

September 15, 2025

Chad Hudson
Forest Supervisor
Bridger Teton National Forest
P.O. Box 1888
Jackson, WY 83001



Christopher Carlton
Deputy Regional Forester
Objection Reviewing Officer
Federal Building
324 25th Street
Ogden, UT 84401

Re: Objection to the FEIS and Draft ROD for Dell Creek and Forest Park

This objection is filed on behalf of Yellowstone to Uintas Connection. We are a 501c3 organization working to protect and restore wildlife habitat, migration corridors and populations. This proposed decision is a threat to those values. Feeding should be discontinued at Dell Creek and Forest Park as well as the five additional feed grounds delineated in the DROD.

We submitted scoping comments for the EIS dated February 11, 2022. These are attached. Some of the major points addressed in those comments include:

- Most FGs occurred within or adjacent to BTNF. Twenty FGs occur within or adjacent to elk crucial range, while 18 occur within or adjacent to elk parturition range. Thirteen FGs occur within or adjacent to active grazing allotments.
- Illegal roads must be closed in relation to elk security habitat as that is additional stress on the population.
- Page 8-9 of the comments summarized with bullet points the results of our literature review. Points of particular interest include:
 - FGs increase spread of disease with brucellosis positive rates of 26%, 2% and 0% on, adjacent to, and independent of FGs.
 - Scavengers and predators reduce the residence time of aborted fetuses in half and act as a biological control of brucellosis and CWD related to FGs.
 - Brucellosis seroprevalence around the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 period.
 - No effective strategy has been implemented to limit spread of CWD.
 - FGs are high cost and interrupt migration.

- The Big Piney Elk Herd Unit Brucellosis Management Action Plan (BMAP) pointed out that the Wyoming Livestock Board defined the exposure period for brucellosis as January 1 to May 1.
- Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, and reducing the feeding season.
- Eight proposed solutions from the BMAP were summarized.
- Economics were reviewed showing the minimal contribution to Wyoming's economy by grazing livestock on public lands.
- Forage used by livestock on public lands in Wyoming would support over 900,000 elk. On the three allotments surrounding Dell Creek, livestock consume forage that would support nearly 4,300 elk.
- We analyzed snow depths for sites relevant to Dell Creek relative to the 20-inch limitation for elk movement. This analysis showed a wide variation in the onset and end of the depth limit. Most end in March and April and begin in Dec – Jan.
- We addressed the phaseout of these FGs and providing native forage.
- Review of the WEST report
 - The long term average of feeding at Dell Creek and Forest Park were 148 and 135 days, respectively, far exceeding the ranges we found by analyzing snow depth.
 - Potential native range within 5 miles of Dell Creek was 22,612 acres and Forest Park 2,728 acres.
- Would need to include McNeel in the analysis due to proximity to Dell Creek.
- EIS should include all FGs on the BTNF.
- We recommended:
 - Closing both FGs and relying on native forage.
 - Reduce the feeding period based on snow depth, not the calendar.
 - Assess current state of forage capacity.
 - Analyze outcome of past habitat treatments.
 - Reduce livestock forage allocations in allotments with parturition and crucial range based on actual forage production and a reduced percentage for livestock.
 - Permanently close vacant allotments.
 - Protect predators and scavengers.
 - Ensure migration corridors and security habitat are functional.
 - Barricade, reclaim and reseed all unauthorized motorized routes.

We submitted scoping comments on the Dell Creek Special Use Permit on October 22, 2021. These are attached. Major points are summarized below:

- We expressed our concern that BTNF will continue to perpetuate FGs by avoiding deciding to phase them out.

- A brucellosis study gave residence times for the contamination in soil, vegetation and tissue that remained viable for 43 days in April, and 26 days in May.
- The percent of elk testing positive for brucellosis antibodies was 22% for FG elk vs 0.7% in free-ranging elk.
- BTNF should use its 36CFR251 Prohibition Authority to ban FGs on the BTNF and to ban trapping and killing of wolves, coyotes, foxes, and other predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume or reduce contaminated birth or abortion offal.
- Do not renew the Dell Creek FG special use permit. This is consistent with Wyoming's CWD Plan.
- Begin resting pastures within the affected five allotments surrounding Dell Creek FG so that plant communities can recover their vigor. Rest can be rotated annually between the pastures, or those pastures containing the preferred elk habitats can be rested multiple years to restore plant community production.
- Reduce livestock stocking rates by updating capability and stocking rate analysis to current forage production and livestock consumption rates, and to provide rested pastures, thus reducing the overall area grazed by livestock each year.
- Require herding of livestock to manage them around areas preferred by elk.
- Prohibit trapping and killing of predators and scavengers in these five allotments as well as the BTNF.
- Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve the habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF.
- Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex.
- On private lands, fence haystacks, manage livestock away from elk, including hazing elk, leaving forage for wildlife, and being tolerant of scavengers.

Additional scoping comments were submitted on the DEIS dated February 14, 2022. These are attached and reflect our role as stakeholder in the WGFD feed ground management plan development.

Also attached are our September 9, 2023 comments on the WGFD Draft Wyoming Elk Feedgrounds Management Plan. We provided recommendations including:

- Phase out FGs over five years.
- Protect carnivores and scavengers for their role in maintaining healthy big game herds.
- Protect migration corridors and restoration of migratory behavior.
- Improve the quality and productivity of elk winter range.
- Reserve forage on public lands for wildlife, de-emphasize vegetation treatments, and adjust livestock grazing and intensity to leave adequate forage to support elk herd objectives.

We summarized elements of a phase out plan to include:

- Evaluate summer and winter forage on elk parturition and winter range for the period of occupancy to determine the population size that can be supported.
- Evaluate integrity and habitat capability of migration corridors to allow movement and provide adequate forage during migrations.
- Adjust elk objectives to maintain elk herds within the capacity of natural habitats that can sustain them on a long-term basis.
- Identify funding sources for regulation fencing around winter livestock feeding areas and haystacks.
- Adjust livestock grazing (stocking rates, timing and duration of grazing, pasture rest and rotation plans) in parturition and wintering areas on public land to ensure sufficient forage is present to support elk herds at objective numbers.
- Identify funding for voluntary retirement of public lands grazing permits in important habitat areas for elk, mule deer, and moose.
- Controlled hunting is used to reduce elk numbers to meet herd objectives that are aligned with available habitat and forage.
- Commitment to reduce elk feeding seasons to zero over five years.
- Identify strategies to encourage elk to resume natural migratory patterns.

We expressed concerns about the inherent bias of the process and its dominance by the livestock and outfitter interests, the lack of provision of forage on private lands, while collecting depredation fees, and the most probable outcome to suit these interests. The draft plan did not include the forage capacity analysis we requested. The process was a top-down driven process in which hard decisions are delayed indefinitely as disease increases. We could not support the plan without the requested analysis and a phase out plan. We then cited the guidance of the WEST report which would be part of an analysis for each FG to determine capacity and set objectives such as the average number of elk at each feed ground, the duration of feeding, and the amount of potential native range on public land within 5 miles.

We submitted comments on the Draft EIS dated January 15, 2024. These are attached. Some major points included:

- The Purpose and Need was designed to accommodate WGFD preference to continue feeding rather than to maintain healthy elk and other wildlife populations or healthy ecosystems.
- The Proposed Action was stated as a WGFD proposed action, thereby deflecting responsibility for upholding the public trust duty of the Forest Service.
- We supported immediate closure of the FGs.
- The Cumulative Effects Analysis was inadequate because it did not address the five-mile radius around FGs recommended in the WEST report.
- Livestock are removing up to 75% of the forage indicating overstocking is an issue.

- Only 12 – 20% of elk are using the two FGs, therefore most are not, thereby the FGs are increasing infection rates.
- The CEA should have included analysis of the acres of habitat on the BTNF within five miles of each FG or the HA containing the FG, the current and potential capacity of that habitat to support elk, and address livestock management to provide for elk forage during parturition and winter.
- The DEIS only considered a couple of DFCs relative to Dell Creek and Forest Park FGs, the CEA should also be analyzed for the effects on DFCs within the five-mile radius of all FGs.
- The USGS model and DEIS do not consider the dynamics of predator and prey. The model used median values of transmission of CWD in fed and unfed elk populations but did not incorporate consideration of the role of predators and scavengers in reducing portions of the population with disease. Research was cited showing the role of wolves and humans in elk population dynamics with wolves removing old animals and hunters removing the reproductive members of the population. Wolves harvested much lower numbers than hunters did.
- We cited and analyzed Forest Plan provisions and the lack of Forest Service monitoring and analysis. This analysis is incorporated here in its entirety.

Our Objection

Going into this feed ground process more than five years ago, we expected that Wyoming Game and Fish and the BTNF would kick the can down the road even if elk were faced with devastating consequences. Public comments are deflected and ignored or explained away, so the public really has no voice, only the livestock industry counts. Sure enough, this is what has happened as is so often the case.

The FEIS and DROD have failed to correct any of the deficiencies we and others have identified in our voluminous comments over several years. They have retained the problematic Purpose and Need and the inadequate Cumulative Effects Analysis. The DROD summarizes the NF alternative as having better outcomes than the PA in terms of minimizing CWD and maximizing elk populations at year 20. It claims that the PA has better outcomes related to cost/benefit. However, a review of the FEIS tables and charts show that this latter claim is untrue. The means and medians of each cost element are nearly the same and the standard errors overlap to a great degree, showing there is no significant difference among the alternatives.

We reviewed the DFCs for the FGs, Dell Creek and Forest Park in ARCGIS Pro to see what DFCs the FGs lie within and those that are adjacent. Dell Creek is in DFC12 and surrounded also by DFC10. These DFCs are managed for *“high quality wildlife habitat”* while having *“no adverse and some beneficial effects on wildlife”*. Forest Park is within DFC3A and surrounded by DFC1B. DFC3A is to be managed for potential addition to the National Wild and Scenic River system and are protected from activities that could *“diminish or change ...fish and wildlife*

values...” while DFC1B is to allow commercial activities and provide “Sufficient habitat to maintain desired populations and distribution of big game species.” The five additional FGs described in the FEIS include Dog Creek, Fall Creek, Fish Creek, Muddy Creek, and Upper Green. These are mostly in DFC 10 and 12. So, maintaining healthy wildlife populations and meeting objectives are key goals. By continuing artificial feeding, the PA does not do that and therefore violates the Forest Plan and NFMA.

Cook et al (2023)¹ (attached) cited in the FEIS determined that:

- “continued feeding will lead to fewer elk by year 20 (mean = 8,300, standard deviation [SD] = 740) compared to no feeding at U.S. Department of Agriculture Forest Service sites (10,700, SD = 890).”
- “The closure of all feedgrounds was projected to result in the largest elk populations at year 20 (12,500, SD = 980).”
- “No feeding at all sites also resulted in the largest cumulative harvest of 57,700 (SD = 2,600) compared to 51,100 (SD = 3,800) for continued feeding at all current feedground sites on the five HUs.”

Thus, we conclude that the only valid alternative is the NF alternative. It supports the healthiest and largest population of elk in a more sustainable fashion than does the PA, which is not sustainable as intended in NFMA. The economics summarized in the FEIS do not show there is any increased benefit of continued feeding.

The Multiple Use and Sustained Yield Act states:

“Multiple use” means: The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, **without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.**

¹ Cook, J.D., Cross, P.C., Tomaszewski, E.M., Cole, E.K., Campbell Grant, E.H., Wilder, J.M., and Runge, M.C., 2023, Evaluating management alternatives for Wyoming Elk feedgrounds in consideration of chronic wasting disease (ver. 2.0, November 2023): U.S. Geological Survey Open-File Report 2023–1015, 50 p., <https://doi.org/10.3133/ofr20231015>.

NFMA incorporates MUSYA. If the Forest Service has not allowed impairment of the productivity of the land in the BTNF, then the maintenance of elk populations should be ongoing without supplemental feeding and thereby mostly disease-free. Indeed, the Cook et al (2023) analysis shows feeding will reduce the population over time, but neither Cook nor the FEIS have analyzed habitat and carrying capacity of the BTNF for its wildlife populations and for elk as the WEST report recommends and NFMA requires.

In our past comments we have raised the issue of carrying capacity and the loss of same by overstocking with livestock. This has not been addressed. NFMA also states, *"require the identification of the suitability of lands for resource management"*. We have seen no capability and suitability analysis of habitat for elk or for the use of FGs. Another failure to meet the intent of NFMA.

The Purpose and Need as defined in the FEIS places economic interests and preferences above that of wildlife as does the Preferred Alternative and therefore violates the balancing provision of MUSYA.

Sincerely,



John Carter, President
Yellowstone to Uintas Connection
PO Box 464
Bondurant, Wy 82922

Scoping Comments_EIS_02_11_2022

February 11, 2022

Tricia O'Connor
Forest Supervisor
Bridger Teton National Forest
PO Box 1888, 324 North Cache
Jackson, WY 83001



Street



Re: Dell Creek & Forest Park Elk Feedgrounds: Long-term Special Use Permits Project EIS

Sent VIA Email To: patricia.oconnor@usda.gov and to the BTNF Comment Portal at <https://www.fs.usda.gov/project/?project=60949&exp=overview>

Dear Ms. O'Connor:

These scoping comments are provided on behalf of the Yellowstone to Uintas Connection, Alliance for the Wild Rockies, and Native Ecosystems Council. We are 501c3 environmental organizations dedicated to science. We advocate for wildlife, wildlife habitat, and migration corridors in the Rocky Mountains. We have major concerns regarding the elk feed grounds (FG) in Wyoming, their impacts on migration, disease, and interrupting natural ecosystem function. We previously submitted scoping comments on your October 13, 2021 scoping letter for issuance of a special use permit for the Dell Creek FG.

The January 14, 2022 scoping letter for this upgraded project is to conduct environmental analysis in an EIS on the effects of reauthorizing Wyoming Game and Fish Commission (WGFC) to operate the Dell Creek and Forest Park elk FGs and associated facilities and activities. Feeding would occur between November 15th and April 30th. The purpose and need of the proposal is to allow WGFC to operate these FGs on the Bridger Teton National Forest (BTNF) and to analyze the proposal to ensure the WGFC is managing elk to sustain the health of the land and meet the goals and objectives of the BTNF Forest Plan. It is unclear as to the length of time this proposed reauthorization will be in effect. It is also unclear as to the length of the process of dealing with annual special use permits while an EIS is being prepared as no definitive end date for issuance of a ROD was specified in the scoping letter.

Based on our experience with the Forest Service, we expect years of back and forth in a NEPA process involving an EIS, so the special use permits for these FGs will likely be back for multiple annual renewals over a period of many years. This means that regardless of what alternatives are selected the FGs will continue to operate unchanged for maybe half a decade, then if there is a phaseout, it will likely occur over many more years. The process alone will perpetuate the ongoing spread of disease for maybe a decade or more. This is unacceptable.

Instead, it would seem a good time to allow the special use permits on both these FGs to be terminated while the fate of the remaining FGs is determined, and their management (feeding

periods) reduced to avoid the high-risk period for disease due to co-mingling of elk and livestock. This would be beneficial to reducing the incidence of brucellosis, chronic wasting disease, and other diseases such as hoof rot in elk. It would result in more time spent in the BTNF or other native range while following natural migration patterns.. Seasonal, parturition and crucial ranges would be used longer for the beneficial nutrition these habitats may provide.

We expect the BTNF to fully analyze the science and effectiveness of various management options; to compare Wyoming FG and disease statistics to other western states and their management; and to address the economics of feeding and livestock grazing, elk hunting, recreation, and their significance to the economy of Sublette County and the State of Wyoming. In the following sections, we provide some background on the issues and options, economics, forage analysis, and snow depth considerations related to winter foraging and migration. In our final section, we look at an alternative to support free ranging elk and reduce disease by closing FGs.

We expect the BTNF to fully address all the objectives, standards, and guidelines as well as the intent, of its Forest Plan. One such provision is the Forest Plan Goal 1.1 objective to re-establish historical elk migration routes. Others have to do with maintaining the Desired Future Conditions (DFC) expressed in that Plan. Elk and other animals depend on areas within many of the DFCs described in the Forest Plan. In our October 21, 2021 scoping comments for renewal of the Dell Creek Special Use Permit, we mapped the 23 FGs and their occurrence relative to the BTNF, elk crucial and parturition ranges. Most FGs occurred within or adjacent to the BTNF. Twenty FGs occur within or adjacent to elk crucial range, while 18 occur within or adjacent to elk parturition range. Thirteen FGs occur within or adjacent to active grazing allotments.

We also mapped the Dell Creek FG in relation to these crucial, parturition ranges and surrounding grazing allotments. Figures 1 - 4 show the occurrence of all FGs in relation to the BTNF, grazing allotments and their status, elk crucial range, and elk parturition range. We also provided a map of the illegal roads and trails in the vicinity of the Dell Creek FG. For wildlife security, these roads and trails should be closed and reclaimed as should those affecting elk security across the BTNF where elk migrate. See Figure 5 showing those in the vicinity of Dell Creek FG.

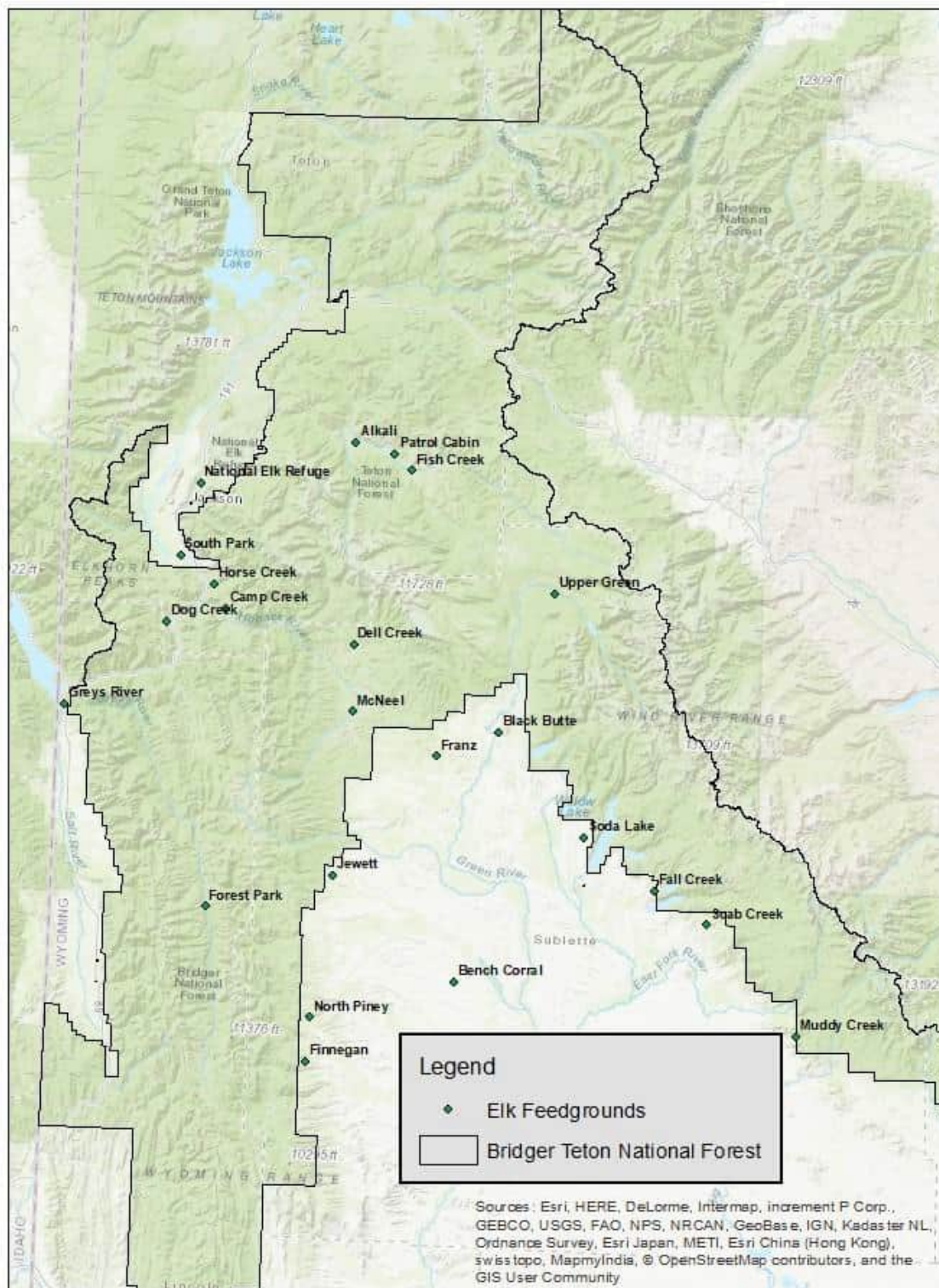


Figure 1. Occurrence of Elk Feed Grounds in or adjacent to the Bridger Teton NF

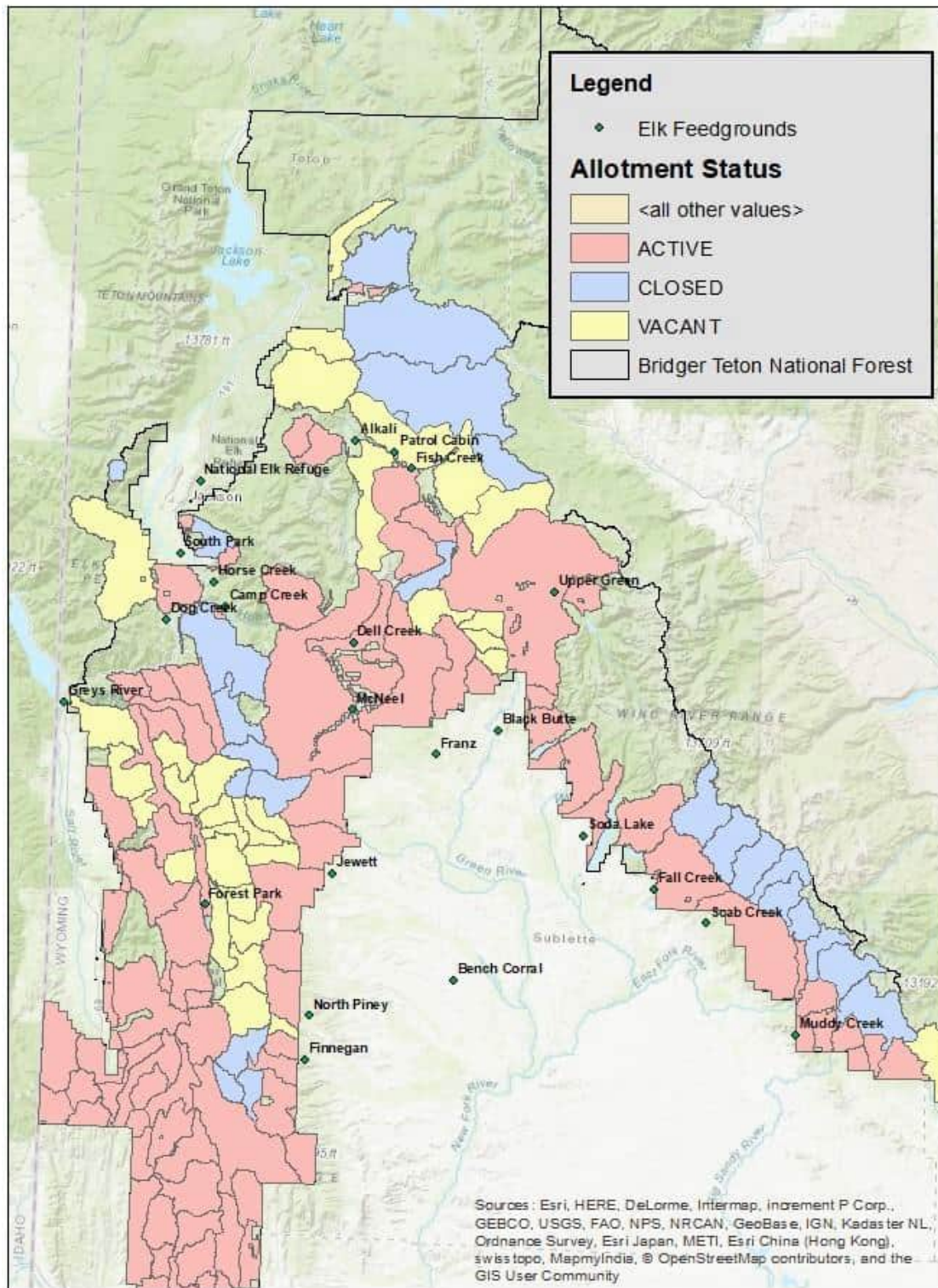


Figure 2. Occurrence of Elk Feed Grounds and Allotment Status



Figure 3. Occurrence of Elk Feed Grounds in relation to Elk Crucial Range

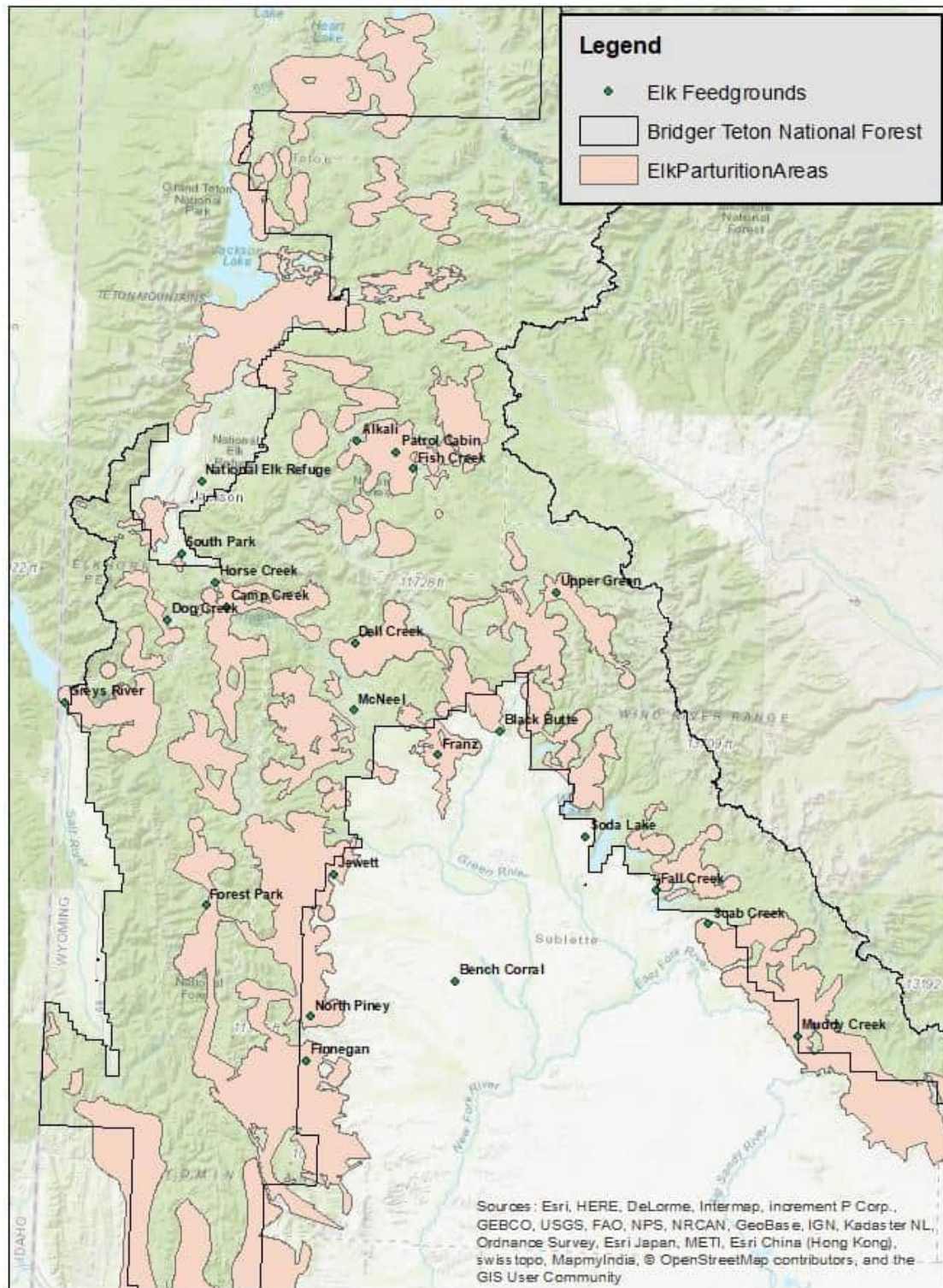


Figure 4. Occurrence of Elk Feed Grounds in relation to Elk Parturition Areas

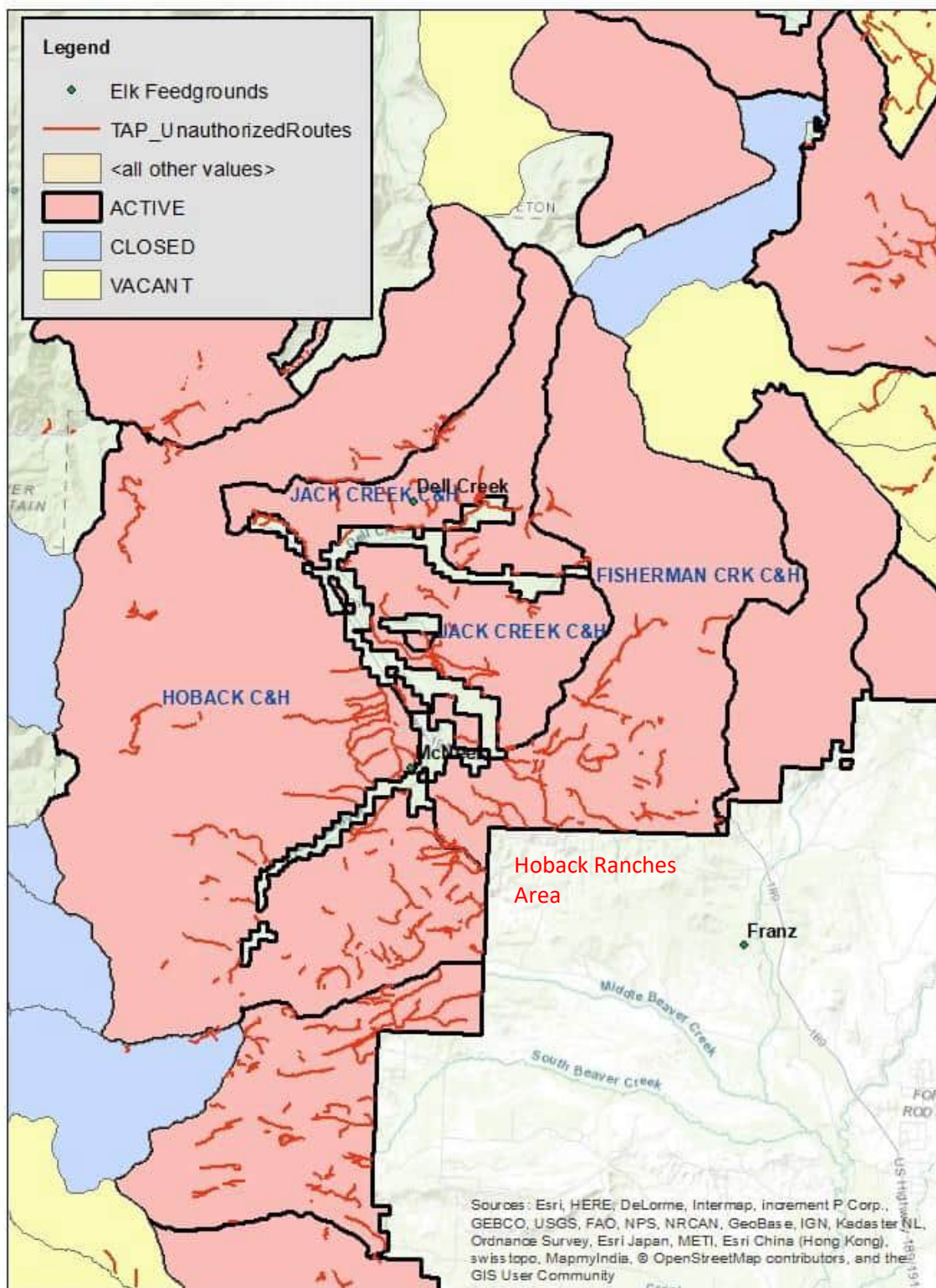


Figure 5. Occurrence of Unauthorized Motorized Routes in Vicinity of the Dell Creek and McNeel Feed Grounds

A. Background

While Wyoming Game and Fish Commission manages these FGs, it is important to understand that the Forest Service has the overall authority for management of National Forest lands, including wildlife and habitat.¹ Forest Service Manual (FSM) 2300 also addresses wildlife management and the relationship to state wildlife management through coordination.² It does not cede authority to the state. FSM 2323.31 Objectives include, "Provide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist." FGs are counter to this objective.

In addition, the Forest Service has Prohibition Authority (36 CFR 251) by which it can ban FGs on National Forest managed lands, ban trapping and killing of wolves, coyotes, foxes and other predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume and reduce contaminated birth or abortion offal, thus reducing potential environmental contamination.

The Wyoming Game and Fish Chronic Wasting Disease Management Plan also has expressed that: "To reduce artificial cervid concentrations, the Department will pursue statewide or local feeding bans where possible, identify points or sources of concentration, and develop strategies to decrease cervid concentrations to minimize CWD transmission."³

We anticipate the EIS will characterize the habitat on the BTNF and its current productivity for both summering and wintering elk and other ungulates to determine whether the current vegetation conditions support wildlife populations during all seasons.

Attachment 1 to these comments is a summary of references that we have reviewed and upon which the following points are based. The NEPA analysis must consider the points provided in each reference.⁴

- FGs concentrate animals and increase the spread of disease with brucellosis seropositive rates of 26%, 2% and 0% on, adjacent to and independent of FGs.
- Scavengers and predators reduce the residence time of aborted fetuses in half and may act as a biological control of brucellosis and CWD related to FGs.
- Elk consumption of crops and hay is not tolerated by producers, who are also opposed to eliminating FGs

¹ Nie, M., Barns, C., Haber, J., Joly, J., Pitt, K., & Zellmer, S. (2017). Fish and Wildlife Management on Federal Lands: Debunking State Supremacy. *Environmental Law*, 47(4), 797–932.

<http://www.jstor.org/stable/44466736>

² USDA Forest Service. 2007. FSM 2300 - Recreation, Wilderness, and Related Resource Management.

³ Wyoming Game and Fish Department. 2020. Wyoming Chronic Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

⁴ Download references from: <https://app.box.com/s/mst3u7nkj7xet15677cl2l2632tpfpao>

- Elk herds are above objectives.
- Modeled CWD population effects indicate CWD could reach 12% - 20% of the elk population and declines in population would occur at 7% seroprevalence in females.
- Predators are a strong defense against CWD by focusing on animals weakened by the disease. Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.
- Tuberculosis in Michigan deer led to eradication of white-tailed deer to protect cattle. Deer populations were beyond carrying capacity and problems occurred in areas with high cattle/deer populations, artificial feeding, and/or continuous interactions between cattle and deer. Michigan banned feeding deer, increased harvest, and worked to eliminate contact between cattle and deer.
- Except for the Greater Yellowstone Area, the U. S. is free of cattle brucellosis.
- Brucellosis seroprevalence around the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 period.
- FGs support between 14,000 and 20,000 of Wyoming's elk population of 112,000.
- Since 2020 CWD has been found in two FGs.
- Since discovery of CWD in 1985 in deer herds in Wyoming, no effective strategy has been implemented to limit spread, while CWD has since been documented throughout most of the state.
- FGs are a high-cost endeavor.
- FGs have interrupted elk migration from summer to winter ranges.
- Continuing feeding elk in the Pinedale region could result in economic loss with CWD.
- The Pinedale area contributes a small part of the regional elk harvest.
- Shortening the feeding period by about half led to elk migrating like non-fed elk.
- Elk tend to avoid cattle and will use lower elevations if no cattle are present. They move to higher elevations when cattle move onto lower elevation areas.
- Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer habitat use overlapped likely due to depletion of forage.
- Summer range condition is important to reproductive success with good condition having higher success than poor condition.
- The Wyoming statewide elk harvest success rate in 2020 was 46%.
- The average number of elk hunters for the states ranged from 57,834 in Wyoming to 220,092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington

The WGFD CWD Management Plan put forth management strategies for CWD that include:

- Use hunter harvest to maximize removal of positive animals
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration

- Develop strategies to decrease cervid concentrations to minimize transmission

The Big Piney Elk Herd Unit Brucellosis Management Action Plan (BMAP)⁵ pointed out that the Wyoming Livestock Board defined the exposure period for brucellosis as January 1 to May 1. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, and reducing the feeding season. A shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to FGs is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. A shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling. It is worth including here the eight options considered and the pros and cons of each while keeping in mind this document was produced using information in the 2007 time frame.

1. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- Find suitable areas lower in elevation with no winter cattle operations.
- Evaluate current habitat to determine production, vegetation, health, and potential.
- All Pinedale Field Office BLM lands are leased for grazing.
- Purchase AUMs for forage reserve.
- These five FGs are not candidates for this option due to potential for damage and commingling.
- Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, and reduce browsing on local native vegetation.
- Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, and increase competition with other species.

2. Eliminate FGs

- Not an option given current herd objectives and current conditions. These would need to change.
- Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Piney EHU, and reduce FG and vaccination expense.
- Cons include increased risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, and reduced vaccination feasibility.

⁵ WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

3. Reduce elk numbers through harvest

- a. Reducing numbers thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, with emphasis on females, and other strategies.

4. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate the need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option.

5. Elk proof fencing of FGs on private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, and reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

6. Habitat enhancement projects in winter range

- a. Facilitated by options 2, 3, 4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high-risk transmission period, create vegetative diversity, and improve range conditions for livestock and wildlife.
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, and may increase invasive species.

7. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, and secure future revenue for WGFD.
- e. Cons are expensive, limited availability of land with potential, and requires landowner willingness.

8. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, and perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, and effective vaccine still lacking.

B. Economics

The BTNF must analyze the economic importance of permitted livestock grazing against the alternative uses of the Forest, particularly given the rising demand for wilderness, outdoor recreation, and wildlife watching. Why should the public have to lose its wildlife so that a handful of livestock permittees can graze their cattle at great public cost? The eroded soils and stream banks, damaged and polluted rivers, streams and springs, and lost wildlife populations are all economic costs that are not accounted for in permitting decisions for grazing livestock. As an example, the FEIS for the Upper Green River Area Rangeland Project⁶ makes the claim that *"Continuing to authorize livestock grazing in the project area would support the custom and culture in surrounding communities and contribute to the achievement of Forest Plan goals."* However, the BTNF did not analyze the real costs and benefits of continued livestock grazing. There is a one hundred year history of taxpayer subsidized feeding of elk to essentially protect livestock producers' stored hay and reduce mixing of elk and cattle. Yet, disease is increasing. We

⁶ USDA. 2017. Upper Green River Area Rangeland Project Final Environmental Impact Statement. Bridger-Teton National Forest.

understand from recent WGFD stakeholder meetings that the current annual cost for maintaining these FG operations is over \$2 million.

As we have observed conditions in the BTNF and adjacent private lands, it has become clear that the BTNF is not effectively managing livestock grazing. We have pointed this out in comments, analysis, and letters to the BTNF. More will be said on this subject in a later section. As we look to phasing out elk FGs as has been done in other states, we see the lack of forage on private lands as permittees first graze the Forest, leaving little, then move their livestock down to the valleys and private lands, where they graze until virtually all the forage is gone before they then move their cattle onto their private winter feeding stations.

When an elk, deer, or moose graze or eat hay on private lands, it is considered "damage", or "depredation" for which livestock producers are reimbursed at taxpayer expense. Yet, the private landowners moved into what was originally wildlife habitat, needed by elk and other animals in winter and summer. What ever happened to giving something back? Many ranches have been paid to place their lands into conservation easements by such entities as the Wyoming Stockgrowers Land Trust⁷, but does that or any other trust require as part of the agreement that forage be left for wildlife and watershed protection? Or, for protection of riparian areas and wetlands? This comes down to an ethical issue in our mind. Not everything must be for profit.

During the period from 1995 through 2020, USDA subsidies for U.S. farms totaled 424.4 billion dollars.⁸ In Wyoming, during the same period, \$317 million in direct payments were made to 10,938 farmers.⁹

An article¹⁰ from the CATO institute on the state of subsidies to farmers in 2020 noted:

U.S. net farm income this year will jump 43% to \$119.6 billion, the highest inflation-adjusted level since 2013, the government said Wednesday in a report. The projected surge occurred as the virus pandemic roiled the food-supply chain in the spring, driving grain prices down and meat costs higher. U.S. agriculture is on track for one of the three most-profitable years in a half century. Adjusted for inflation since 1973, projected net farm income in 2020 will be surpassed only by 2011 and 2013 figures. Direct government aid, accounting for 39% of net farm income, rose to a record \$46.5 billion from \$22.4 billion last year.

⁷ WSGLT. 2022. Wyoming Stock Growers Land Trust. <https://wsgmt.org/>

⁸ <https://farm.ewg.org/regionsummary.php>

⁹ https://farm.ewg.org/top_recips.php?fips=56000&progcode=totalfarm®ionname=Wyoming

¹⁰ Lincicome, S. 2020. Examining America's Farm Subsidy Problem. CATO institute. <https://www.cato.org/commentary/examining-americas-farm-subsidy-problem>

The annual amounts vary and the forecast for 2022 is provided by USDA.¹¹

Overall, farm cash receipts are forecast to increase by \$29.3 billion (6.8 percent) to \$461.9 billion in 2022 in nominal dollars. Total crop receipts are forecast to increase by \$12.0 billion (5.1 percent) from 2021 levels to \$248.6 billion. Soybean, corn, cotton, and wheat receipts combined are forecast to increase by \$11.7 billion (8.2 percent) in 2022, accounting for almost all the forecasted growth in crop cash receipts. Total animal/animal product receipts are expected to increase by \$17.4 billion (8.9 percent) to \$213.3 billion following increases in receipts for milk, cattle/calves, and broilers. Direct Government farm payments are forecast at \$11.7 billion in 2022, a \$15.5 billion (57.0 percent) decrease from 2021 forecast levels.

A current article predicts that cattle prices will explode in 2022, "Fed cattle prices, now near \$140 per cwt, are up \$25 from last year. Feeder calves are now over \$2 a pound at many auction markets, from \$1.60 last year."¹² While these record prices occur, BLM and the Forest Service have released their public land grazing fees for 2022 which will be \$1.35 per animal unit month (cow/calf).¹³ This is less than the Wyoming State fee at \$6.38/AUM and over an order of magnitude lower than the average private land grazing fee in Wyoming of \$21.50/AUM.¹⁴

A current economic analysis of SW Wyoming was conducted by Headwaters Economics.¹⁵ This study determined that Agriculture in Wyoming is 3.6% of private employment and in the Region, including Lincoln, Uinta, Sublette, and Sweetwater Counties, it is 3.2%. Travel and Tourism was 20.2% of private employment in Wyoming while in this Region it was 15%. The agriculture sector was one of the lowest paying sectors. For example, in Sublette County in 2005, average earnings for this sector were less than \$20,000 per job.¹⁶ Agriculture property was assessed at 0.2% of the County's total assessed valuation and sales tax revenue was so low it was not reported.

Dr. Thomas Power states that, "Claims about the relative importance of federal grazing to the economies of the western states can be simply analyzed by answering the following four

¹¹ U.S. Department of Agriculture, Economic Research Service. *Farm Sector Income & Finances: Farm Sector Income Forecast*, February 4, 2022. <https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/>

¹² <https://www.agriculture.com/livestock/cattle/the-cattle-price-explosion-is-now>

¹³ <https://www.blm.gov/press-release/bureau-land-management-and-usda-forest-service-announce-2022-grazing-fees>

¹⁴ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

¹⁵ Headwaters Economics. 2021. A Profile of Key Indicators Southwest Region. Selected Geographies: Lincoln County, WY; Uinta County, WY; Sublette County, WY; Sweetwater County, WY. (Citing BLM and the Forest Service.)

¹⁶ Taylor, D.T. and Foulke, T. 2008. Sublette County Wyoming: A Socio-Economic Profile. University of Wyoming Department of Agricultural and Applied Economics.

questions: 1. What portion of the value produced by cattle and sheep operations is associated with the feed used? 2. What portion of the feed for those cattle and sheep operations comes from grazing on federal lands? 3. What portion of the total agricultural activity involves raising cattle and sheep? 4. What part of the total economy is represented by agriculture?"¹⁷

According to the 2017 Wyoming Census of Agriculture, Sublette County sales of cattle and calves was \$41 million.¹⁸ How much of this can be attributed to public lands? Since permitted grazing seasons on the BTNF and other public lands are approximately 120 days, or about one-third of a year, this is 30% of the livestock economy in the county, or around \$12 million, but the livestock grazing on the BTNF is a smaller fraction which can be determined by an analysis of the authorized AUMS on the BTNF, BLM and State Lands. The EIS must do this calculation. That calculation could show it is maybe \$3 - \$4 million as an approximation.

Against this value, an analysis of the economic importance of BTNF managed lands to the local and regional economies when grazed by livestock should be compared to other values foregone such as recreation, clean water, and wildlife. For this EIS for Dell Creek and Forest Park, the areas of habitat for elk seasonal, winter and parturition range that are permitted to be grazed by livestock must be determined. Then they should be valued based on the loss of elk forage and habitat (elk numbers and value) due to livestock grazing vs the value if the habitat is allowed to produce at potential by not grazing livestock and/or reducing livestock grazing to meet the best science on forage allocations, a sustainable utilization rate of 25%, and rest, to allow plant communities to recover following grazing.¹⁹

This would be based on numbers of cattle using the elk habitat and the length of time they use the habitat and how many elk that habitat could support at different livestock stocking rates ranging to no livestock grazing. Stocking rates would be determined by the factors described above as regards utilization, current forage production, adequate rest and current cattle weights and forage consumption rates. Current Forest Service Regional criteria for determining capable and suitable lands for livestock grazing should also be used to determine the acres upon which grazing should be allowed. The analysis should include values of outdoor recreation, for example that reported by the U.S. Fish and Wildlife Service.²⁰ That report for 2011 shows the value for Wyoming for Fishing at \$463 million; Hunting at \$288 million; Wildlife Watching at \$350 million per year, or a total of \$1.1 billion spent in Wyoming. That was ten years ago before the recent explosion in tourism. A report for 2016 showed over \$156 billion spent on these

¹⁷ Power, Thomas M. 2002. Taking stock of public lands grazing an economic analysis. In: Welfare Ranching, the Subsidized Destruction of the American West.

¹⁸ USDA. 2017. 2017 Census of Agriculture County Profile Sublette County, Wyoming.

¹⁹ Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review. Report Prepared for Yellowstone to Uintas Connection, Paris, ID. <https://app.box.com/s/ngw6723dx52quxw2rd8u>

²⁰ US Fish and Wildlife Service. 2011. 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

endeavors in the U.S.²¹ It should also consider the costs of water treatment and other costs to the BTNF and affected communities related to livestock degradation of the air, water, and plant communities (weeds). A current news release from Grand Teton National Park shows a 48% increase in visitation for April 2021 when compared to April 2019.²² What are the current statistics for Sublette County and how does the value of livestock grazing on the BTNF play into this?

C. Forage Consumption and Displacement of Elk by Livestock

We reviewed statistics for the number of permitted and authorized livestock in BLM, Forest Service and State managed lands in Wyoming.^{23 24} The summary is provided in Table 1 showing that 3,016,445 Animal Unit Months (AUMs) were authorized in recent years. An animal unit month is the allocation of forage used by a cow and calf each month. A 2016 review of the AUMs and rates of consumption of forage by livestock showed that current cattle weights and forage consumption rate as a percent of body weight for a cow and calf pair was 50.4 lbs/day or 1,532 pounds per month.²⁵ The estimated elk forage consumption rate is 14 lb/day.²⁶

Table 1. Authorized Livestock AUMs on Public Lands in Wyoming

Managing Agency	Permitted AUMs	Authorized AUMs
National Forest	443,740	355,392
National Grassland	150,058	126,174
BLM	1,863,702	1,401,056
Wyoming State		1,130,823*
Total		3,016,445

*Calculated from 2011 grazing revenue of 5,247,021 divided by the rate of \$4.64/AUM.²⁷

²¹ US Fish and Wildlife Service. 2018. 2016 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

²² DOI National Park Service. 2021. News Release. 05/23/2021.

²³ USDA. 2017. Grazing Statistical Summary FY 2016. Forest Service Range Management.

²⁴ DOI. 2020. Public Land Statistics 2019. Bureau of Land Management.

²⁵ Carter, J. 2016. Updating the Animal Unit Month. Report to Yellowstone to Uintas Connection. Paris, Idaho. <https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

²⁶ Holechek, J, RD Pieper, C H Herbel. 2004. Range Management Principles and Practices, Fifth Edition. Table 8.11, page 240.

²⁷ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

Using these statistics, we calculated the number of elk that could be supported in Wyoming if livestock were not grazing our public lands.

$3,016,445 \text{ AUMs} \times 1,532 = 4,621,193,740$ pounds of forage consumed by livestock on public land each year

One elk consumes $14 \text{ lb/day} \times 365 \text{ days/year} = 5,110 \text{ lb/year}$

Number of elk equivalent to livestock grazed on public lands in Wyoming is therefore,

$$4,621,193,740 \div 5,110 = 904,343 \text{ elk per year}$$

Let's look at the three allotments surrounding the Dell Creek FG that contain elk habitat and the number of cattle authorized to graze. These data were taken from the Annual Operating Instructions for the three allotments for 2021 and are summarized in Table 2.²⁸ Our calculation indicates that there are approximately 14,313 AUMs being consumed by cattle in the three allotments that include elk seasonal, winter and parturition range. If an elk consumes 5,110 lbs of forage each year, then the number of elk equivalent to the livestock forage consumption is:

$14,313 \text{ AUMs} \times 1,532 = 21,927,516$ pounds of forage consumed by livestock on the three allotments each year

One elk consumes $14 \text{ lb/day} \times 365 \text{ days/year} = 5,110 \text{ lb/year}$

Number of elk equivalent to livestock grazed on the three allotments is therefore,

$$21,927,516 \div 5,110 = 4,291 \text{ elk per year}$$

²⁸ USDA. 2021. Annual Operating Instructions for Fisherman Creek, Hoback and Jack Creek allotments. Bridger-Teton National Forest.

Table 2. Animal Unit Months for Fisherman Creek, Hoback, and Jack Creek Allotments

Allotment	Livestock Type	Numbers	Dates Grazed	AUMs*
Fisherman Creek	Cow and Calf	711	June 11 - Oct 15	2,947
	Yearling	691	"	1,432
	Horse	37	"	77
Hoback	Cow and Calf	692	June 11 - Oct 15	2,868
	Yearling	1,944	"	4,029
	Horse	17	"	35
Jack Creek	Cow and Calf	330	June 11 - Oct 15	1,368
	"	47	June 11 - Oct 20	203
	Yearling	627	"	1,351
Totals		5,096		14,313

*For simplicity we counted a yearling and horse as equivalent to 0.5 AUM each.

The AOIs for these allotments allow 50% utilization in riparian areas and 40% in uplands, but there are questions as to whether these standards are met or whether sufficient forage exists to support the livestock or elk that use, or potentially use, these allotments. We have addressed issues with the current monitoring and management of allotments by the BTNF in several letters or comments referenced above.

A recent example are our comments on the Elk Ridge Complex Supplementation Project Environmental Assessment.²⁹ We collected forage data on the allotments covered by this EA and found that current forage production was significantly lower than that predicted by the soil survey and ecological site descriptions, in fact, it was approximately 10% of the potential amount. This meant that the predicted stocking rate of 603 cow/calf pairs could not be supported at the allowable use standards provided. In addition, the allowable use standards do not leave adequate cover (retention) for amphibians, birds, and small mammals. In fact they provide for less than one inch residual vegetation height on the key species.

We determined that the key species method used by the BTNF is not proper; and that agency monitoring is flawed. We provided photos of some areas in currently grazed allotments managed with these allowable use standards showing that aspen stands have lost much of their herbaceous understory and lack recruitment; that monitoring locations in upland areas are selected for minimal use by livestock (on ridges and far from water); that streams continue to suffer downcutting and degraded riparian areas; that riparian areas are not actually monitored and the green line stubble height is not representative of riparian use; that riparian residual vegetation heights following livestock grazing are very short and not providing cover and forage for birds, mammals and amphibians. See, for example the photos of the Fisherman Creek riparian zone on p25 of those Elk Ridge comments. We also documented over 100 trespass cattle into the vacant Elk Ridge Complex showing that those cattle from the Upper Green Complex are not being properly managed or controlled. Also see our letter to the BTNF

²⁹ <https://app.box.com/s/8w485mxxrpbzbrh2v52n59ozkuud5v49>

critiquing monitoring on the Upper Green Complex.³⁰ For management related to elk FGs, these problems must be corrected to avoid guesswork and provide the public with a data- and science-based analysis.

It is incumbent on the BTNF in its analysis of the Dell Creek FG to document the current state of the plant communities and forage base on the Fisherman Creek, Hoback, and Jack's Creek allotments as well as the seasonal, crucial and parturition ranges for ungulates to determine whether sufficient forage is available to support the livestock being authorized, the potential elk, deer, pronghorn, and moose populations, to provide cover for migrant birds, amphibians, and small mammals, and to provide for watershed protection. These three allotments were chosen to encompass much of the winter range identified in the WEST report for Dell Creek FG. Similarly, for Forest Park the analysis should look at the allotments in which seasonal, winter and parturition range occurs and evaluate the ability of those allotments to support the Forest Park elk in the absence of the FG.

Then there is the question of what ranchers are doing to provide residual forage on private lands that are historic foraging areas for deer, pronghorn, elk, and moose. This past year we have inspected private lands bordering Highway 189/191 between Bondurant and Daniel and found that the valleys are grazed completely with little residual forage going into winter. These private lands are grazed once the livestock leave public lands and enter the valleys and surrounding habitats before winter feeding begins. The Hoback Ranches (HR) residential development bordering the BTNF lies between the McNeel and Franz FGs and is not grazed by livestock. (Figure 5). HR and adjacent areas on BLM and BTNF are used below as examples where livestock access is not available, either through land use covenants or on public lands bordering HR where topography or fencing excludes livestock. HR is a private land block of 7,500 acres with covenants preventing livestock. In these places not grazed by livestock, the plant communities are available for wildlife, including elk. We note that elk from McNeel FG migrate through HR to Franz FG and feed within the HR.

³⁰ Carter, J. 2022. Letter to Patricia O'Connor in Reference to Upper Green Cooperative Range Monitoring. January 3, 2022. <https://app.box.com/s/r05zd3iteyx4fb115f53q5pxp7bnu5md>



Figure 6.

Upper - Fall 2021, private land along Hwy 189/191 north of Daniel grazed prior to winter leaving no available residual for wildlife.

Lower - Fall 2021, same location showing residual grasses providing some forage in HWY 189/191 ROW on left with grazed private on right.

In winter, when deer or elk dig through the snow in these grazed areas, they will find little to no forage for the energy expended.





Figure 7.

Upper - Fall 2021, BTNF Fisherman Creek allotment adjacent to Hwy 189/191. This riparian meadow is grazed beyond standards leaving no available residual for wildlife.

Lower - Fall 2021, Fisherman Creek allotment upland on access road to Hoback Ranches showing low growing grasses and little residual for wildlife.

In winter, when deer or elk dig through the snow in these places, they will find little or no forage for the energy expended.





Figure 8.

Upper - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

Lower - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

In winter, when deer or elk dig through the snow in these places they will find little forage for the energy expended.





Figure 9.

Left - Summer 2021, Forest Svc and BLM managed land adjacent to Hoback Ranches. These locations are isolated by topography and a fence, and not grazed by livestock.

Right - Summer 2021, adjacent grazed private land showing little residual vegetation.

D. Snow Depth

WGFD has indicated that a snow depth of 20 inches or more with crusts and ice forming may indicate feeding is necessary.³¹ Elk may move through snow up to three feet deep.³² We were interested in snow depths in the region near the Dell Creek FG and looked up SNOTEL and ACIS data for three locations ranging from lower to higher elevations and along potential migration routes between Bondurant and Pinedale. The station metadata is shown in Table 3 and a map in Figure 10.

Table 3. Metadata for SNOTEL and ACIS Stations

Station Name	Network	Latitude, degrees	Longitude, degrees	Elevation, ft.
Bondurant	ACIS	43.20	110.40	6,620
East Rim Divide	SNOTEL	43.13	110.20	7,930
Pinedale	ACIS	42.87	109.87	7,180

We looked at the period from 2011 to the current day to determine the number of days that snow depth exceeded 20 inches for the three stations and for the higher elevation East Rim Divide we also looked at the number of days above 3 feet snow depth which could limit elk movement. The data is plotted in Figures 11 - 13.

Statistics on the timing of snow depth relative to ability of elk to forage or migrate for these three stations are summarized in Table 4. These are station statistics and don't necessarily reflect site specific data for elements of winter range where depths may be less such as south or west-facing slopes. They are useful in looking at the length of time snow cover may limit foraging or migration and illustrate that current numbers of feeding days may be longer than necessary. We used the foraging depth limit of 20 inches and the migration depth limit of 36 inches as noted in the WGFD reports cited above.

The Bondurant station is representative of conditions at Dell Creek FG and can be used for estimation of the minimum, maximum and average number of days elk may be limited in foraging. In some years the snow level did not reach the foraging depth limit, but on average there were 68 days in which foraging could be limited. In heavy snow years, this increased up to 128 days. It would be expected if forage is available, the elk would migrate to where the forage occurs. In this case, based on migration patterns, it could be to the south across the East Rim Divide.

The East Rim Station is representative of snow depths at the East Rim Divide, the higher elevation barrier elk would negotiate to move south. At the migration limit of 36-inch snow

³¹ Wise, B. 2021. Western State Management of Wintering Elk. Wyoming Game and Fish Department.

³² Oneale, E. Undated. Rocky Mountain Elk. Wyoming Game and Fish Department Habitat Extension Bulletin No. 27

depth, there would be some years in which it is not a barrier (minimum of 1 in our 10-year date range). The average number of days snow depth exceeded 36 inches was 49 and the maximum 94 days. The question is whether elk would move up over the East Rim as snow depths limited foraging in the lower elevations, since it stands to reason the depths would be greater at the higher elevation on East Rim Divide. Since they are reported to move from McNeel FG to the Franz FG, and we observe this movement in HR, it appears likely they would do so.

The Pinedale station is representative of the lower elevations to the south where, ostensibly, elk could winter. It is characterized by shorter periods when snow depth can be limiting. This ranged from 1 day to 63 days with an average of 19 days when snow depth exceeded 20 inches. South or west facing slopes could have lower depths allowing foraging. We recently observed mule deer in the Highway 189/191 ROW resting in about a foot of snow on a south facing slope. They were foraging there while snow depths in other locations were deeper. The BTNF EIS analysis should look at the differentials for snow depth with slope, aspect and elevation as applied to winter range and migration routes to define availability of suitable areas for elk foraging and migration and put special management emphasis on these areas to ensure forage is available and migration can occur.

Table 4. Snow Depth Statistics for SNOTEL and ACIS Network Stations 2011 - 2021

Station Name	Min/Mean/Max Days Above	Date Range for Onset of Depth Limit	Date Range for End of Depth Limit
Bondurant	0/68/128 > 20 in.	12/21 - 2/8*	3/15 - 5/1
East Rim Divide	95/123/152 > 20 in.	11/26 - 1/4	4/9 - 5/4
East Rim Divide	1/49/94 > 36 in.	1/7 - 3/22	3/3 - 4/21
Pinedale	1/19/63 > 20 in.	12/24 - 2/20	12/27 - 3/20

*2017 never exceeded 20-inch snow depth.

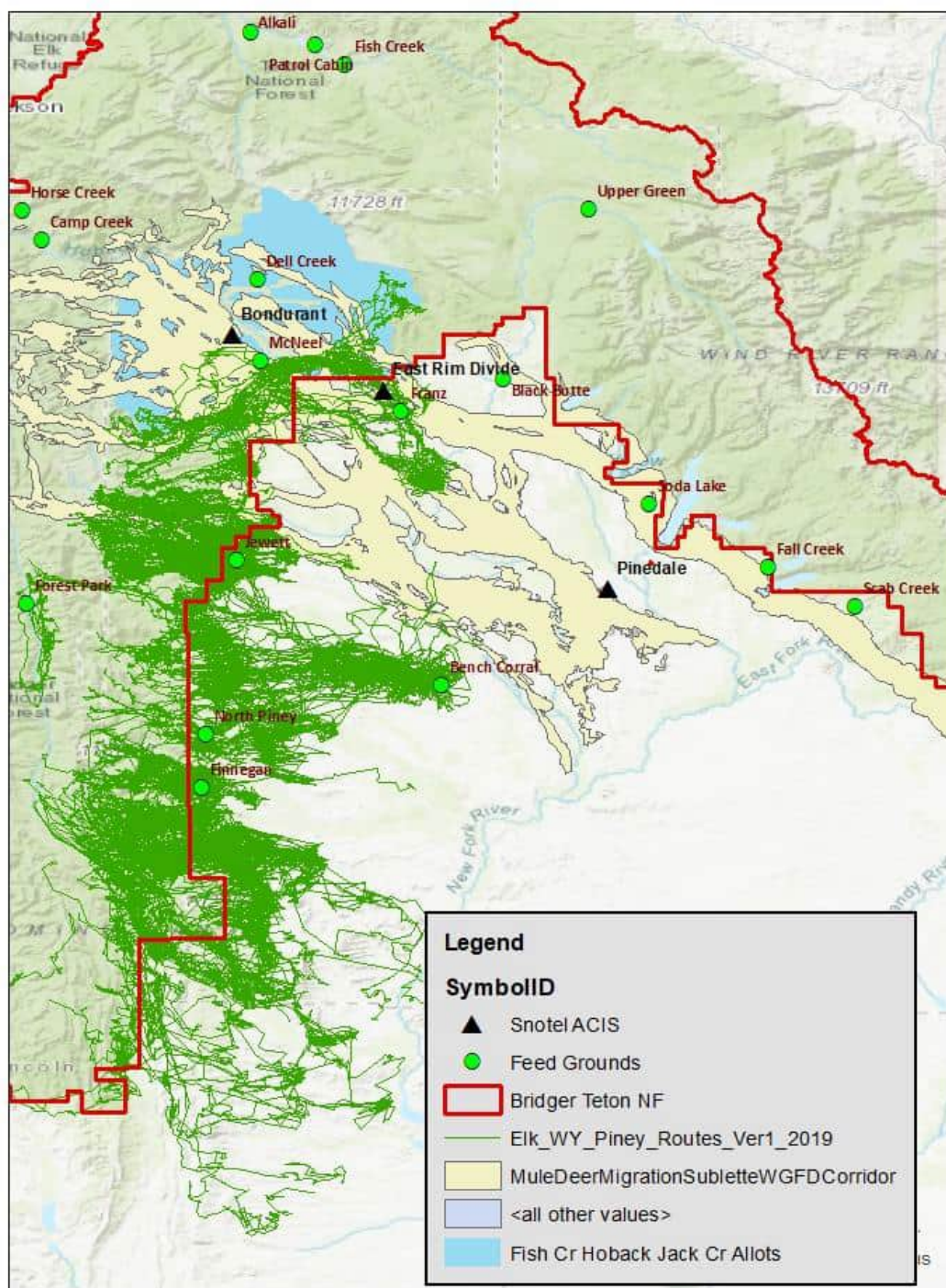


Figure 10. Snow Depth Monitoring Locations and Migration Routes

Figure 11. Bondurant ACIS Snow Depth

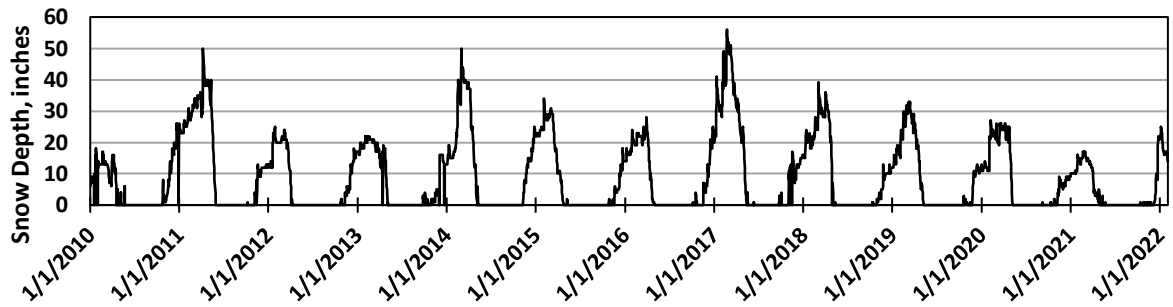


Figure 12. East Rim Divide SNOTEL Snow Depth

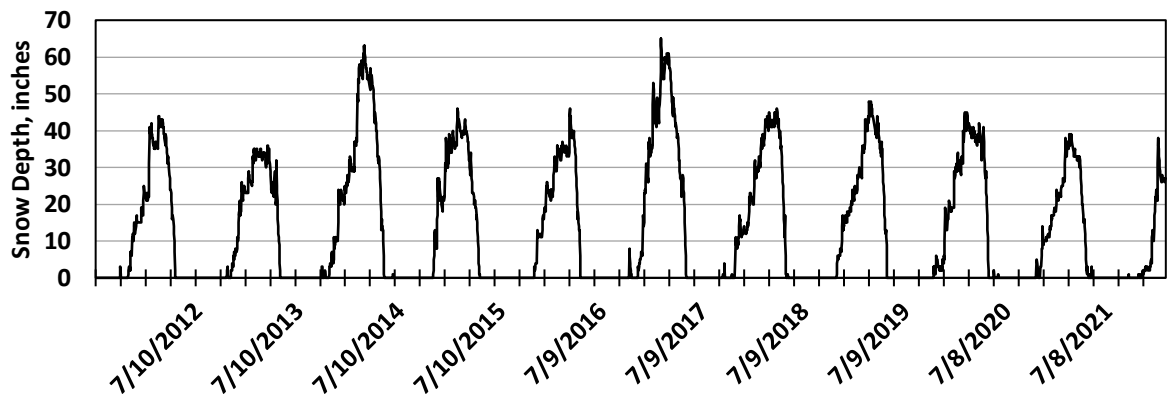
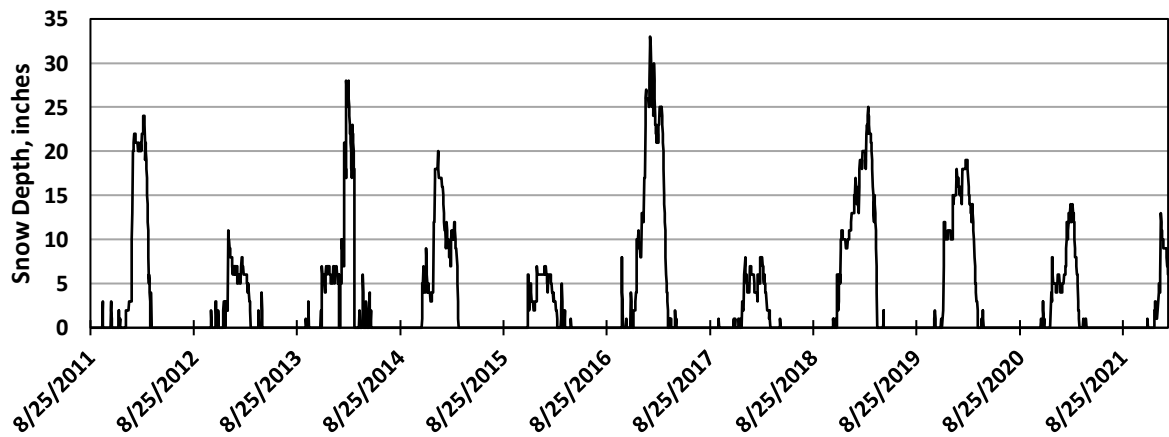


Figure 13. Pinedale ACIS Snow Depth



E. Phaseout of Dell Creek and Forest Park, and Providing Native Forage

According to the WEST report³³, Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135, far exceeding the ranges we found by analyzing snow depth. According to the WEST report, these long periods gave both FGs a poor ranking to have successful transitions to native range. The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range.

The McNeel FG is very near Dell Creek FG and would need to be included in the analysis. According to the WEST report, the McNeel quota is 600 elk with an average fed of 578 animals. McNeel has 36,699 acres of native potential range within a five-mile radius constituting 73% of that overall area. Any analysis of Dell Creek must consider the effects of McNeel and the native range for both. For Dell Creek, these crucial and parturition ranges would be partially included in the Fisherman Creek, Hoback and Jack's Creek allotments described above. See Figures 14 - 18 for migration routes and the overall relationship of all FGs to the BTNF and elk crucial and parturition ranges. The WEST report also noted that elk from McNeel FG move across the Rim to the Franz FG on BLM. As mentioned, we observe the elk here in Hoback Ranches in early winter, then some appear to move south through HR as the snow deepens.

Figure 14 shows the FGs, elk migration patterns, and the mule deer migration route in Sublette County. Elk movement relative to the FGs shows that elk from Forest Park FG move across to the east into Sublette County and the FGs adjacent to the BTNF. The McNeel FG migration pattern is also shown. What is missing from this WGFD data is the migration relative to Dell Creek FG. What we may say is that the presence of crucial, seasonal, and parturition range that is present in the five-mile radius from Dell or McNeel (WEST Report) would imply migration between those summer and winter habitats.

Ultimately, these FGs must all be closed to limit disease spread between wildlife species and between wildlife and livestock by reducing the seroprevalence in wildlife. However, closing Dell Creek and Forest Park can lead to the elk moving onto other existing FGs, thus continuing

³³ WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

the concentration of animals. Dell Creek elk could move to McNeel, for example. We advocate for closure of all FGs, including Dell Creek and Forest Park, which are the subject of this scoping. This EIS should be expanded to analyze all FGs on the BTNF with a selected alternative for closure of them all. In addition, the Forest Service must work with BLM and the State of Wyoming for closure of the remaining FGs. Any alternative and analysis that does not include addressing all FGs is not adequate because the cumulative effects of all FGs are a single problem, the FGs are interrelated and until they are all eliminated, CWD and other diseases will continue to have high seroprevalence and thus the continuing issue with livestock.

We recommend the following steps to address this issue:

1. Close Dell Creek and Forest Park FGs immediately upon issuing a record of decision. We have pointed out that there are other FGs the animals can access until all are closed, and that there is summer and winter range in the tens of thousands of acres within reach.
2. Require WGFD to reduce the feeding period at the other BTNF FGs. The scoping letter notes that feeding would occur between November 15th and April 30th. This overlaps the brucellosis risk period. The feeding period should be reduced to the minimum to escape the high-risk period of exposure at FGs. Ranchers can protect their hay stacks and winter feeding areas.
3. Because native forage and access to it is a key factor to provide alternatives to the FGs, an assessment of the current state of native forage and its seasonal availability must be determined. Forage capacity must be determined by field measurements. Snow depth measurements and modeling must be used to determine the seasonal availability of forage based on snow depth. We have shown some evidence here that neither the BTNF nor private landowners are leaving adequate residual forage for wildlife. Now this must be quantified by identifying all the crucial, parturition and seasonal elk habitat on the BTNF, measuring summer and winter forage availability, and adjusting livestock grazing to accommodate elk and other ungulates to inform the EIS analysis and support a meaningful alternative for closure of FGs.
4. Map, describe, and analyze the outcomes of all past habitat treatments implemented in association with the FGs and on BTNF managed lands, their current condition, native forage productivity, and capacity for wildlife.
5. Livestock allocations must be reduced in these elk habitats by: updating the capability and suitability analysis of all allotments that contain parturition and crucial range to current forage production and livestock forage consumption rates. Reduce the allowable use standards. Annually rest or permanently close pastures that occur in these critical habitat areas to reduce livestock/elk overlap or co-mingling. The science validates 25% allowable use criteria and the need for rest of grazed areas, and this must be accurately monitored by correcting current monitoring issues we have identified. Herding must be used to control livestock use and co-mingling in these areas preferred by elk.

6. Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex, among others.
7. Predators and scavengers must be protected so they can provide their essential role in dispersing animals, reducing the presence of contaminated animal remains, and reducing environmental contamination. The BTNF can effectuate this by using its Prohibition Authority to eliminate hunting and trapping of these animals within the bounds of the BTNF. We remind the Forest Service it has primacy over management on public lands and is a cooperating agency with the State of Wyoming, not its servant.
8. The BTNF must identify migration corridors for elk, deer, pronghorn, and moose that occur on the BTNF and ensure through quantitative monitoring that these migration routes are fully functional in terms of cover and forage, that migration barriers are eliminated, and that they also connect with migration routes in other ownerships.
9. Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF with a priority on grizzly bear habitat and security, elk habitat and security.
10. The State of Wyoming is conducting stakeholder meetings to address the long-term fate of FGs. Unfortunately, this process has already arrived at the predetermination by the State Director of WGFD that FGs will not be eliminated even though its own planning in the past has acknowledged that closing the FGs is important to control disease. The BTNF can do two things. First, close all FGs on the BTNF as there are past examples of this that work. Second, get engaged with the State, BLM, and private landowners to provide forage and migration for these animals on lands managed by other entities.

In our Attachment to these comments, we have provided the pros and cons of closure and a rebuttal to the arguments against closure by Mr. Lloyd Dorsey. The supporters of continued feeding are mainly hunters and livestock producers. We have shown the relative value of livestock production on the BTNF is minor to the local and regional economy. We have also shown that other states continue to sell licenses with much lower harvest success (46% in Wyoming vs as low as 11% in Washington with more hunters than Wyoming). Most livestock producers already fence their haystacks and can also fence their winter livestock feeding operations. Subsidies are available to help with this. WGFD would save over \$2 million in annual costs by not continuing feeding.

Please Reply To:



John Carter, Ecologist
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922

Michael Garrity – Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624

Sara Johnson – Executive Director
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

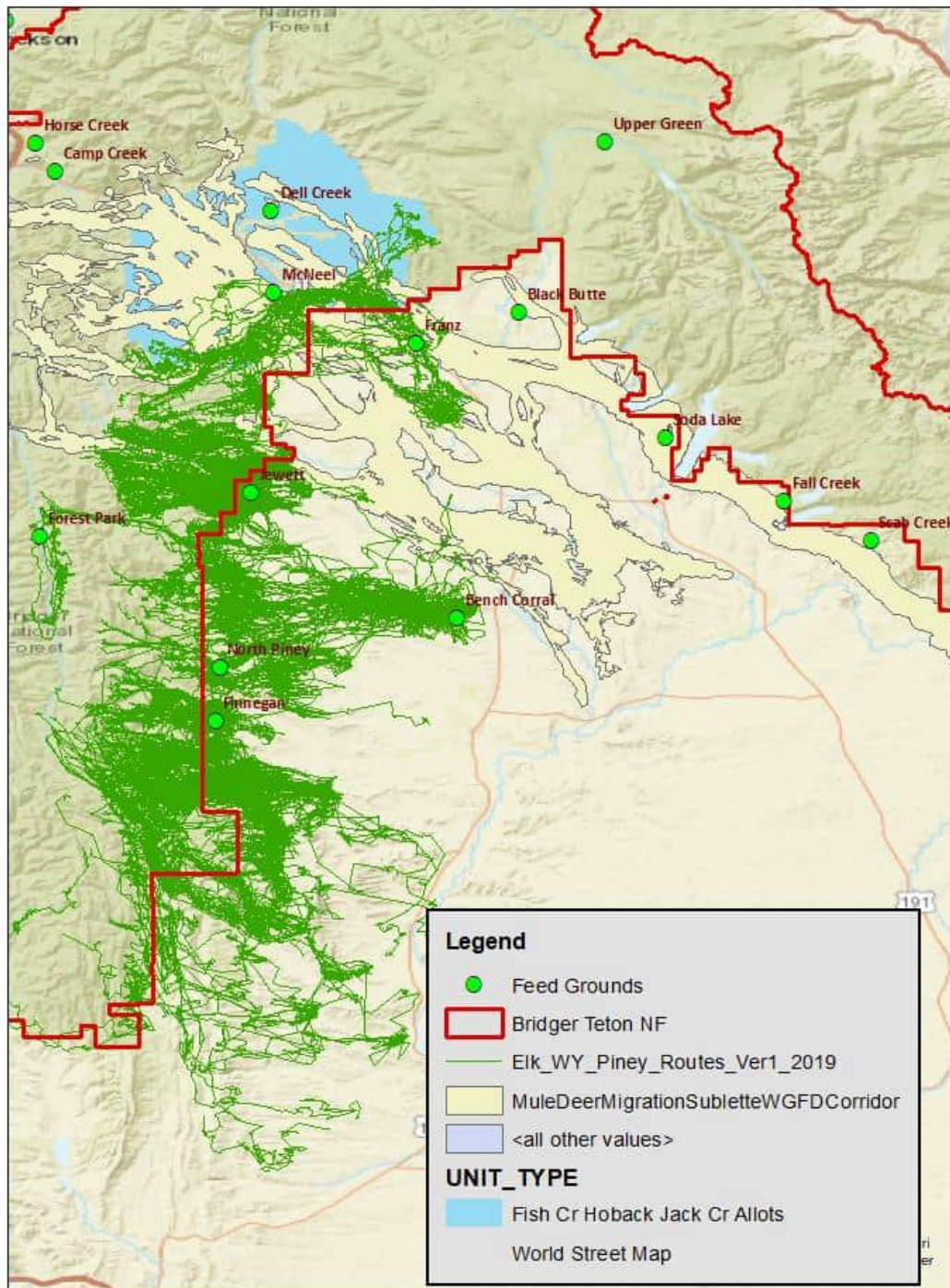


Figure 14. Elk Feedgrounds, Migration Routes and Grazing Allotments

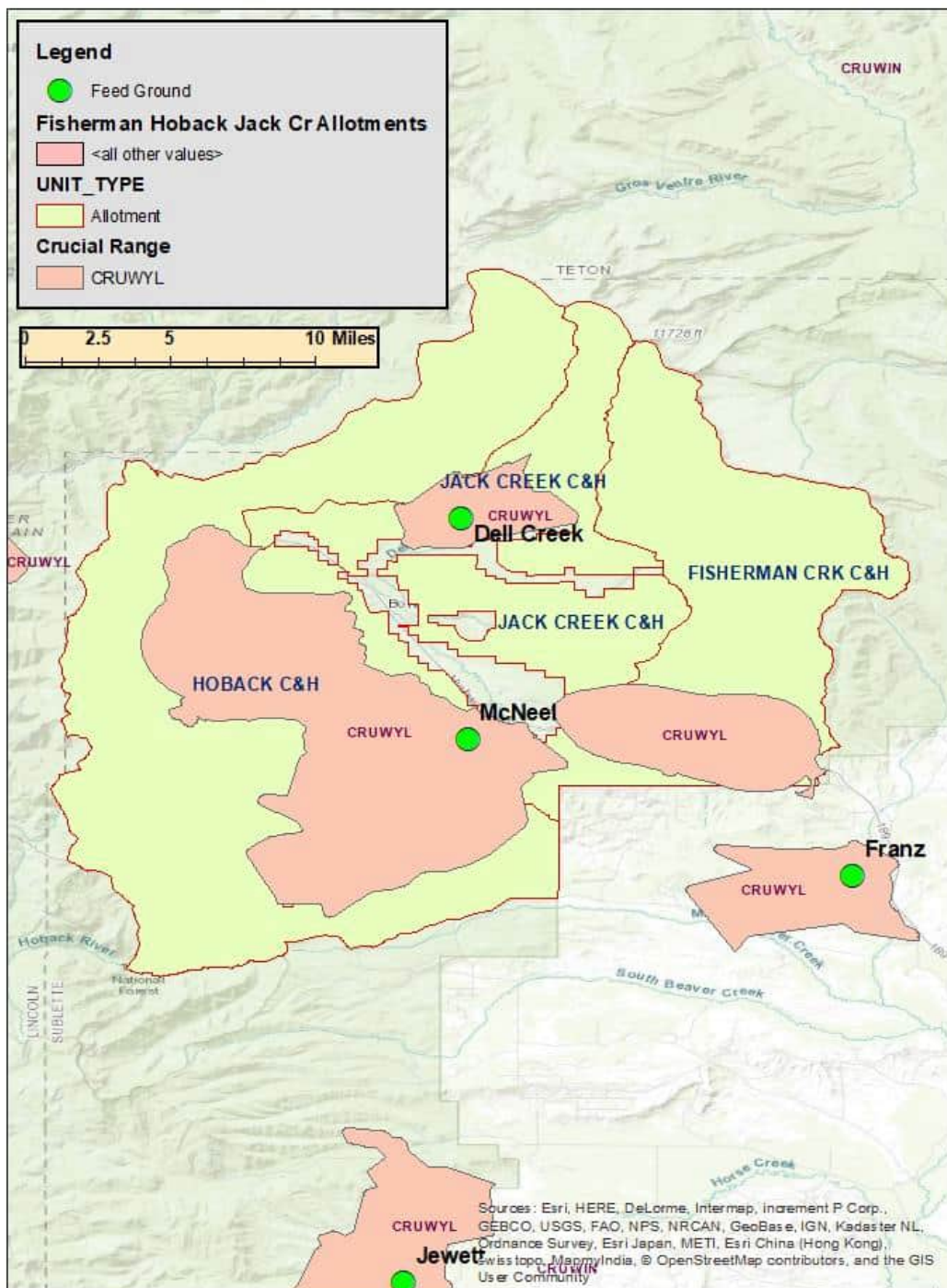


Figure 15. Dell Creek and McNeel FGs, Crucial Range and Grazing Allotments

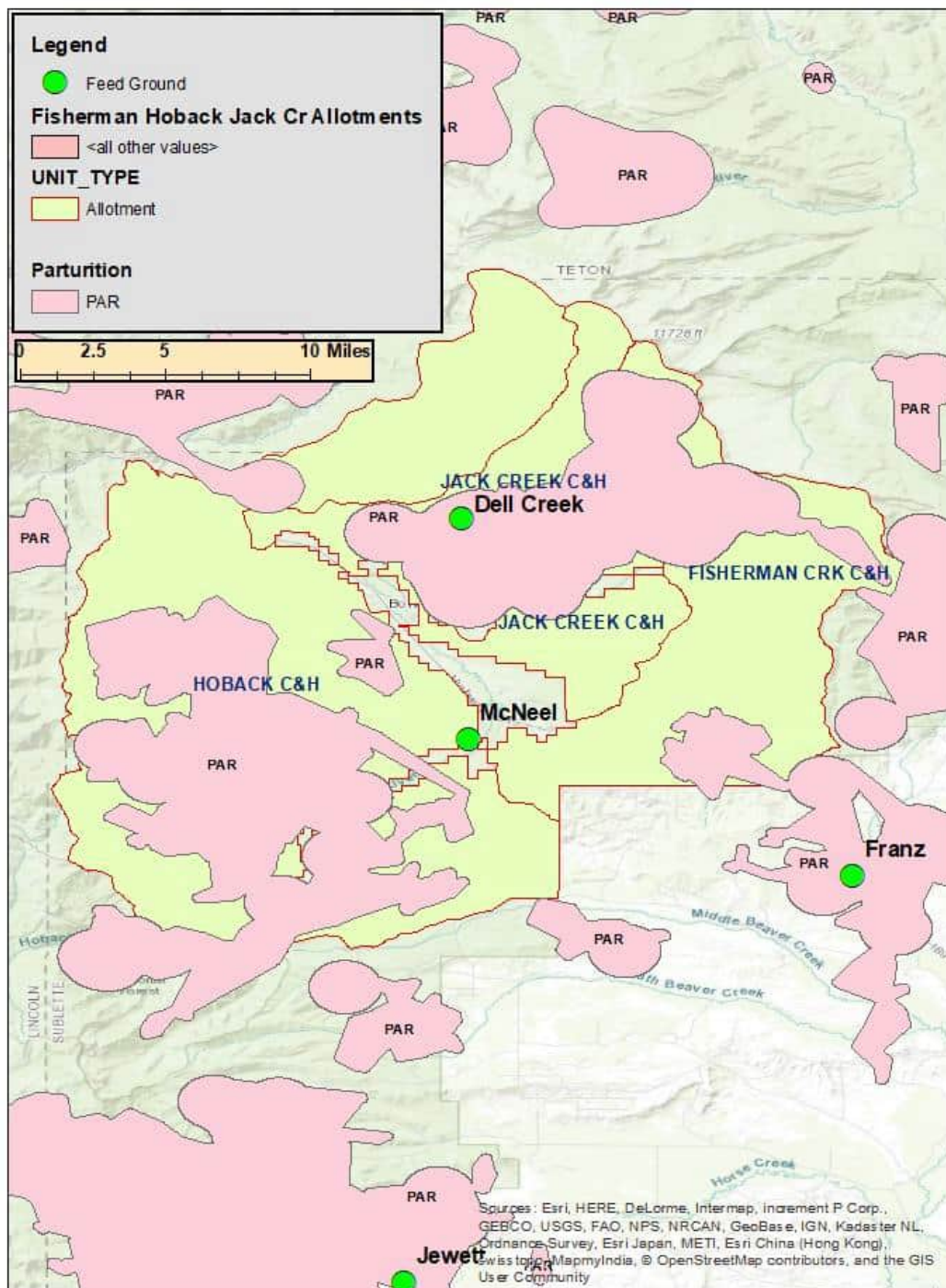


Figure 16. Dell Creek and McNeel FGs, Elk Parturition Range and Grazing Allotments

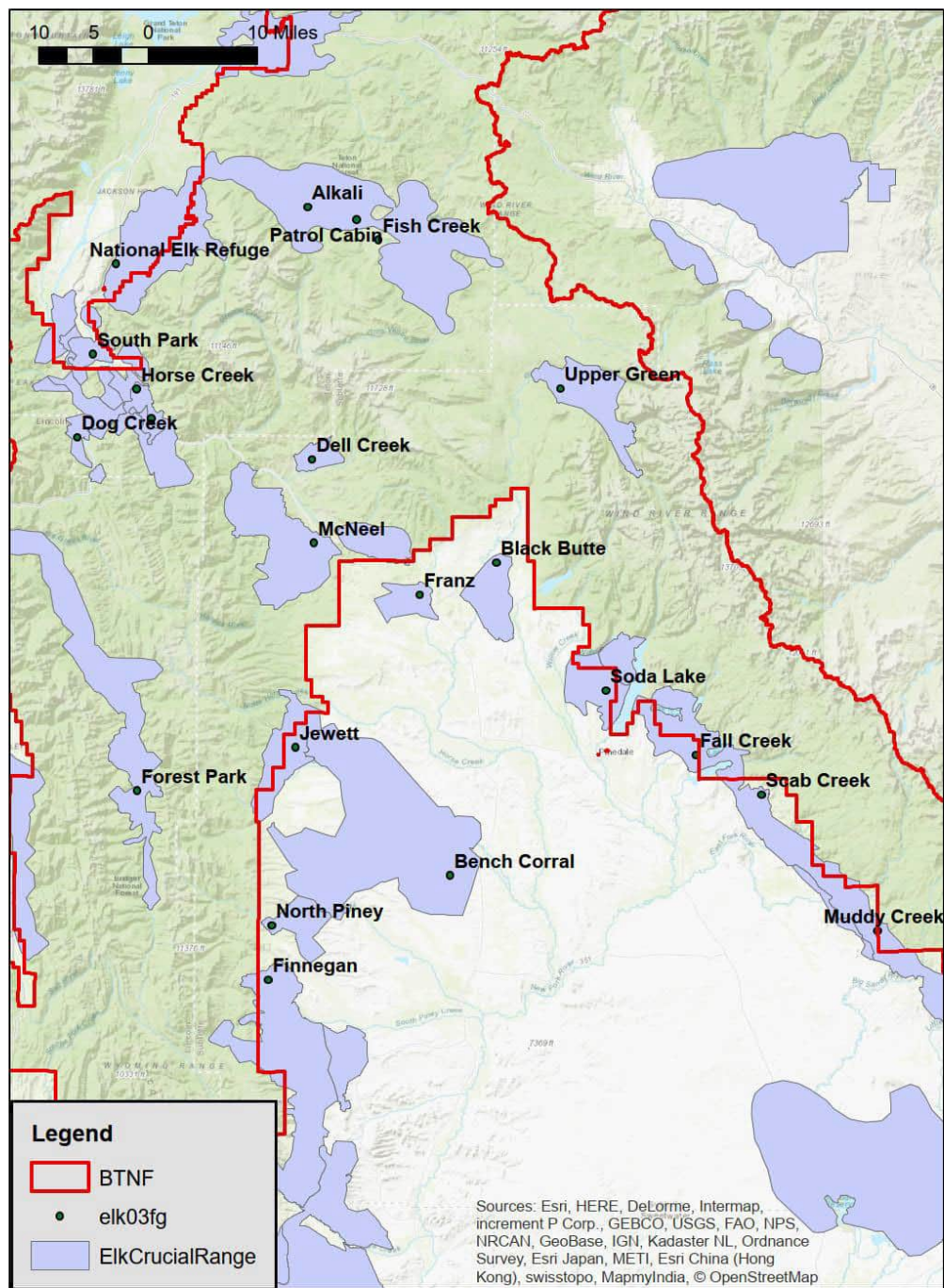


Figure 17. Elk Feedgrounds and Elk Crucial Range

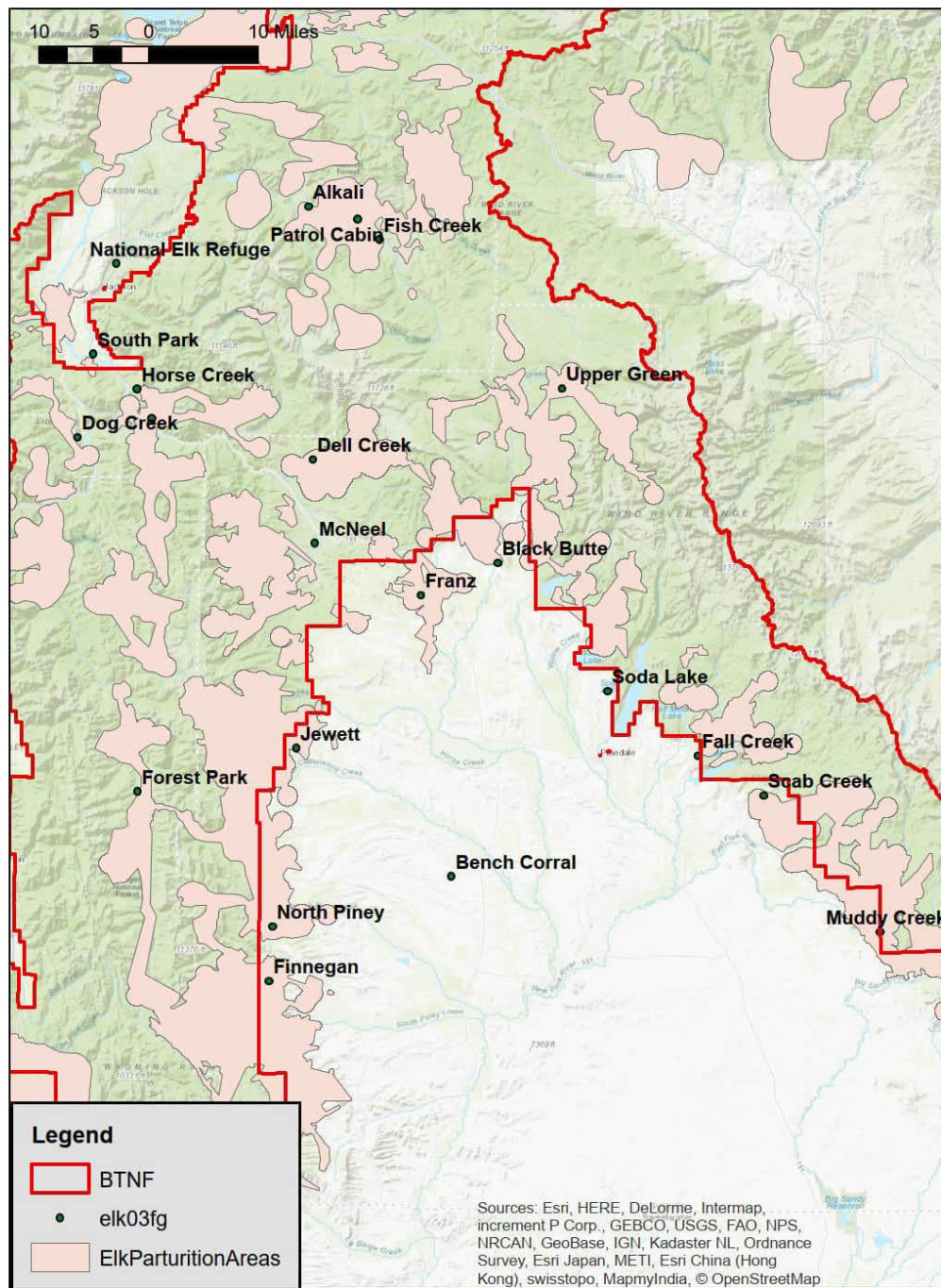


Figure 18. Elk Feedgrounds and Parturition Range

ATTACHMENT 1

Y2U, AWR and NEC Scoping Comments Dell Creek and Forest Park FGs

February 11, 2022

The following pages are notes summarizing content of information sources used in developing scoping comments for the Dell Creek and Forest Park FG EIS. They are not in any particular order, but can be word searched.

WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

Wy lost brucellosis free status in 2004 when it was found in a Sublette County herd. Increased surveillance, research, and brucellosis management action plan (BMAP), and lack of infection in 2005, Wy regained its brucellosis class-free status in 2006. Objectives of the BMAP were to: 1) document and analyze all available quantitative and qualitative data regarding brucellosis, 2) use available data to develop management options to reduce risk of brucellosis transmission among wildlife and from elk to cattle, and 3) select appropriate management options for implementation in the Big Piney Elk Herd Unit (BPEHU).

Currently, five feedgrounds are located within the BPEHU: Franz, Jewett, Bench Corral, North Piney, and Finnegan. All feedgrounds in this Herd Unit (excluding Bench Corral) are located along the border of BLM or private lands and USFS lands and were established “uphill” from livestock operations primarily to prevent damage to stored hay (and later, prevent commingling).

In the BPEHU, of 1,574 sq mi, 17% is in winter range categories. Brucellosis was likely transmitted from domestic livestock to free-ranging bison and elk just prior to 1917 (Meagher and Meyer 1994) after repetitive commingling and subsequent contact with aborted fetuses contaminated with brucellosis. Brucella transmission usually occurs via the oral route, with ingestion of bacteria that are shed by infected females in high numbers in aborted fetuses, fetal membranes and fluids, uterine discharges, and milk (Siello and Marys 1998). Determining if an animal is infected with *Brucella abortus* is accomplished only by removing select tissues (e.g., the reproductive tract and/or lymph nodes surrounding the reproductive tract) from the suspect animal and culturing the bacteria from these tissues.

23 winter elk feedgrounds exist in western Wyoming, including the National Elk Refuge. FGs are used as substitutes for native winter range and to minimize depredation of winter hay stores, winter mortality, and elk-cattle commingling. About 13,000 elk are fed on WGFD FGs annually.

Wyoming Livestock Board defined the exposure period for cattle as 1 Jan to 1 May. Brucellosis abortion events in captive and FG elk have been documented from late Feb to June.

Concentrating elk on FGs likely increases the rate of intraspecific transmission. This explains the seropositive levels of elk at 26%, 2% and 0% on, adjacent to, and completely independent of feedgrounds. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Elk from this allotment "are assumed" to be mostly independent of FGs, thus posing little risk.

A vaccination program for elk began in 1985 with 95% of calves vaccinated with Strain 19 annually on every feedground except Dell Creek. Dell Creek is a control site to assess the program. Between 29 - 62% of elk tested were protected by Strain 19. Seroprevalence between vaccinated and non-vaccinated elk are not significantly different.

Tout vegetation treatments as increasing herbaceous species used by elk, and may reduce the length of feeding season, reduce elk density on FGs, reduce intra-specific disease transmission, and influence distribution. Speculate that veg treatments in Buffalo Valley encouraged native forage utilization by that herd. The Buffalo Valley herd had lower seroprevalence (2.7%) than those using FGs (26%).

Brucellosis seroprevalence rates in elk attending feedgrounds with substantial habitat treatments and/or access to native winter range appear to be lower than those on feedgrounds with minimal to no access to additional feeding opportunities (WGFD unpublished data). Among the recommendations produced by the Brucellosis Coordination Team (BCT) was a call for further enhancement of winter elk habitat (Wyoming BCT Report 2005).

Field studies have documented scavengers consuming pseudo-aborted bovine and elk fetuses faster on (33hr, 18.9hr) than off (57.5hr, 33hr) feedgrounds. Primary scavengers (based on total mass of fetus consumed and/or removed) include coyotes, foxes, and eagles, with magpies and ravens as secondary scavengers. Coyotes can be infected with brucellosis, presumably from ingestion of contaminated tissues and/or fluids. no confirmed case of natural interspecific transmission has been observed (Forbes 1990). Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis. Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis.

Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, reducing the feeding season. Shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to feedgrounds is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due

to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. Shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling.

Short term objective is to reduce co-mingling and prevalence in elk. Long-term objectives to eliminate brucellosis in wildlife in the GYE, maintain producer viability, reduce, or eliminate dependence of elk on FGs, maintain herd objectives, improve range health, maximize benefits to all wildlife.

In 1995 elk were relocated from the long duration late season North Piney FG to Bench Corral using baited hay. Elk continued to migrate to Bench Corral after that. This decreased risk of inter- and intra-specific transmission, and costs. No differences in utilization in the three affected allotments were documented. North Piney reclassified as a staging area FG before migrating to Bench Corral.

Each FG is a separate situation, requiring a different approach. Some FGs may have no options given current herd objectives and other conditions. Cattle and elk must be separated during the risk period. Eight options are considered:

9. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- a. Suitable areas lower in elevation with no winter cattle operations
- b. Evaluate current habitat to determine production, veg health and potential
- c. All PFO BLM lands leased for grazing
- d. Purchase AUMs for forage reserve
- e. These five FGs are not candidates for this option due to potential for damage and co-mingling
- f. Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, reduce browsing on local native vegetation
- g. Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, increase competition with other species

10. Eliminate FGs

- a. Not an option given current herd objectives and current conditions. These would need to change.
- b. Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Pine EHU, reduce FG and vaccination expense.
- c. Cons include increase risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, reduce vaccination feasibility.,

11. Reduce elk numbers through harvest

- a. Reducing number thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, emphasis on females, and other strategies.

12. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option

13. Elk proof fencing of FGs or private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

14. Habitat enhancement projects in winter range

- a. Facilitated by options 2,3,4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high risk transmission period, and create vegetative diversity, improve range conditions for livestock and wildlife
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, may increase invasive species.

15. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, secure future revenue for WGFD,
- e. Cons are expensive, limited availability of land with potential, requires landowner willingness.

16. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, effective vaccine still lacking.

Coordination Meetings

WGFD - reclassify and manage North Piney FG as a staging area/FG but not for relocation or elimination. Elk that leave will not be hazed back, but allowed to migrate to Bench Corral. May consider baiting to Bench Corral, reducing feed, establish cutoff date for feeding.

WGFD, BLM, NRCS, APHIS - Discussed all options but 4, 5, 6, 7 of most interest. All agencies agreed that pursuit of Option 6 when feasible, but securing a forage reserve to assist implementation. This would be facilitated most by working to implement the conservation easement option.

Producers - First meeting attendance was poor, but all options discussed with no significant recommendations made. Second meeting provided draft BMAP. WGFD, BLM, APHIS attended along with 4 producers. No significant recommendations.

Producer Survey

Most producers supported relocation of FGs, Fencing stackyards and feedgrounds, vaccination. Most were opposed to eliminating FGs with modest opposition to acquiring native range. Opinions on other options were mixed.

Dorsey, L. 2015. What Happens When Elk Feeding Ends. Prepared for Wyoming Wildlife Advocates.

1. Eliminating FGs impractical - FGs have been successfully ended in Yellowstone, eastern Idaho, North Piney, and Deseret Ranch. Only 3% of Rocky Mtn Elk are fed. Rocky Mtn Elk do well without artificial feeding.
2. Development in winter range - Most lands in the three WY counties are public, thereby not developed with the 20 million acres GYE comprised of 80% public lands with vast areas of winter range. Colorado, with nine times the population of WY does not feed elk, yet has three times the elk and twice the cattle as WY.
3. Available habitat will require reduction of elk - The elk population objective is 81,275 which is 37% below the current population of 112,000.
4. Elk will starve in harsh winters - Other states have similar climates and the elk range freely and remain health through the winter. Moose, bighorn sheep, pronghorn, and deer also range freely and do well.
5. If not fed, elk will be in neighborhoods - Most of the area is open space and people can fence if concerned. If palatable plants are not planted, then the animals will move through. Most people value the wildlife in their area.
6. If no FGs, elk will get into haystacks and mingle with livestock - Most haystacks are fenced, which is normal. Fencing around livestock winter feedlines is also common. Money is available for fencing. Idaho requires fencing haystacks and feedlines.
7. Predators will go hungry and threaten people - Most of the hundreds of thousands of ungulates in the GYE are not fed and predators will not suffer from lack of prey. Bears, wolves, and mountain lions have not posed a threat to people. Domestic animals like horses, cattle, dogs kill dozens of people each year and no one thinks of them posing a threat.
8. Predators will follow elk into neighborhoods - While this happens, even in Jackson where feeding occurs, some do follow the elk and scare people. WGFD relocates or kills the animal. If fencing or not planting palatable plants is practiced, the elk will move through. Teton County passed an ordinance prohibiting feeding of deer and elk.
9. Reducing FGs or numbers of elk will harm the economy - the Jackson elk herd has declined in numbers, yet the local economy has improved. Over the long term, disease could lead to loss of elk, moose, and deer due to the concentration on FGs. Experts say to spread elk out, conserve abundant predators to keep herds spread out and healthy, so disease doesn't cause the loss. Phasing out FGs will pay dividends.
10. Hunting licenses and WGFD funding will suffer - WGFD could save over \$2 million by closing FGs. Could attract wildlife watchers for funding. Our hunting success rate is double that of surrounding states (40% v 20%). Could still sell the licenses and let the rate drop toward that of other states.
11. More elk on roads - Surrounding states have more elk than WY and don't feed, plus the number of elk on FGs is a small part of the population. People are used to deer, elk and

other animals crossing roads and in neighborhoods. Tools are available to mitigate risks to the wildlife and people.

12. Elk can't learn to migrate - Elk behavior is innate and if habitat is available, they will move from harsh climes to less harsh. Protected lands are large and connected, which means they can move across seasonal ranges if allowed.
13. If FGs end - Elk will be spread out across the vast protected landscapes and with predators on the landscape to keep herds dispersed and healthy.
14. Conclusion - CWD will arrive in the FGs and given that elk do well as free ranging herds and in our Rocky Mtn winters without feeding, that we have perfected fencing and have over or under passes and given science supporting ending FGs, it would be impractical not to quickly phase them out before it's too late.

Galloway, N. L., R. J. Monello, D. Brimeyer, E. K. Cole, and N. T. Hobbs. 2021. Supporting adaptive management with ecological forecasting: Chronic wasting disease in the Jackson Elk Herd. *Ecosphere* 12(10): e03776. 10.1002/ecs2.3776

Population data from management of the Jackson elk herd were modeled to consider potential effects of CWD on populations. CWD population effects were simulated based on data from the infected Rocky Mtn National Park population. The effects of management (hunting) were also incorporated into the model. It was estimated that CWD could reach 12% of the population but could range up to 20%. When superimposed on recruitment rates for the past two decades, the model predicted a prevalence of 7% in females would cause the population growth rate to drop below 1 which results in a population decline when female harvest was zero. They could not rule out this effect with a threshold as high as 23%. A time-invariant transmission rate was used, which could change with actual data from concentrated populations. Natural selection for resistance was not expected over the near term with expectations under "worst case" transmission scenarios reaching out to 75 - 100 yrs.

Other research cited observations from captive and free-ranging herds that indicate CWD may have "greater impacts on elk in relatively high-density settings". This is the case for the Jackson elk herd as well as other feedground situations.

In addition, the Bison and Elk Management Plan (2007) strategy is to reduce reliance on supplemental feeding. It is noted that reduction in elk population size and improvements to available natural standing forage "have been unsuccessful in reducing elk density on the refuge winter range."

Elk that migrate over long distances may have an advantage by spending more time over a large area, thus lower density. Intermixing on feedgrounds may negate this effect. [FGs bad under any scenario] Short distance migrants may have higher body condition, thus and their higher recruitment might mitigate impacts on populations growth, but negative factors would then include more vehicle collisions, more co-mingling with livestock, more property damage and decreased hunting opportunity.

"Given that the CWD effects in the model were based on Rocky Mountain National Park in a lower density elk population, it would seem advisable to reduce the areas of higher concentration on the refuge before CWD reaches endemic levels, which may prove to have a much larger impact than that estimated here on crowded herds typical of feed ground populations. Lower population densities may also have the added benefit of increasing recruitment rates (Proffitt et al. 2014), which are relatively low in this population, and allow the population to both handle a higher prevalence of CWD before λ is reduced below 1 and allow for a greater proportion of elk to be sustainably harvested on an annual basis."

Wilkinson, T. 2019. Wildlife Diseases: A Global Expert Takes Stock of Greater Yellowstone. Mountain Journal May 20, 2019.

Princeton scientist, Andy P. Dobson, studies the ecology of infectious diseases and the conservation of endangered and threatened species. His work has spanned the world and he compares the Greater Yellowstone Ecosystem to the Serengeti in Africa where most of the original fauna of the last 1,000 years is still intact. He worked with Yellowstone scientists on the issue of brucellosis and bison.

Of interest is his observation that pathogens and parasites play in natural ecosystems, suggesting that as much as 90% of biodiversity is parasitic on the 10 percent we study. Predators and herbivores carry pathogens that drain their nutritional resources and "occasionally gain an advantage that leads to epidemic outbreaks". He expresses a need for a better understanding of how natural communities operate and how populations are regulated that includes an understanding of the role played by parasites and pathogens. "Many ecological and wildlife management debates are acrimonious because people forget to consider the role of disease."

Dobson notes that brucellosis is "largely a consequence of feeding elk in winter in Wyoming when it might be better to let their populations settle to lower levels with healthier populations." "CWD presents an expanding and increasingly worrying threat to elk, mule deer and cattle. It's a consequence of loss of coyotes, wolves and other predators from the West over the last fifty years combined with efforts to ranch stock on really poor soils where they are so nutritionally deprived that they gnaw on old carcasses and become infected with prions from animals that have died from CWD." "if you have wolves, and coyotes they kill and consume these weakened animals and effectively remove CWD from the ecosystem."

"Wolves and coyotes are our strongest defense against CWD, particularly wolves – they are pursuit predators who always focus on the weakest animals in a group of potential prey. As CWD manifests itself by reducing locomotory ability, wolves will key in on this and selectively remove those individuals from the population. These animals are then not available to infect uninfected individuals in the herd – so there's a bonus knock-on effect of selective predation."

When asked about predators spreading the disease thru their own urine and feces, Dobson

notes, " Canids are not susceptible to prions, many millions of years of evolution as scavengers have insured this. During the BSE [Mad Cow Disease] crisis in the UK, it was estimated that a large number of domestic dogs in the UK was exposed to the prions. Not a single dog was ever recorded as infected. So wolves and canids do not transmit the prions/CWD in their feces and urine. It is nonsense to suggest so. Carnivores are also much more territorial in the West and only dispersing individuals range over areas comparable to those of elk, mule deer and pronghorn."

When asked about feeding of thousands of elk on feedgrounds in Wyoming, Dobson's opinion is that: "...it's really dumb. It's much better to let natural regulation reduce elk populations down to levels naturally supported by the landscape. Aggregating elk on feedgrounds at the time of peak Brucella transmission and with CWD looming is arguably the stupidest form of animal management I can imagine."

Thuermer, A. M. 2021. Feds to Reconsider Two Elk Feedgrounds Following CWD Discoveries. Wyofile November 18, 2021.

Angus Thuermer reporting in Wyofile describes the project background. Wyoming Game and Fish Department operates 22 elk feedgrounds that support 14,000 to 20,000 of the 112,000 elk in Wyoming. In addition, the National Elk Refuge supports the 11,000 elk in the Jackson Elk Herd which is managed by the US Fish and Wildlife Service. Fourteen of the feedgrounds are on federal property. Since 2020, CWD has been found in two feedground-supported elk herds. These herds include about 13,000 elk.

His report also provides an interview with the Forest Service which claimed continuing to issue the special use permit for the Dell Creek FG "will not reasonably contribute additional positive or negative impacts (including the potential for disease transmission) to wildlife in the project area" and could lead to "significant adverse effects to elk and cattle, including elk deaths and disease transmission".

Allen, S. and Edwards, H. 2021. Elk Feedgrounds & Infectious Disease. Presentations to the Stakeholders November 9, 2021.

Concentrating animals can lead to rapid transmission of disease. They gave an example of bovine tuberculosis in white tailed deer in Michigan. Cattle were the original source but it spills back and forth between cattle and white tailed deer. It was eliminated in cattle herds in 1974 - 1975 and Michigan attained "accredited-free" status in 1979. But, in 1994 - 1995 a second white tailed deer was found infected and more cases were found. This led to an eradication program, but in 1997, tuberculosis began appearing in cattle again, leading to loss of accreditation. Deer carrying capacities were at or beyond carrying capacity with high densities maintained through feeding. Problems were occurring in areas with (1) high cattle/deer populations, (2) artificial feeding, and/or (3) continuous interactions between cattle and deer. Can't eliminate tuberculosis in cattle without eliminating it in deer.

The Michigan eradication program included a ban on feeding deer, increased harvest quotas, eliminate contact between cattle and deer, continue monitoring for trends, educate stakeholders on managing deer to eradicate TB.

Brucellosis and Its Management on Elk Feedgrounds

Summary of CWD and Elk Feedgrounds:

- Impossible to eradicate once established & always fatal
- No treatments & no vaccines at this time
- Likely to decrease populations over the long-term
- Zoonotic disease?
- Elk feedgrounds become “hot spot” of CWD transmission from prion contamination
- Transmission to deer, elk, and moose
- Prion source likely to sustain elevated prevalence

Summary of Brucellosis & Elk Feedgrounds

- Difficult to eradicate once established in a reservoir population
- Rarely fatal, but causes elk to abort
- No vaccines for elk available
- Currently, with feeding, no impact to elk populations over the long-term
- Within Designated Surveillance Area, economic/trade challenges for cattle producers
- Zoonotic disease
- Elk feedgrounds concentrate elk, which results in more transmission and sustained infected population

Brucellosis is zoonotic, causing abortion in cattle and infects a range of wild and domestic animals. Vaccination can prevent in cattle, but not in elk. Not found in meat and killed by cooking, so low risk to humans from hunting. Bacteria become active in third trimester with fetus and fluids infected. Risk present after Feb 1. Brucellosis decreases livestock production, transmissible to other animals, must quarantine or destroy, increased testing and vet expenses.

Except for the GYA, the US is free of cattle brucellosis. In the Designated Surveillance Area, within the GYA, about 2.6 cattle or domestic bison herds exposed each year. Transmission from elk. High risk herds have movement restrictions, increased testing, vaccination, quarantine. Overall, the state maintains a Brucellosis Free status.

In elk and bison, the abortion rate is 61% and 82%, respectively. In elk leads to a 24% reduction in reproduction. Elk on FGs have a seroprevalence of 25 - 30%, while in bison it is 65%. The map on slide 14 shows the distribution of brucellosis in Wyoming coinciding with the FGs. The WGFD management approach for FGs includes:

- Surveillance
- Elk/Cattle Separation
- Habitat Enhancement
- Feedground Management
- Vaccination
- Adaptive Management

In non-FG elk includes monitoring outside FGs focused on hunter killed cow elk with blood collection kits. The entire state is covered every 4 - 5 years. Seroprevalence in the area of the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 time period. Monitoring in FGs covers 3 - 5 FGs each year to look at seroprevalence over time.

Test and Slaughter worked at Muddy Creek to reduce seroprevalence from 37 - 5% over 5 years, but when the slaughtering ended, the rate increased from 6 - 56% over the next 10 years. Dell creek has a high seroprevalence that has cycled over time with low of 8% in 2004 to a high of 88% in 2019. (Chart)

Methods to separate cattle and elk include winter feeding, elk hazing and stack yard fencing. A map of wildfires and treatments in the FG area reveals a significant number of both covering a large area. (could use files). On FGs, carcass removal and feeding on clean snow are used. Used vaccination from 1985 - 2015 on about 2,500 calves each year.

Adaptive management based on March to May as peak transmission period. The longer the feeding season, the more disease. Using low density feedlines led to a 75% reduction in elk-fetus contacts. Collar data mapped in the presentation shows elk pretty much covering the east and west slopes around the basin. The map on p31 is illustrative of the transmission and high-risk transmission periods.

Chronic Wasting Disease

Long incubation period (18 - 48 months) with no signs during the incubation period. During the last 4 - 8 weeks of the disease signs appear as weight loss, drooling, droopy ears, change in behavior, hair, and coat changes. Prions can be shed in feces, urine, and saliva for months to years during incubation. Transmission increases with density. Mechanisms include ingestion of contaminated feed and soil, mineral licks and contaminated surfaces, carcasses. Prions persist in the environment over the long term (16+ yrs scrapie). CWD is equally distributed in bull and cow elk, and in mule and white tailed deer it is more common in bucks.

Slide 10 shows the CWD prevalence in WY mule deer herd units with prevalence increasing and population decreasing. CWD positive female survival is 37% while negative females it was 79%. Mountain lions and CWD are leading causes of mortality. The FG area is shown lacking infection.

Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.

Slides show pattern of increase of CWD across Wyoming with deer having the highest prevalence. Southeastern elk herd trends graphed showing increases over 20 years. In surrounding states CWD ranges from 6.5 - 28% in elk.

If feeding stopped, CWD will be low initially and increase slowly or stabilize. Mortality rates with supplemental feeding could be high and irreversible with environmental contamination and transmission. Stopping supplemental feeding over several years would lead to a decline in population. "Disease experts fear CWD will significantly decrease elk populations. Feedgrounds will become year round "hotspots" of transmission to all cervids; greatly expanding the distribution and prevalence of CWD across the landscape." (slide 26).

Modeling of CWD in FGs indicates that prevalence will increase rapidly on FGs with highest elk density, elk populations will decrease as prevalence increases, decrease in hunting opportunity as populations decline. They recommend limiting supplemental feeding once CWD detected.

"Most experts think there is a good chance that wolves will be able to select for, and remove CWD positive animals from the population. Wolves are rarely found on feedgrounds, but may be found in areas surrounding the feedground. WGFD does not kill predators on feedgrounds, but WGFC-Chap 21 allows wolf removals in set circumstances." (slide 35).

Prions are detected in coyote feces for up to 3 days from being fed CWD infected elk brain, but infectivity decreased through the digestive tract. Crows fed scrapie mouse brain with infectious prions detected four hours post infection. Conclude prions remain infectious after passage thru digestive system of coyotes and crows.

WGFD. 2020. Wyoming Chronic Wasting Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

The Plan is not a statewide or regional approach. Instead, strategies will be "tailored to local herd and disease dynamics, and broad and diverse public support must be garnered before being implemented."

As of February 2020, CWD had been identified in 31/37, or 84% of Wyoming mule deer herds, 9/36, or 25% of elk herds, and wherever white-tailed deer occur. The long-term objective is to reduce or limit prevalence and spread where possible. Eradication is not feasible at this time. Strategies include reducing artificial cervid concentration and hunter harvest management.

High concentrations of cervids are commonly observed on traditional deer and elk winter ranges, or artificial sources consisting of modified habitat in urban and rural communities where citizens feed wildlife, or green space such as golf courses. Agricultural operations such

as mineral licks, water developments, haystacks, irrigated hayfields. And, FGs.

WGFD will develop recommendations to the Wyoming State Legislature to provide authority to regulate feeding of wild cervids, but Ag practices will not be included. Work with local governments to develop and implement ordinances on feeding. WGFD will identify areas with unnaturally high concentrations and work with landowners to decrease concentrations through hunting seasons or culling; eliminate the source such as fencing stackyards, salt/mineral feeders that exclude wildlife; engage Ag community to develop management practices.

Management strategies include:

- Use hunter harvest to maximize removal of positive animals
- Use regulations
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration
- Develop strategies to decrease cervid concentrations to minimize transmission
- Experimental hunter harvest strategies in some areas to increase harvest of mature male mule deer and/or reduce cervid densities
- These strategies will not be proposed on a large scale in the absence of peer-reviewed research indicating they are a viable means to reduce CWD over the long term.
- In the event such harvest strategies are proven to effectively reduce CWD prevalence, additional public outreach and strategies may be proposed pending public support.

"Since the initial discovery of CWD in 1985 in a free-ranging mule deer in Wyoming, the Department has not implemented any formal strategies to combat the spread or prevalence of this disease. Unfortunately, CWD has since been documented throughout most of the state, with many mule deer and white-tailed deer herds now exhibiting CWD prevalence levels high enough to potentially impact population performance. The need to develop proven methods to manage CWD is now readily apparent and doing nothing to combat this disease is no longer acceptable, a sentiment strongly echoed within hunter survey data."

Modeling efforts suggest CWD may have significant population level effects in Rocky Mtn National Park elk, Wyoming white tailed deer and Wyoming mule deer.

Surveillance for CWD has been conducted since 1997 using hunter-harvested cervids, targeted cervids (symptoms), and road killed cervids. This is a rotating multi-year program to measure prevalence every five years.

WGFD will engage in a localized collaborative process in Teton, Sublette, and Lincoln counties. The collaborative group is to "serve in an advisory capacity to the Department on how to best manage CWD in relation to Department-operated elk feedgrounds." The collaborative process will likely, " 1) review management plans, policies, and literature related to CWD and

feedgrounds; 2) develop feedground-specific disease management plans that encompass not only CWD, but brucellosis, necrotic stomatitis, and other diseases; 3) conduct site-specific feedground evaluations; 4) address proper carcass disposal for suspected CWD-positive elk that die on or near feedgrounds; and 5) evaluate research and monitoring opportunities and needs."

Feeding management strategies will continue to include:

- Low density feeding to reduce intraspecific brucellosis transmission
- Reduction of the feeding season
- Expand feeding areas onto clean snow or new areas to reduce environmental contamination effects

Other Feedground Plan Requirements

- WGFD will identify, remove, and test all cervids with CWD symptoms on and around feedgrounds
- Coordinate with state and federal agencies on CWD
- Coordinate CWD surveillance in NW Wyoming, and coordinate with GTNP and NER on their CWD management plans for elk and bison to manage wintering populations and reduce reliance on supplemental feed.
- Collaborate with stakeholders to acquire critical winter range habitat and migration corridors where possible
- Work with partners to implement habitat improvement projects
- Consider source of hay in relation to known CWD endemic areas
- Determine if closures of specific FGs can occur where dispersal of elk will not cause damage, conflict, or co-mingling issues with private property or create a need to drastically reduce elk numbers.
- Consider CWD dynamics in developing herd unit population objectives, hunting seasons, feedground quotas, and other.
- Continue intensive CWD surveillance in Jackson and Pinedale regions
- If CWD detected in FG, monitor FG and surroundings intensively, remove the animal and properly dispose of it.
- Maximize feeding area to decrease animal to animal contact, feed on clean snow, decrease days of feeding to disperse elk, take additional actions to decrease elk concentrations consistent with other wildlife and FG practices
- Expand research into migration in Jackson and Pinedale Regions to understand mechanisms behind spread of CWD.
- Monitor predatory animal presence and their impacts on FG elk, including implementation of proper management actions for gray wolves causing unacceptable impacts at state operated feedgrounds
- WGFD will continue to consider the potential role of predators and scavengers to remove CWD infected animals and carcasses to reduce CWD transmission

The recent collaborative process used to develop this plan began in 2018 and involved public meetings, CWD working group meetings, reporting to the public and final input and review of the CWD working group. A hunter perspective survey was conducted in 2019 regarding CWD in deer in Wyoming. Taking no action and letting CWD take its natural course was the least acceptable action. Most acceptable was use of special management hunts to remove deer in localized areas of high prevalence.

DOI. 2007. Record of Decision Final Bison and Elk Management Plan and Environmental Impact Statement National Elk Refuge and Grand Teton National Park. U.S. Department of Interior and U.S. Fish and Wildlife Service National Elk Refuge. Jackson, Wyoming.

The ROD claims there have been many benefits associated with wintering bison and elk on the refuge, high animal concentrations have created an unnatural situation that has contributed to increased risk for disease, damage to and loss of habitat due to browsing of willow, cottonwood and aspen stands, low winter mortality which affects predators and other species and requires intensive hunting programs, and a high level of brucellosis in the elk and bison herds.

The ROD recognizes the effects of the herds on surrounding habitats and that the plan will contribute to the herd objectives set by WGFD and objectives established by the Forest Service related to elk, bison, and their habitat in the BTNF.

Goals of the plan are to:

- 1) provide "secure, sustainable ungulate grazing habitat that is characterized primarily by native composition and structure within and among plant communities and that also provides for the needs of other native species."
- 2) Sustainable populations that are at reduced risk of disease, perpetuate to the greatest extent possible, natural processes and the interactions of bison and elk with natural environmental fluctuations influenced by fire, vegetation succession, weather, predation, and competition. Support elk reductions in GTNP when needed to achieve objectives, support hunting in the Memorial Parkway
- 3) Contribute to herd objectives to the extent compatible with Goals 1 and 2
- 4) Work with Wyoming to reduce prevalence of brucellosis to protect the economic interest and viability of the livestock industry and reduce the risk of adverse effects from diseases not currently found in the Jackson populations

The Decision Alternative 4 to adaptively manage habitat and populations to achieve desired conditions over 15 years. Mostly vague generalities, improve summer and winter habitat, ensure biotic integrity is sustained, work with WGFD to implement a dynamic framework for decreasing the need for supplemental feeding.

- Habitat restoration projects
- Work with partners to minimize bison and elk conflicts, financial resources
- Public education

- Identify criteria for beginning and ending feeding each year
- Develop adaptive management actions with triggers to transition from feeding to greater reliance on native forage based on
 - Level of forage production and availability
 - Desired herd sizes and ratios
 - Mitigation of co-mingling
 - Winter distribution of bison and elk
 - Prevalence of brucellosis, CWD other diseases
 - Public support
- Maintain Jackson elk herd objective of 11,000 with 5,000 wintering on the Refuge. Further reductions based on triggers and changing social, political, or biological conditions. Hunting will be used to assist the state in managing herds.
- Maintain 500 bison (current 1,100)
- Permit ceremonial taking by tribes
- Permit WGFD to vaccinate elk

Other alternatives:

- Alt 2 Minimal Management of Habitat and Populations
 - Herds would fluctuate with reduced numbers, establish migration out of Jackson to other wintering areas, feeding phased out over 10 - 15 yrs, eliminating hunting on the refuge to increase use of transitional habitats and over time natural densities would reduce prevalence of brucellosis.
 - Not selected due to negative public reaction due to higher winter mortality, competition for forage with other ungulates, higher depredation to stored hay, landscaping, numbers of elk could fall below objectives, impacts to grizzly bears due to lower elk numbers and higher competition for forage in the Green River basin. Little public support.
- Alt 3 Restore Habitat, Support Migrations and Phase Back Supplemental Feeding
 - Restore habitat by reducing elk numbers, reduce supplemental feeding over 10 years, with feed provided only in most severe winters 2 out of 10. Hunting would continue, brucellosis decrease over time as a result of fewer concentrated animals, vaccines with higher efficacy used when developed.
 - Not selected due to negative public reaction due to decrease in elk numbers in the refuge, decrease elk hunting opportunities, increase winter mortality, similar depredation effects and effects to grizzlies. No public support.
- Alt 5 Restore Habitat, Improve Forage, and Continue Supplemental Feeding
 - Supplemental feeding in 9 of 10 yrs, about 5,000 - 7,000 elk winter on the refuge, elk hunting continue, disease reduction through spreading out feed and moving feeding locations, vaccination continued, woody vegetation restored for other species.
 - Not selected as it remains similar to current management which would continue high disease levels, impacts from non-endemic disease and woody vegetation

destruction, habitat damage would negatively impact other wildlife species from migrant birds to bighorn sheep, potential for transmission to infect mule deer and moose with non-endemic diseases. Stakeholder groups, general public and other agencies opposed this alternative with some support among stakeholders and general public.

- Alt 6 Restore Habitat, Adaptively Manage Populations, and Phase Out Supplemental Feeding.
 - Phase out feeding over 5 years, continue hunting and herd reduction program. 2,400 - 2,700 elk would winter on the refuge and could increase to 3,200 with 1,200 - 1,600 summering in the park, habitat would be managed to improve available winter grazing, woody vegetation initially restored.
 - Not selected as eliminating supplemental feeding and reducing numbers in 5 years could be difficult to achieve and not acceptable to some stakeholder groups, local residents, and the State of Wyoming.
 - Alternative 6 could decrease elk hunting and viewing opportunities, slightly increase elk and bison annual winter mortality, and would likely lower Jackson elk herd numbers below the WGFD's objective in some years. In the short term, competition for forage with other ungulates in some areas and the likelihood of higher depredation on stored hay and damage to crops and landscaping (similar to Alternative 2 effects) would increase.
 - Alternative 6 would result in the greatest overall benefit to the biological and physical environments. Alt 4 was not the preferred alternative but " it will contribute to significant environmental benefits in a manner that is consistent with regional herd management objectives; it better balances the divergent views and interests and perspectives of other agencies, stakeholder groups and the public; it builds upon success implemented on the ground; and it enables managers to adapt to new information and changing conditions."
- Section 7 Consultation
 - "This consultation concluded that the preferred alternative may adversely affect grizzly bear in Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway due to potential hunter conflicts, and that it may affect but is not likely to adversely affect bald eagles and wolves on either Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway or the National Elk Refuge due to increased availability of elk carcasses. (Alternative 4 will have no effect on Canada lynx and yellow-billed cuckoo)."

WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

Review of the history and rationale for feedgrounds. They were established to: (1) change elk distribution and prevent crop or private property damage; (2) reduce winter mortality of elk so herds like those in the Jackson area would not have to be reduced; (3) reduce elk and cattle

interaction during periods of high risk for brucellosis transmission (Feb 15 - June 15).

Feedgrounds were "the least painful remedy for producing immediate results to appease differing groups: agricultural interests that desire rapid resolution to crop damage; and pro-wildlife constituencies that oppose reductions in elk populations despite wildlife-human conflicts and dwindling habitat." A perceived benefit is maintaining a larger number of elk than native winter ranges could support, which is a high priority for sportsmen groups. The major problems with FGs include:

1. High cost
2. Habitat degradation due to high concentrations of elk that damage surrounding vegetation, such as aspen, serviceberry, willow, and other deciduous woody vegetation
3. Public perception - FGs have resulted in less concern for conservation of native range because people feel native range is unnecessary to support elk
4. Disease transmission - the role of FGs in spreading disease, e.g. significant levels of brucellosis in wild elk occur only in the GYE where many elk rely on FGs. "Of the estimated 1 million elk in North America, significant levels of brucellosis in wild elk occur only in areas associated with feedgrounds." Other diseases are of concern, including pasteurellosis, bovine viral diarrhea, scabies, and CWD.
5. Wildlife migration and connectivity - FGs have interrupted elk migration from summer to winter ranges which has fragmented their habitat. This situation could become permanent because of reduced concern for native winter ranges.

The report ranked the FGs in terms of their potential for distributing elk off FGs and into native ranges (without reducing numbers, increasing damage to private property, or increasing risk of brucellosis transmission to livestock). Factors considered included (1) the average number of elk at each FG, (2) duration of feeding, (3) amount of potential native range on public lands within 5 miles, (4) potential damage to private property without the FG, and (5) potential for brucellosis transmission.

The report noted that elk populations were above objective across the herd units. Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The average annual cost for feeding at Dell Creek was \$82/elk and at Forest Park it was \$58/elk. Dell Creek is in the Hoback Herd Unit and is intended to stop elk migration short of lower elevation private property. This is a high snowfall area with low winter temperatures which limits opportunity for elk to forage on native winter range. The Forest Park FG is in an area where private property damage and agricultural conflicts don't exist. Subdivision development in and around Alpine creates potential barriers.

The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135 days gave them a poor ranking because FGs with shorter durations were more likely to have successful transitions to native range. The fewer the number fed, it was assumed the greater likelihood of successful transition. Dell Creek at 400 quota was given a high rating of 1 out of 4,

while Forest Park at 750 was ranked 2 out of 4.

The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range. WGFD rankings showed Dell Creek closure would result in the worst ranking for private property damage, with Forest Park least. Dell Creek ranked high in brucellosis transmission risk, while Forest Park ranked low.

In a final summation, the report considered Dell Creek to have the low potential for distributing elk onto native range with Forest Park having moderate potential.

Maloney, M., J. A. Merkle, D. Aadland, D. Peck, R. D. Horan, K. L. Monteith, T. Winslow, J. Logan, D. Finnoff, C. Sims, and B. Schumaker. 2020. Chronic wasting disease undermines efforts to control the spread of brucellosis in the Greater Yellowstone Ecosystem. *Ecological Applications* 30(6): e02129. 10.1002/eap.2129

This paper modeled management strategies using spatial and economic factors. Elk migratory behavior and population densities were modeled with and without feeding. Their model indicates that continuing to feed elk in the region around Pinedale "could result in substantial welfare losses" and to maximize the present value of economic benefits based on the arrival of CWD, "wildlife managers may wish to consider discontinuing elk feedgrounds while simultaneously developing new methods to mitigate the financial impact to ranchers of possible brucellosis transmission to livestock."

The paper also verified the rationale of feeding to reduce winter mortality and support larger elk herds than could be sustained on native range. Also that FGs truncate natural migratory routes thus limiting the time spent on private, low-elevation ranchlands during winter and reducing brucellosis transmission to cattle. But FGS increase the prevalence of brucellosis in elk. A CWD outbreak would negatively affect tourism and hunting. Citing Scurlock and Edwards, they note there is a brucellosis prevalence of 21.9% in FG elk and 3.7% in unfed populations.

The Pinedale region contributes a small part of regional elk harvest. The model suggests a social welfare loss of \$19 million if feeding continues and CWD is introduced into the study area. With CWD, elk management results in lower elk populations to reduce density effects and environmental transmission. Economically it is better to eliminate feeding and increase population targets relative to targets with FGs.

"The benefits and costs of elk management in response to CWD risks accrue differently to hunters and ranchers. Discontinuing feeding will, especially in the first year, increase brucellosis and depredation costs for ranchers associated with elk using private lands. However, our model predicts that these costs are outweighed by the economic benefits to hunters, guides, outfitters, and other regional businesses that provide goods and services to hunters. These benefits accrue to a relatively large and diffuse number of people, whereas the

increased brucellosis-related costs fall on a relatively small number of local ranchers."

The gains for hunters could be used to offset losses to ranchers, while discontinuing feeding is economically optimal. As a "result, the costs of continuing to feed elk after the introduction of CWD outweigh the benefits".

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

FSM 2610.2 - Objectives

1. To develop and maintain partnerships with the appropriate State agencies to jointly establish and meet wildlife, fish, and threatened, endangered, and sensitive species habitat goals, objectives, and standards.
2. To cooperate with other agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive species habitat management.

FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

1. Use management indicators to address issues, concerns and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability for management indicators.
4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including

endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

Jones, J. D., Kauffman, M. J., Monteith, K. L., Scurlock, B. M., Albeke, S. E., and Cross, P. C. (2014). Supplemental feeding alters migration of a temperate ungulate. *Ecol. Appl.* 24, 1769–1779. doi: 10.1890/13-2092.1

A study of supplemental feeding on migration habits of elk was conducted in 18 of the 22 State of Wyoming managed feeding operations in 2009 to 2011. The study tracked behavior of collared elk that were fed and those that were not. Migration is an important evolutionary adaptation that allows animals to access nutritious forage and thereby "enhancing demography and population growth". Factors that disrupt the natural migration patterns include roads, habitat loss, agriculture, supplemental feeding, and climate change. Ranching, hunting and FG establishment have altered historical patterns of migration.

FGs were established in Wyoming beginning in 1912 to intercept elk migrating from higher elevations on public lands to prevent them entering private lands in the valleys. This was to limit damage to stored crops and avoid transmission of diseases to livestock. The study identified winter ranges of fed and unfed elk. Fed elk winter range included herbaceous species, shrubs, conifer, and agricultural lands, while unfed elk relied upon riparian areas with willow, sage-steppe, aspen and conifer.

Study results showed that fed elk migrated shorter distances (35.4 km) than unfed elk (54.6 km). Fed elk spent less time on summer range by arriving later and departing earlier and arrived back on winter range earlier than unfed elk. Fed elk resided on summer range 26 days less and departed 10 days earlier than unfed elk. Fed elk relied on stopovers for 11 more days in spring and 13 more days in autumn.

Shortening the number of days for the feeding operation from 134 to 74 days lead to fed elk following a migration pattern and occupancy of summer range similar to unfed elk by responding to plant greenup in a similar way. Feeding for the longer period delayed migration to summer range until plant greenup reached an NDVI threshold value of 0.17 at which point, fed elk began to arrive on summer range. During years when plant greenup was delayed this delay effect due to feeding was more pronounced. Fed elk responded to elevation, decreasing temperatures, and increasing precipitation by leaving summer range earlier than unfed elk.

An important outcome is that while feeding has changed patterns of migration, it has not altered the propensity to migrate. When leaving winter range, both fed and unfed elk left at

about the same time, but fed elk tended to remain near the FGs. Feeding appears to condition the elk to leave summer range earlier which limits use of forage during the growing season.

Since elk feeding is within the brucellosis endemic area in Wyoming, prolonged time on winter or nearby transitional ranges may lead to delaying cattle turn-out dates to reduce transmission between cattle and elk. Ending feeding earlier would "encourage fed elk to migrate and spend more time on summer range, thereby increasing access to high-quality forage and maximizing their distance from cattle. Shortening the feeding season also would reduce intraspecific disease transmission, because FGs crowd elk and expose them to higher disease risk."

Schumaker, Brant A.; Peck, Dannelle E.; and Kauffman, Mandy E. (2012) "Brucellosis in the Greater Yellowstone Area: Disease Management at the Wildlife–Livestock Interface," Human–Wildlife Interactions: Vol. 6 : Iss. 1 , Article 7. DOI: <https://doi.org/10.26077/95s0-ah13>

A study of brucellosis in the Greater Yellowstone area (GYA) by University of Wyoming researchers provides insight useful to management relative to elk FGs. Brucellosis is found mostly in the "wildlife-livestock interface" in the GYA and is thought to have "originated from cattle kept within the boundaries of Yellowstone National Park (YNP) for park employees." It was thought that brucellosis was observed in bison in YNP and subsequently transmitted to elk.

The goal of elk feeding was to deter elk from moving onto private lands where they eat hay and mingle with cattle. Because elk infected with brucellosis tend to abort fetuses while they are on FGs, this increases exposure and maintains high levels of the disease among the fed elk.

"Exposure to brucellosis and subsequent infection are, therefore, maintained at relatively high levels among elk that overwinter in Wyoming FGs."

Contamination of parturition sites with brucellosis from infected elk that give birth in mid-May to mid-July can remain present into August, depending on weather. Elk clean up some of the tissues and fluids from birth, which reduces risk of exposure. Brucellosis contamination in soil, vegetation and tissue at birth or abortion sites remained viable for 43 days in April and 26 days in May. The proportion of FG elk testing positive for brucellosis antibodies was 22% compared to 3.7% in free-ranging elk in tests conducted in 2008 and 2009. There appeared to be an increasing incidence of positive tests in non-FG elk. It was suspected that increasing herd sizes and hunting pressure was concentrating elk on private lands not accessible to hunting and these increasing congregations have become a likely source of transmission.

Recommendations for cattle risk management included fencing haystacks, modifying winter feeding practices, hazing elk off private property, vaccinations, spaying heifers, and changing livestock type. Vaccinating elk at FGs, shortening feeding periods, and spreading hay over a larger area have been used to reduce risk. Some producers were delaying grazing on high-risk grazing allotments that overlap with FGs. Converting to steers and spayed heifers was another change some producers were employing. Isolation of elk from cattle by delaying cattle grazing in spring where elk overwinter or excluding elk from areas grazed by cattle in spring and early

summer. Predator-prey relationships, hunter access and land use in disease dynamics are also mentioned.

USDA Forest Service. 2006. Science Update: Elk, Deer and Cattle: The Starkey Project. Pacific Northwest Research Station. Issue 13.

The Starkey Project compared interactions and habitat use between mule deer, elk, and cattle. Elk tended to avoid cattle and will use lower elevations if no cattle are present. But move to higher elevations when cattle move onto lower elevation areas.

Coe, Priscilla K.; Johnson, Bruce K.; Stewart, Kelley M.; Kie, John G. 2004. Spatial and temporal interactions of elk, mule deer, and cattle. In: Transactions of the 69th North American Wildlife and Natural Resources Conference: 656-669

Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer overlapped likely due to depletion of forage.

Kie, J., Evans, C., Loft, E., and Menke, J. 2007. Foraging behavior by mule deer: The influence of cattle grazing. Journal of Wildlife Management 55(4):665 - 674.

Where cattle were grazed, deer home ranges were larger and hiding cover for fawns reduced.

Julander, O. (1962). Range management in relation to mule deer habitat and herd productivity in Utah. Journal of Range Management, 15(5), 278-281.

An early study from Utah looked at range condition and mule deer productivity. Summer range condition was compared to fetal production per doe with good condition range providing higher ovulation rates and productivity than poor condition range. This is important in looking at how forage depletion by livestock may reduce production of deer or elk.

Szcodronski, K. E., and P. C. Cross. 2021. Scavengers reduce potential brucellosis transmission risk in the Greater Yellowstone Ecosystem. Ecosphere 12(10):e03783. 10.1002/ecs2.3783

A current study from the Greater Yellowstone Ecosystem determined that scavengers reduce potential brucellosis transmission risk. Using remote cameras at 264 sites with simulated abortion materials, they determined that time to removal was slower at sites where mammalian scavengers were reduced (6.5 days) to those with no scavenger reduction (4.1 days). Coyotes, red foxes, golden and bald eagles, and turkey vultures were the dominant scavengers. In areas where cattle and elk congregate there was a 90% probability that abortion materials would be removed by scavengers within 16 days.

WGFD. 2021. Hunting in Wyoming - 2020 Annual Reports of Big and Trophy Game Harvest. <https://wgfd.wyo.gov/Hunting/Harvest-Reports/2020-Harvest-Report>

The Wyoming statewide elk harvest success rate in 2020 was 46%.

Backcountry Chronicles. 2020. Newest Elk Harvest Data - Comparison of Western States for 2019 Elk Hunt. <https://www.backcountrychronicles.com/elk-harvest-comparison-western-states/#:~:text=Wyoming%20claims%20an%20amazing%20overall,waiting%20on%202017%20harvest%20data>).

This article summarized state reports of elk hunting statistics. Some interesting points are that the average number of elk hunters for the states ranged from 57,834 in Wyoming to 220, 092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington, yet even at Washington's lower success rate, it still had more hunters than Wyoming.

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

FSM 2610.2 - Objectives

1. To develop and maintain partnerships with the appropriate State agencies to jointly establish and meet wildlife, fish, and threatened, endangered, and sensitive species habitat goals, objectives, and standards.
2. To cooperate with other agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive species habitat management.

FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

1. Use management indicators to address issues, concerns and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability

for management indicators.

4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

Scoping Comment Dell Creek Permit_10_22_2021

February 11, 2022

Tricia O'Connor
Forest Supervisor
Bridger Teton National Forest
PO Box 1888, 324 North Cache
Jackson, WY 83001



Street



Re: Dell Creek & Forest Park Elk Feedgrounds: Long-term Special Use Permits Project EIS

Sent VIA Email To: patricia.oconnor@usda.gov and to the BTNF Comment Portal at <https://www.fs.usda.gov/project/?project=60949&exp=overview>

Dear Ms. O'Connor:

These scoping comments are provided on behalf of the Yellowstone to Uintas Connection, Alliance for the Wild Rockies, and Native Ecosystems Council. We are 501c3 environmental organizations dedicated to science. We advocate for wildlife, wildlife habitat, and migration corridors in the Rocky Mountains. We have major concerns regarding the elk feed grounds (FG) in Wyoming, their impacts on migration, disease, and interrupting natural ecosystem function. We previously submitted scoping comments on your October 13, 2021 scoping letter for issuance of a special use permit for the Dell Creek FG.

The January 14, 2022 scoping letter for this upgraded project is to conduct environmental analysis in an EIS on the effects of reauthorizing Wyoming Game and Fish Commission (WGFC) to operate the Dell Creek and Forest Park elk FGs and associated facilities and activities. Feeding would occur between November 15th and April 30th. The purpose and need of the proposal is to allow WGFC to operate these FGs on the Bridger Teton National Forest (BTNF) and to analyze the proposal to ensure the WGFC is managing elk to sustain the health of the land and meet the goals and objectives of the BTNF Forest Plan. It is unclear as to the length of time this proposed reauthorization will be in effect. It is also unclear as to the length of the process of dealing with annual special use permits while an EIS is being prepared as no definitive end date for issuance of a ROD was specified in the scoping letter.

Based on our experience with the Forest Service, we expect years of back and forth in a NEPA process involving an EIS, so the special use permits for these FGs will likely be back for multiple annual renewals over a period of many years. This means that regardless of what alternatives are selected the FGs will continue to operate unchanged for maybe half a decade, then if there is a phaseout, it will likely occur over many more years. The process alone will perpetuate the ongoing spread of disease for maybe a decade or more. This is unacceptable.

Instead, it would seem a good time to allow the special use permits on both these FGs to be terminated while the fate of the remaining FGs is determined, and their management (feeding

periods) reduced to avoid the high-risk period for disease due to co-mingling of elk and livestock. This would be beneficial to reducing the incidence of brucellosis, chronic wasting disease, and other diseases such as hoof rot in elk. It would result in more time spent in the BTNF or other native range while following natural migration patterns.. Seasonal, parturition and crucial ranges would be used longer for the beneficial nutrition these habitats may provide.

We expect the BTNF to fully analyze the science and effectiveness of various management options; to compare Wyoming FG and disease statistics to other western states and their management; and to address the economics of feeding and livestock grazing, elk hunting, recreation, and their significance to the economy of Sublette County and the State of Wyoming. In the following sections, we provide some background on the issues and options, economics, forage analysis, and snow depth considerations related to winter foraging and migration. In our final section, we look at an alternative to support free ranging elk and reduce disease by closing FGs.

We expect the BTNF to fully address all the objectives, standards, and guidelines as well as the intent, of its Forest Plan. One such provision is the Forest Plan Goal 1.1 objective to re-establish historical elk migration routes. Others have to do with maintaining the Desired Future Conditions (DFC) expressed in that Plan. Elk and other animals depend on areas within many of the DFCs described in the Forest Plan. In our October 21, 2021 scoping comments for renewal of the Dell Creek Special Use Permit, we mapped the 23 FGs and their occurrence relative to the BTNF, elk crucial and parturition ranges. Most FGs occurred within or adjacent to the BTNF. Twenty FGs occur within or adjacent to elk crucial range, while 18 occur within or adjacent to elk parturition range. Thirteen FGs occur within or adjacent to active grazing allotments.

We also mapped the Dell Creek FG in relation to these crucial, parturition ranges and surrounding grazing allotments. Figures 1 - 4 show the occurrence of all FGs in relation to the BTNF, grazing allotments and their status, elk crucial range, and elk parturition range. We also provided a map of the illegal roads and trails in the vicinity of the Dell Creek FG. For wildlife security, these roads and trails should be closed and reclaimed as should those affecting elk security across the BTNF where elk migrate. See Figure 5 showing those in the vicinity of Dell Creek FG.

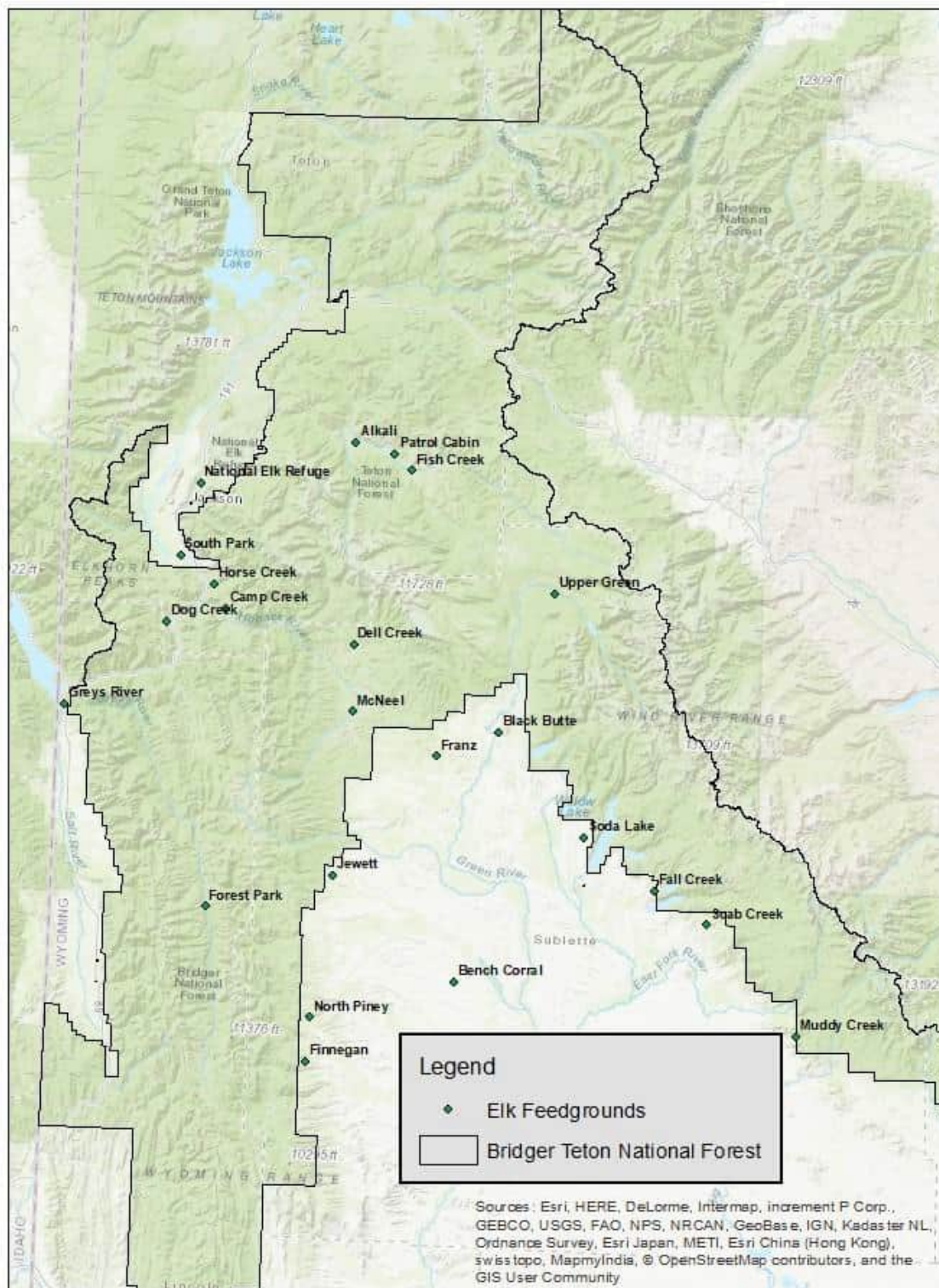


Figure 1. Occurrence of Elk Feed Grounds in or adjacent to the Bridger Teton NF

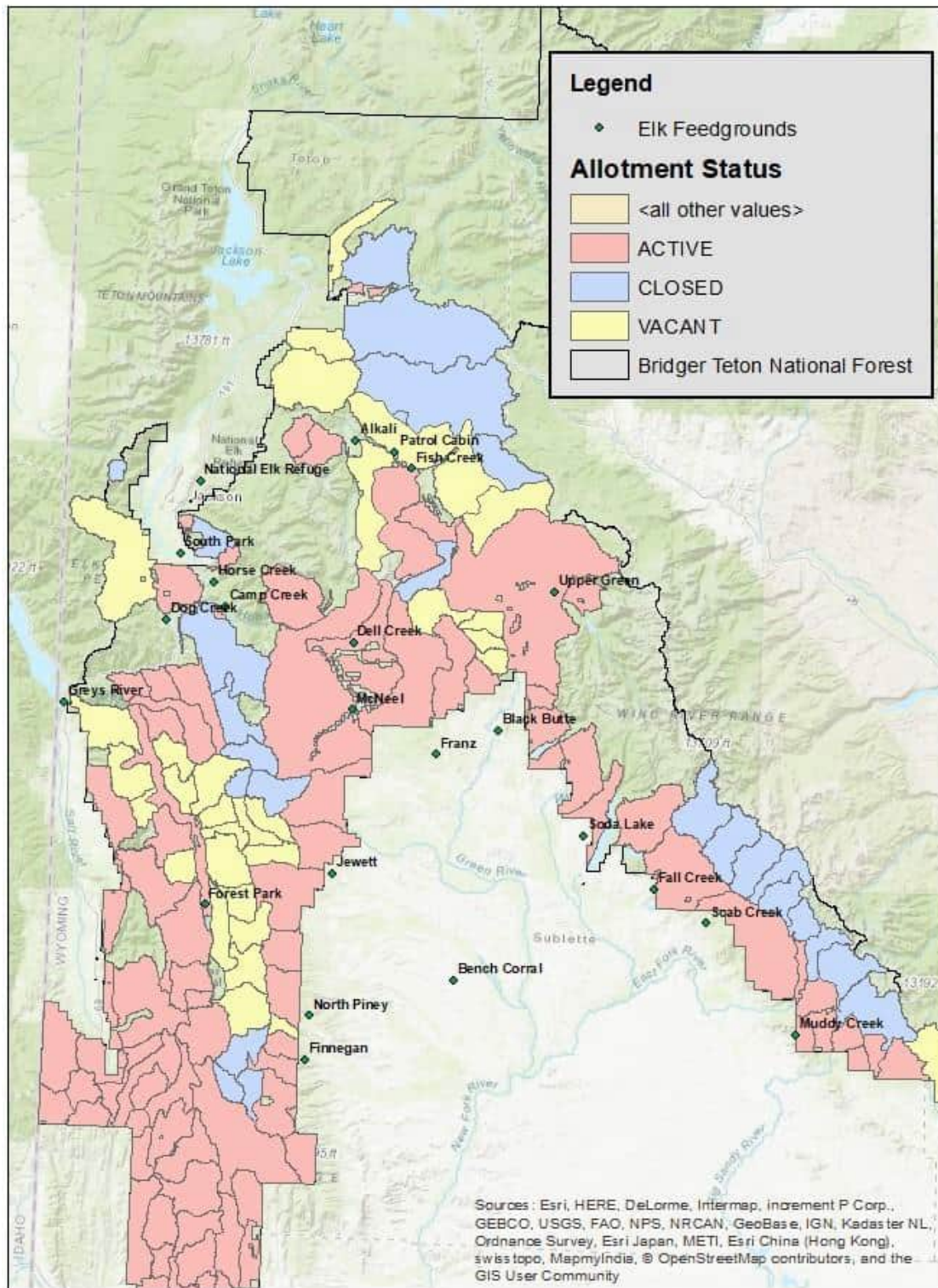


Figure 2. Occurrence of Elk Feed Grounds and Allotment Status



Figure 3. Occurrence of Elk Feed Grounds in relation to Elk Crucial Range

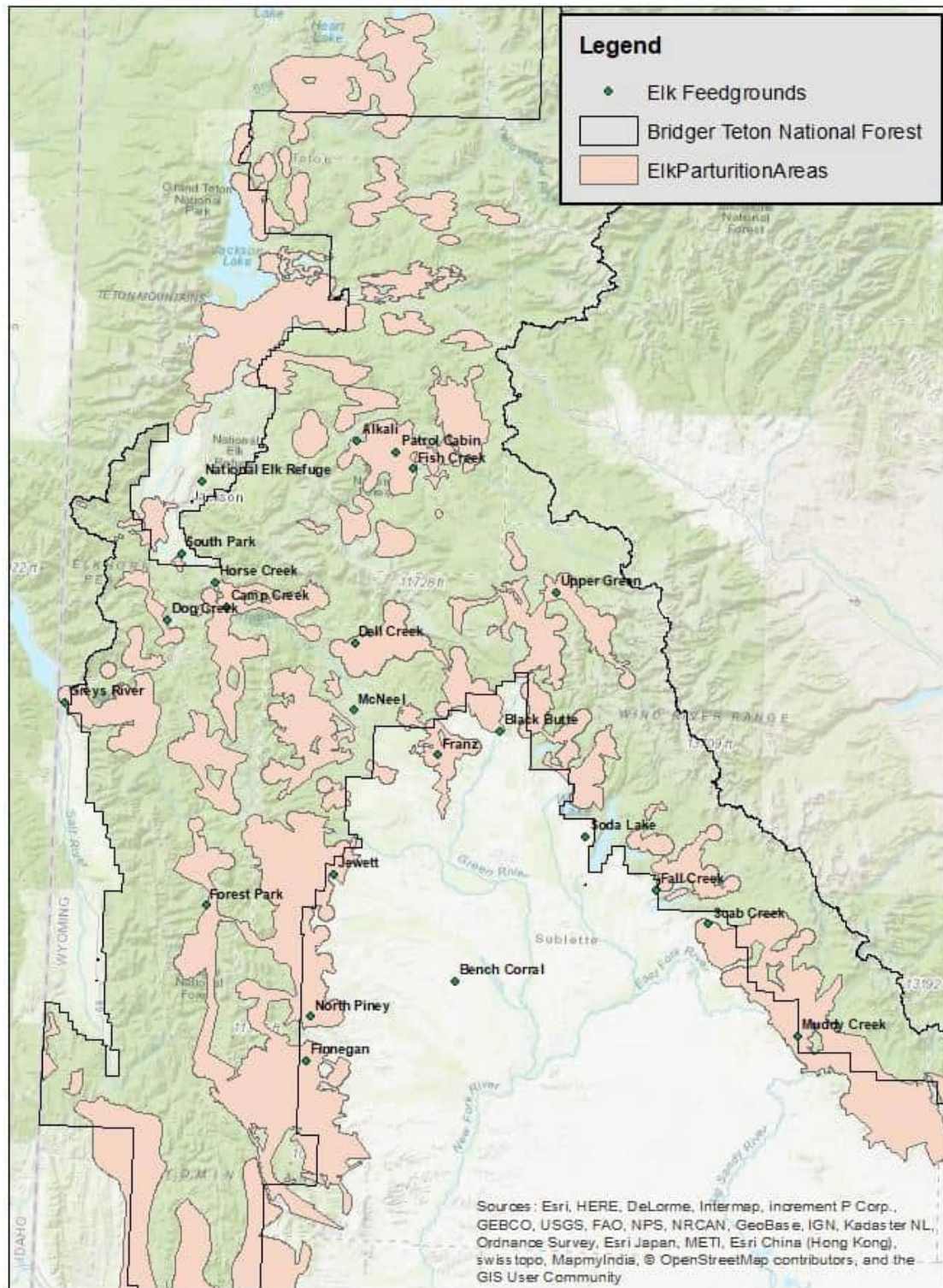


Figure 4. Occurrence of Elk Feed Grounds in relation to Elk Parturition Areas

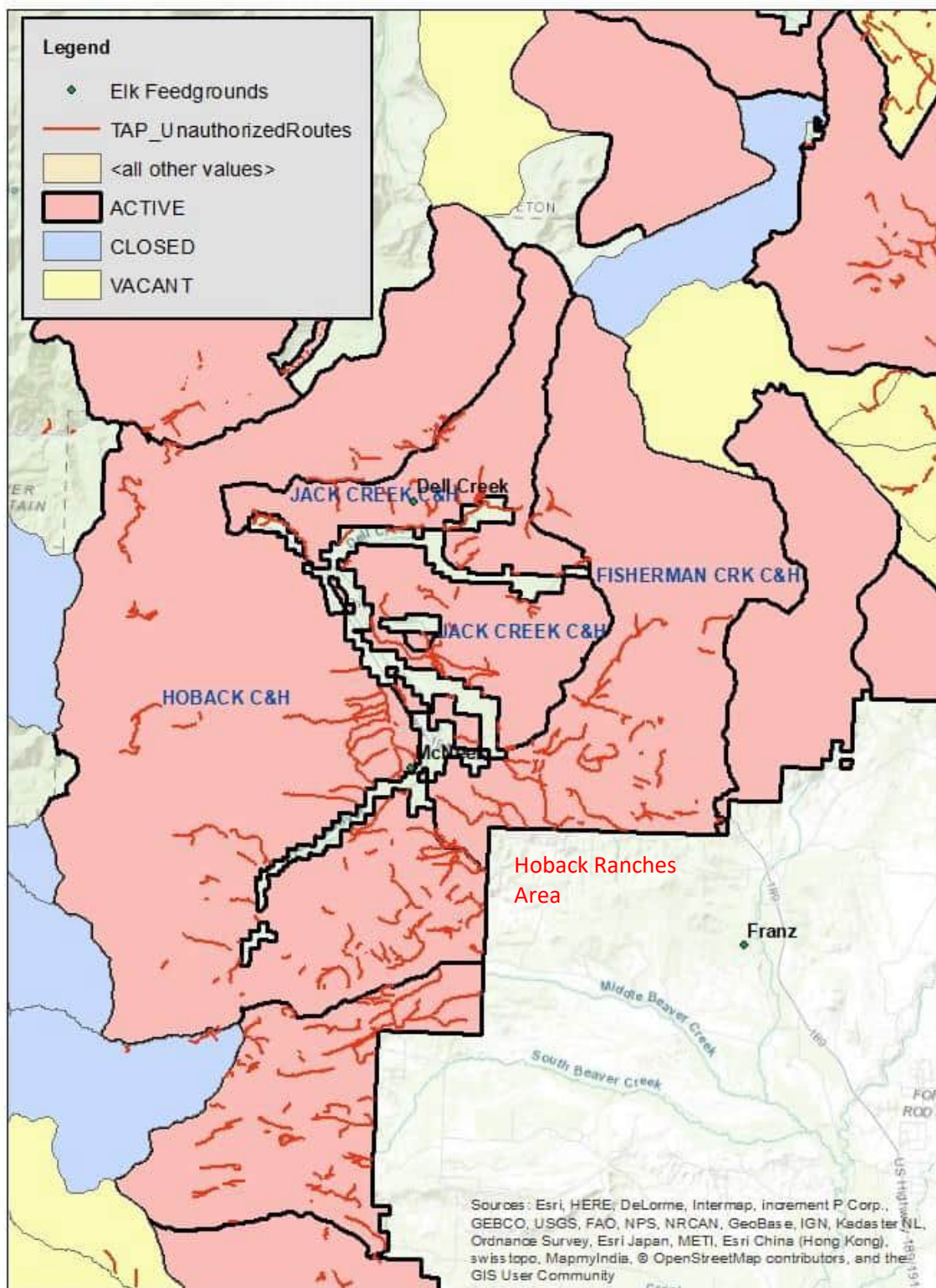


Figure 5. Occurrence of Unauthorized Motorized Routes in Vicinity of the Dell Creek and McNeel Feed Grounds

A. Background

While Wyoming Game and Fish Commission manages these FGs, it is important to understand that the Forest Service has the overall authority for management of National Forest lands, including wildlife and habitat.¹ Forest Service Manual (FSM) 2300 also addresses wildlife management and the relationship to state wildlife management through coordination.² It does not cede authority to the state. FSM 2323.31 Objectives include, "Provide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist." FGs are counter to this objective.

In addition, the Forest Service has Prohibition Authority (36 CFR 251) by which it can ban FGs on National Forest managed lands, ban trapping and killing of wolves, coyotes, foxes and other predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume and reduce contaminated birth or abortion offal, thus reducing potential environmental contamination.

The Wyoming Game and Fish Chronic Wasting Disease Management Plan also has expressed that: "To reduce artificial cervid concentrations, the Department will pursue statewide or local feeding bans where possible, identify points or sources of concentration, and develop strategies to decrease cervid concentrations to minimize CWD transmission."³

We anticipate the EIS will characterize the habitat on the BTNF and its current productivity for both summering and wintering elk and other ungulates to determine whether the current vegetation conditions support wildlife populations during all seasons.

Attachment 1 to these comments is a summary of references that we have reviewed and upon which the following points are based. The NEPA analysis must consider the points provided in each reference.⁴

- FGs concentrate animals and increase the spread of disease with brucellosis seropositive rates of 26%, 2% and 0% on, adjacent to and independent of FGs.
- Scavengers and predators reduce the residence time of aborted fetuses in half and may act as a biological control of brucellosis and CWD related to FGs.
- Elk consumption of crops and hay is not tolerated by producers, who are also opposed to eliminating FGs

¹ Nie, M., Barns, C., Haber, J., Joly, J., Pitt, K., & Zellmer, S. (2017). Fish and Wildlife Management on Federal Lands: Debunking State Supremacy. *Environmental Law*, 47(4), 797–932.
<http://www.jstor.org/stable/44466736>

² USDA Forest Service. 2007. FSM 2300 - Recreation, Wilderness, and Related Resource Management.

³ Wyoming Game and Fish Department. 2020. Wyoming Chronic Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

⁴ Download references from: <https://app.box.com/s/mst3u7nkj7xet15677cl2l2632tpfpao>

- Elk herds are above objectives.
- Modeled CWD population effects indicate CWD could reach 12% - 20% of the elk population and declines in population would occur at 7% seroprevalence in females.
- Predators are a strong defense against CWD by focusing on animals weakened by the disease. Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.
- Tuberculosis in Michigan deer led to eradication of white-tailed deer to protect cattle. Deer populations were beyond carrying capacity and problems occurred in areas with high cattle/deer populations, artificial feeding, and/or continuous interactions between cattle and deer. Michigan banned feeding deer, increased harvest, and worked to eliminate contact between cattle and deer.
- Except for the Greater Yellowstone Area, the U. S. is free of cattle brucellosis.
- Brucellosis seroprevalence around the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 period.
- FGs support between 14,000 and 20,000 of Wyoming's elk population of 112,000.
- Since 2020 CWD has been found in two FGs.
- Since discovery of CWD in 1985 in deer herds in Wyoming, no effective strategy has been implemented to limit spread, while CWD has since been documented throughout most of the state.
- FGs are a high-cost endeavor.
- FGs have interrupted elk migration from summer to winter ranges.
- Continuing feeding elk in the Pinedale region could result in economic loss with CWD.
- The Pinedale area contributes a small part of the regional elk harvest.
- Shortening the feeding period by about half led to elk migrating like non-fed elk.
- Elk tend to avoid cattle and will use lower elevations if no cattle are present. They move to higher elevations when cattle move onto lower elevation areas.
- Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer habitat use overlapped likely due to depletion of forage.
- Summer range condition is important to reproductive success with good condition having higher success than poor condition.
- The Wyoming statewide elk harvest success rate in 2020 was 46%.
- The average number of elk hunters for the states ranged from 57,834 in Wyoming to 220,092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington

The WGFD CWD Management Plan put forth management strategies for CWD that include:

- Use hunter harvest to maximize removal of positive animals
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration

- Develop strategies to decrease cervid concentrations to minimize transmission

The Big Piney Elk Herd Unit Brucellosis Management Action Plan (BMAP)⁵ pointed out that the Wyoming Livestock Board defined the exposure period for brucellosis as January 1 to May 1. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, and reducing the feeding season. A shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to FGs is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. A shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling. It is worth including here the eight options considered and the pros and cons of each while keeping in mind this document was produced using information in the 2007 time frame.

1. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- Find suitable areas lower in elevation with no winter cattle operations.
- Evaluate current habitat to determine production, vegetation, health, and potential.
- All Pinedale Field Office BLM lands are leased for grazing.
- Purchase AUMs for forage reserve.
- These five FGs are not candidates for this option due to potential for damage and commingling.
- Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, and reduce browsing on local native vegetation.
- Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, and increase competition with other species.

2. Eliminate FGs

- Not an option given current herd objectives and current conditions. These would need to change.
- Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Piney EHU, and reduce FG and vaccination expense.
- Cons include increased risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, and reduced vaccination feasibility.

⁵ WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

3. Reduce elk numbers through harvest

- a. Reducing numbers thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, with emphasis on females, and other strategies.

4. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate the need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option.

5. Elk proof fencing of FGs on private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, and reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

6. Habitat enhancement projects in winter range

- a. Facilitated by options 2, 3, 4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high-risk transmission period, create vegetative diversity, and improve range conditions for livestock and wildlife.
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, and may increase invasive species.

7. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, and secure future revenue for WGFD.
- e. Cons are expensive, limited availability of land with potential, and requires landowner willingness.

8. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, and perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, and effective vaccine still lacking.

B. Economics

The BTNF must analyze the economic importance of permitted livestock grazing against the alternative uses of the Forest, particularly given the rising demand for wilderness, outdoor recreation, and wildlife watching. Why should the public have to lose its wildlife so that a handful of livestock permittees can graze their cattle at great public cost? The eroded soils and stream banks, damaged and polluted rivers, streams and springs, and lost wildlife populations are all economic costs that are not accounted for in permitting decisions for grazing livestock. As an example, the FEIS for the Upper Green River Area Rangeland Project⁶ makes the claim that *"Continuing to authorize livestock grazing in the project area would support the custom and culture in surrounding communities and contribute to the achievement of Forest Plan goals."* However, the BTNF did not analyze the real costs and benefits of continued livestock grazing. There is a one hundred year history of taxpayer subsidized feeding of elk to essentially protect livestock producers' stored hay and reduce mixing of elk and cattle. Yet, disease is increasing. We

⁶ USDA. 2017. Upper Green River Area Rangeland Project Final Environmental Impact Statement. Bridger-Teton National Forest.

understand from recent WGFD stakeholder meetings that the current annual cost for maintaining these FG operations is over \$2 million.

As we have observed conditions in the BTNF and adjacent private lands, it has become clear that the BTNF is not effectively managing livestock grazing. We have pointed this out in comments, analysis, and letters to the BTNF. More will be said on this subject in a later section. As we look to phasing out elk FGs as has been done in other states, we see the lack of forage on private lands as permittees first graze the Forest, leaving little, then move their livestock down to the valleys and private lands, where they graze until virtually all the forage is gone before they then move their cattle onto their private winter feeding stations.

When an elk, deer, or moose graze or eat hay on private lands, it is considered "damage", or "depredation" for which livestock producers are reimbursed at taxpayer expense. Yet, the private landowners moved into what was originally wildlife habitat, needed by elk and other animals in winter and summer. What ever happened to giving something back? Many ranches have been paid to place their lands into conservation easements by such entities as the Wyoming Stockgrowers Land Trust⁷, but does that or any other trust require as part of the agreement that forage be left for wildlife and watershed protection? Or, for protection of riparian areas and wetlands? This comes down to an ethical issue in our mind. Not everything must be for profit.

During the period from 1995 through 2020, USDA subsidies for U.S. farms totaled 424.4 billion dollars.⁸ In Wyoming, during the same period, \$317 million in direct payments were made to 10,938 farmers.⁹

An article¹⁰ from the CATO institute on the state of subsidies to farmers in 2020 noted:

U.S. net farm income this year will jump 43% to \$119.6 billion, the highest inflation-adjusted level since 2013, the government said Wednesday in a report. The projected surge occurred as the virus pandemic roiled the food-supply chain in the spring, driving grain prices down and meat costs higher. U.S. agriculture is on track for one of the three most-profitable years in a half century. Adjusted for inflation since 1973, projected net farm income in 2020 will be surpassed only by 2011 and 2013 figures. Direct government aid, accounting for 39% of net farm income, rose to a record \$46.5 billion from \$22.4 billion last year.

⁷ WSGLT. 2022. Wyoming Stock Growers Land Trust. <https://wsgmt.org/>

⁸ <https://farm.ewg.org/regionsummary.php>

⁹ https://farm.ewg.org/top_recips.php?fips=56000&progcode=totalfarm®ionname=Wyoming

¹⁰ Lincicome, S. 2020. Examining America's Farm Subsidy Problem. CATO institute. <https://www.cato.org/commentary/examining-americas-farm-subsidy-problem>

The annual amounts vary and the forecast for 2022 is provided by USDA.¹¹

Overall, farm cash receipts are forecast to increase by \$29.3 billion (6.8 percent) to \$461.9 billion in 2022 in nominal dollars. Total crop receipts are forecast to increase by \$12.0 billion (5.1 percent) from 2021 levels to \$248.6 billion. Soybean, corn, cotton, and wheat receipts combined are forecast to increase by \$11.7 billion (8.2 percent) in 2022, accounting for almost all the forecasted growth in crop cash receipts. Total animal/animal product receipts are expected to increase by \$17.4 billion (8.9 percent) to \$213.3 billion following increases in receipts for milk, cattle/calves, and broilers. Direct Government farm payments are forecast at \$11.7 billion in 2022, a \$15.5 billion (57.0 percent) decrease from 2021 forecast levels.

A current article predicts that cattle prices will explode in 2022, "Fed cattle prices, now near \$140 per cwt, are up \$25 from last year. Feeder calves are now over \$2 a pound at many auction markets, from \$1.60 last year."¹² While these record prices occur, BLM and the Forest Service have released their public land grazing fees for 2022 which will be \$1.35 per animal unit month (cow/calf).¹³ This is less than the Wyoming State fee at \$6.38/AUM and over an order of magnitude lower than the average private land grazing fee in Wyoming of \$21.50/AUM.¹⁴

A current economic analysis of SW Wyoming was conducted by Headwaters Economics.¹⁵ This study determined that Agriculture in Wyoming is 3.6% of private employment and in the Region, including Lincoln, Uinta, Sublette, and Sweetwater Counties, it is 3.2%. Travel and Tourism was 20.2% of private employment in Wyoming while in this Region it was 15%. The agriculture sector was one of the lowest paying sectors. For example, in Sublette County in 2005, average earnings for this sector were less than \$20,000 per job.¹⁶ Agriculture property was assessed at 0.2% of the County's total assessed valuation and sales tax revenue was so low it was not reported.

Dr. Thomas Power states that, "Claims about the relative importance of federal grazing to the economies of the western states can be simply analyzed by answering the following four

¹¹ U.S. Department of Agriculture, Economic Research Service. *Farm Sector Income & Finances: Farm Sector Income Forecast*, February 4, 2022. <https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/>

¹² <https://www.agriculture.com/livestock/cattle/the-cattle-price-explosion-is-now>

¹³ <https://www.blm.gov/press-release/bureau-land-management-and-usda-forest-service-announce-2022-grazing-fees>

¹⁴ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

¹⁵ Headwaters Economics. 2021. A Profile of Key Indicators Southwest Region. Selected Geographies: Lincoln County, WY; Uinta County, WY; Sublette County, WY; Sweetwater County, WY. (Citing BLM and the Forest Service.)

¹⁶ Taylor, D.T. and Foulke, T. 2008. Sublette County Wyoming: A Socio-Economic Profile. University of Wyoming Department of Agricultural and Applied Economics.

questions: 1. What portion of the value produced by cattle and sheep operations is associated with the feed used? 2. What portion of the feed for those cattle and sheep operations comes from grazing on federal lands? 3. What portion of the total agricultural activity involves raising cattle and sheep? 4. What part of the total economy is represented by agriculture?"¹⁷

According to the 2017 Wyoming Census of Agriculture, Sublette County sales of cattle and calves was \$41 million.¹⁸ How much of this can be attributed to public lands? Since permitted grazing seasons on the BTNF and other public lands are approximately 120 days, or about one-third of a year, this is 30% of the livestock economy in the county, or around \$12 million, but the livestock grazing on the BTNF is a smaller fraction which can be determined by an analysis of the authorized AUMS on the BTNF, BLM and State Lands. The EIS must do this calculation. That calculation could show it is maybe \$3 - \$4 million as an approximation.

Against this value, an analysis of the economic importance of BTNF managed lands to the local and regional economies when grazed by livestock should be compared to other values foregone such as recreation, clean water, and wildlife. For this EIS for Dell Creek and Forest Park, the areas of habitat for elk seasonal, winter and parturition range that are permitted to be grazed by livestock must be determined. Then they should be valued based on the loss of elk forage and habitat (elk numbers and value) due to livestock grazing vs the value if the habitat is allowed to produce at potential by not grazing livestock and/or reducing livestock grazing to meet the best science on forage allocations, a sustainable utilization rate of 25%, and rest, to allow plant communities to recover following grazing.¹⁹

This would be based on numbers of cattle using the elk habitat and the length of time they use the habitat and how many elk that habitat could support at different livestock stocking rates ranging to no livestock grazing. Stocking rates would be determined by the factors described above as regards utilization, current forage production, adequate rest and current cattle weights and forage consumption rates. Current Forest Service Regional criteria for determining capable and suitable lands for livestock grazing should also be used to determine the acres upon which grazing should be allowed. The analysis should include values of outdoor recreation, for example that reported by the U.S. Fish and Wildlife Service.²⁰ That report for 2011 shows the value for Wyoming for Fishing at \$463 million; Hunting at \$288 million; Wildlife Watching at \$350 million per year, or a total of \$1.1 billion spent in Wyoming. That was ten years ago before the recent explosion in tourism. A report for 2016 showed over \$156 billion spent on these

¹⁷ Power, Thomas M. 2002. Taking stock of public lands grazing an economic analysis. In: Welfare Ranching, the Subsidized Destruction of the American West.

¹⁸ USDA. 2017. 2017 Census of Agriculture County Profile Sublette County, Wyoming.

¹⁹ Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review. Report Prepared for Yellowstone to Uintas Connection, Paris, ID. <https://app.box.com/s/ngw6723dx52quxw2rd8u>

²⁰ US Fish and Wildlife Service. 2011. 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

endeavors in the U.S.²¹ It should also consider the costs of water treatment and other costs to the BTNF and affected communities related to livestock degradation of the air, water, and plant communities (weeds). A current news release from Grand Teton National Park shows a 48% increase in visitation for April 2021 when compared to April 2019.²² What are the current statistics for Sublette County and how does the value of livestock grazing on the BTNF play into this?

C. Forage Consumption and Displacement of Elk by Livestock

We reviewed statistics for the number of permitted and authorized livestock in BLM, Forest Service and State managed lands in Wyoming.^{23 24} The summary is provided in Table 1 showing that 3,016,445 Animal Unit Months (AUMs) were authorized in recent years. An animal unit month is the allocation of forage used by a cow and calf each month. A 2016 review of the AUMs and rates of consumption of forage by livestock showed that current cattle weights and forage consumption rate as a percent of body weight for a cow and calf pair was 50.4 lbs/day or 1,532 pounds per month.²⁵ The estimated elk forage consumption rate is 14 lb/day.²⁶

Table 1. Authorized Livestock AUMs on Public Lands in Wyoming

Managing Agency	Permitted AUMs	Authorized AUMs
National Forest	443,740	355,392
National Grassland	150,058	126,174
BLM	1,863,702	1,401,056
Wyoming State		1,130,823*
Total		3,016,445

*Calculated from 2011 grazing revenue of 5,247,021 divided by the rate of \$4.64/AUM.²⁷

²¹ US Fish and Wildlife Service. 2018. 2016 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

²² DOI National Park Service. 2021. News Release. 05/23/2021.

²³ USDA. 2017. Grazing Statistical Summary FY 2016. Forest Service Range Management.

²⁴ DOI. 2020. Public Land Statistics 2019. Bureau of Land Management.

²⁵ Carter, J. 2016. Updating the Animal Unit Month. Report to Yellowstone to Uintas Connection. Paris, Idaho. <https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

²⁶ Holechek, J, RD Pieper, C H Herbel. 2004. Range Management Principles and Practices, Fifth Edition. Table 8.11, page 240.

²⁷ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

Using these statistics, we calculated the number of elk that could be supported in Wyoming if livestock were not grazing our public lands.

3,016,445 AUMs x 1,532 = 4,621,193,740 pounds of forage consumed by livestock on public land each year

One elk consumes 14 lb/day x 365 days/year = 5,110 lb/year

Number of elk equivalent to livestock grazed on public lands in Wyoming is therefore,

$$4,621,193,740 \div 5,110 = 904,343 \text{ elk per year}$$

Let's look at the three allotments surrounding the Dell Creek FG that contain elk habitat and the number of cattle authorized to graze. These data were taken from the Annual Operating Instructions for the three allotments for 2021 and are summarized in Table 2.²⁸ Our calculation indicates that there are approximately 14,313 AUMs being consumed by cattle in the three allotments that include elk seasonal, winter and parturition range. If an elk consumes 5,110 lbs of forage each year, then the number of elk equivalent to the livestock forage consumption is:

14,313 AUMs x 1,532 = 21,927,516 pounds of forage consumed by livestock on the three allotments each year

One elk consumes 14 lb/day x 365 days/year = 5,110 lb/year

Number of elk equivalent to livestock grazed on the three allotments is therefore,

$$21,927,516 \div 5,110 = 4,291 \text{ elk per year}$$

²⁸ USDA. 2021. Annual Operating Instructions for Fisherman Creek, Hoback and Jack Creek allotments. Bridger-Teton National Forest.

Table 2. Animal Unit Months for Fisherman Creek, Hoback, and Jack Creek Allotments

Allotment	Livestock Type	Numbers	Dates Grazed	AUMs*
Fisherman Creek	Cow and Calf	711	June 11 - Oct 15	2,947
	Yearling	691	"	1,432
	Horse	37	"	77
Hoback	Cow and Calf	692	June 11 - Oct 15	2,868
	Yearling	1,944	"	4,029
	Horse	17	"	35
Jack Creek	Cow and Calf	330	June 11 - Oct 15	1,368
	"	47	June 11 - Oct 20	203
	Yearling	627	"	1,351
Totals		5,096		14,313

*For simplicity we counted a yearling and horse as equivalent to 0.5 AUM each.

The AOIs for these allotments allow 50% utilization in riparian areas and 40% in uplands, but there are questions as to whether these standards are met or whether sufficient forage exists to support the livestock or elk that use, or potentially use, these allotments. We have addressed issues with the current monitoring and management of allotments by the BTNF in several letters or comments referenced above.

A recent example are our comments on the Elk Ridge Complex Supplementation Project Environmental Assessment.²⁹ We collected forage data on the allotments covered by this EA and found that current forage production was significantly lower than that predicted by the soil survey and ecological site descriptions, in fact, it was approximately 10% of the potential amount. This meant that the predicted stocking rate of 603 cow/calf pairs could not be supported at the allowable use standards provided. In addition, the allowable use standards do not leave adequate cover (retention) for amphibians, birds, and small mammals. In fact they provide for less than one inch residual vegetation height on the key species.

We determined that the key species method used by the BTNF is not proper; and that agency monitoring is flawed. We provided photos of some areas in currently grazed allotments managed with these allowable use standards showing that aspen stands have lost much of their herbaceous understory and lack recruitment; that monitoring locations in upland areas are selected for minimal use by livestock (on ridges and far from water); that streams continue to suffer downcutting and degraded riparian areas; that riparian areas are not actually monitored and the green line stubble height is not representative of riparian use; that riparian residual vegetation heights following livestock grazing are very short and not providing cover and forage for birds, mammals and amphibians. See, for example the photos of the Fisherman Creek riparian zone on p25 of those Elk Ridge comments. We also documented over 100 trespass cattle into the vacant Elk Ridge Complex showing that those cattle from the Upper Green Complex are not being properly managed or controlled. Also see our letter to the BTNF

²⁹ <https://app.box.com/s/8w485mxxrpbzbrh2v52n59ozkuud5v49>

critiquing monitoring on the Upper Green Complex.³⁰ For management related to elk FGs, these problems must be corrected to avoid guesswork and provide the public with a data- and science-based analysis.

It is incumbent on the BTNF in its analysis of the Dell Creek FG to document the current state of the plant communities and forage base on the Fisherman Creek, Hoback, and Jack's Creek allotments as well as the seasonal, crucial and parturition ranges for ungulates to determine whether sufficient forage is available to support the livestock being authorized, the potential elk, deer, pronghorn, and moose populations, to provide cover for migrant birds, amphibians, and small mammals, and to provide for watershed protection. These three allotments were chosen to encompass much of the winter range identified in the WEST report for Dell Creek FG. Similarly, for Forest Park the analysis should look at the allotments in which seasonal, winter and parturition range occurs and evaluate the ability of those allotments to support the Forest Park elk in the absence of the FG.

Then there is the question of what ranchers are doing to provide residual forage on private lands that are historic foraging areas for deer, pronghorn, elk, and moose. This past year we have inspected private lands bordering Highway 189/191 between Bondurant and Daniel and found that the valleys are grazed completely with little residual forage going into winter. These private lands are grazed once the livestock leave public lands and enter the valleys and surrounding habitats before winter feeding begins. The Hoback Ranches (HR) residential development bordering the BTNF lies between the McNeel and Franz FGs and is not grazed by livestock. (Figure 5). HR and adjacent areas on BLM and BTNF are used below as examples where livestock access is not available, either through land use covenants or on public lands bordering HR where topography or fencing excludes livestock. HR is a private land block of 7,500 acres with covenants preventing livestock. In these places not grazed by livestock, the plant communities are available for wildlife, including elk. We note that elk from McNeel FG migrate through HR to Franz FG and feed within the HR.

³⁰ Carter, J. 2022. Letter to Patricia O'Connor in Reference to Upper Green Cooperative Range Monitoring. January 3, 2022. <https://app.box.com/s/r05zd3iteyx4fb115f53q5pxp7bnu5md>



Figure 6.

Upper - Fall 2021, private land along Hwy 189/191 north of Daniel grazed prior to winter leaving no available residual for wildlife.

Lower - Fall 2021, same location showing residual grasses providing some forage in HWY 189/191 ROW on left with grazed private on right.

In winter, when deer or elk dig through the snow in these grazed areas, they will find little to no forage for the energy expended.





Figure 7.

Upper - Fall 2021, BTNF Fisherman Creek allotment adjacent to Hwy 189/191. This riparian meadow is grazed beyond standards leaving no available residual for wildlife.

Lower - Fall 2021, Fisherman Creek allotment upland on access road to Hoback Ranches showing low growing grasses and little residual for wildlife.

In winter, when deer or elk dig through the snow in these places, they will find little or no forage for the energy expended.





Figure 8.

Upper - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

Lower - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

In winter, when deer or elk dig through the snow in these places they will find little forage for the energy expended.





Figure 9.

Left - Summer 2021, Forest Svc and BLM managed land adjacent to Hoback Ranches. These locations are isolated by topography and a fence, and not grazed by livestock.

Right - Summer 2021, adjacent grazed private land showing little residual vegetation.

D. Snow Depth

WGFD has indicated that a snow depth of 20 inches or more with crusts and ice forming may indicate feeding is necessary.³¹ Elk may move through snow up to three feet deep.³² We were interested in snow depths in the region near the Dell Creek FG and looked up SNOTEL and ACIS data for three locations ranging from lower to higher elevations and along potential migration routes between Bondurant and Pinedale. The station metadata is shown in Table 3 and a map in Figure 10.

Table 3. Metadata for SNOTEL and ACIS Stations

Station Name	Network	Latitude, degrees	Longitude, degrees	Elevation, ft.
Bondurant	ACIS	43.20	110.40	6,620
East Rim Divide	SNOTEL	43.13	110.20	7,930
Pinedale	ACIS	42.87	109.87	7,180

We looked at the period from 2011 to the current day to determine the number of days that snow depth exceeded 20 inches for the three stations and for the higher elevation East Rim Divide we also looked at the number of days above 3 feet snow depth which could limit elk movement. The data is plotted in Figures 11 - 13.

Statistics on the timing of snow depth relative to ability of elk to forage or migrate for these three stations are summarized in Table 4. These are station statistics and don't necessarily reflect site specific data for elements of winter range where depths may be less such as south or west-facing slopes. They are useful in looking at the length of time snow cover may limit foraging or migration and illustrate that current numbers of feeding days may be longer than necessary. We used the foraging depth limit of 20 inches and the migration depth limit of 36 inches as noted in the WGFD reports cited above.

The Bondurant station is representative of conditions at Dell Creek FG and can be used for estimation of the minimum, maximum and average number of days elk may be limited in foraging. In some years the snow level did not reach the foraging depth limit, but on average there were 68 days in which foraging could be limited. In heavy snow years, this increased up to 128 days. It would be expected if forage is available, the elk would migrate to where the forage occurs. In this case, based on migration patterns, it could be to the south across the East Rim Divide.

The East Rim Station is representative of snow depths at the East Rim Divide, the higher elevation barrier elk would negotiate to move south. At the migration limit of 36-inch snow

³¹ Wise, B. 2021. Western State Management of Wintering Elk. Wyoming Game and Fish Department.

³² Oneale, E. Undated. Rocky Mountain Elk. Wyoming Game and Fish Department Habitat Extension Bulletin No. 27

depth, there would be some years in which it is not a barrier (minimum of 1 in our 10-year date range). The average number of days snow depth exceeded 36 inches was 49 and the maximum 94 days. The question is whether elk would move up over the East Rim as snow depths limited foraging in the lower elevations, since it stands to reason the depths would be greater at the higher elevation on East Rim Divide. Since they are reported to move from McNeel FG to the Franz FG, and we observe this movement in HR, it appears likely they would do so.

The Pinedale station is representative of the lower elevations to the south where, ostensibly, elk could winter. It is characterized by shorter periods when snow depth can be limiting. This ranged from 1 day to 63 days with an average of 19 days when snow depth exceeded 20 inches. South or west facing slopes could have lower depths allowing foraging. We recently observed mule deer in the Highway 189/191 ROW resting in about a foot of snow on a south facing slope. They were foraging there while snow depths in other locations were deeper. The BTNF EIS analysis should look at the differentials for snow depth with slope, aspect and elevation as applied to winter range and migration routes to define availability of suitable areas for elk foraging and migration and put special management emphasis on these areas to ensure forage is available and migration can occur.

Table 4. Snow Depth Statistics for SNOTEL and ACIS Network Stations 2011 - 2021

Station Name	Min/Mean/Max Days Above	Date Range for Onset of Depth Limit	Date Range for End of Depth Limit
Bondurant	0/68/128 > 20 in.	12/21 - 2/8*	3/15 - 5/1
East Rim Divide	95/123/152 > 20 in.	11/26 - 1/4	4/9 - 5/4
East Rim Divide	1/49/94 > 36 in.	1/7 - 3/22	3/3 - 4/21
Pinedale	1/19/63 > 20 in.	12/24 - 2/20	12/27 - 3/20

*2017 never exceeded 20-inch snow depth.

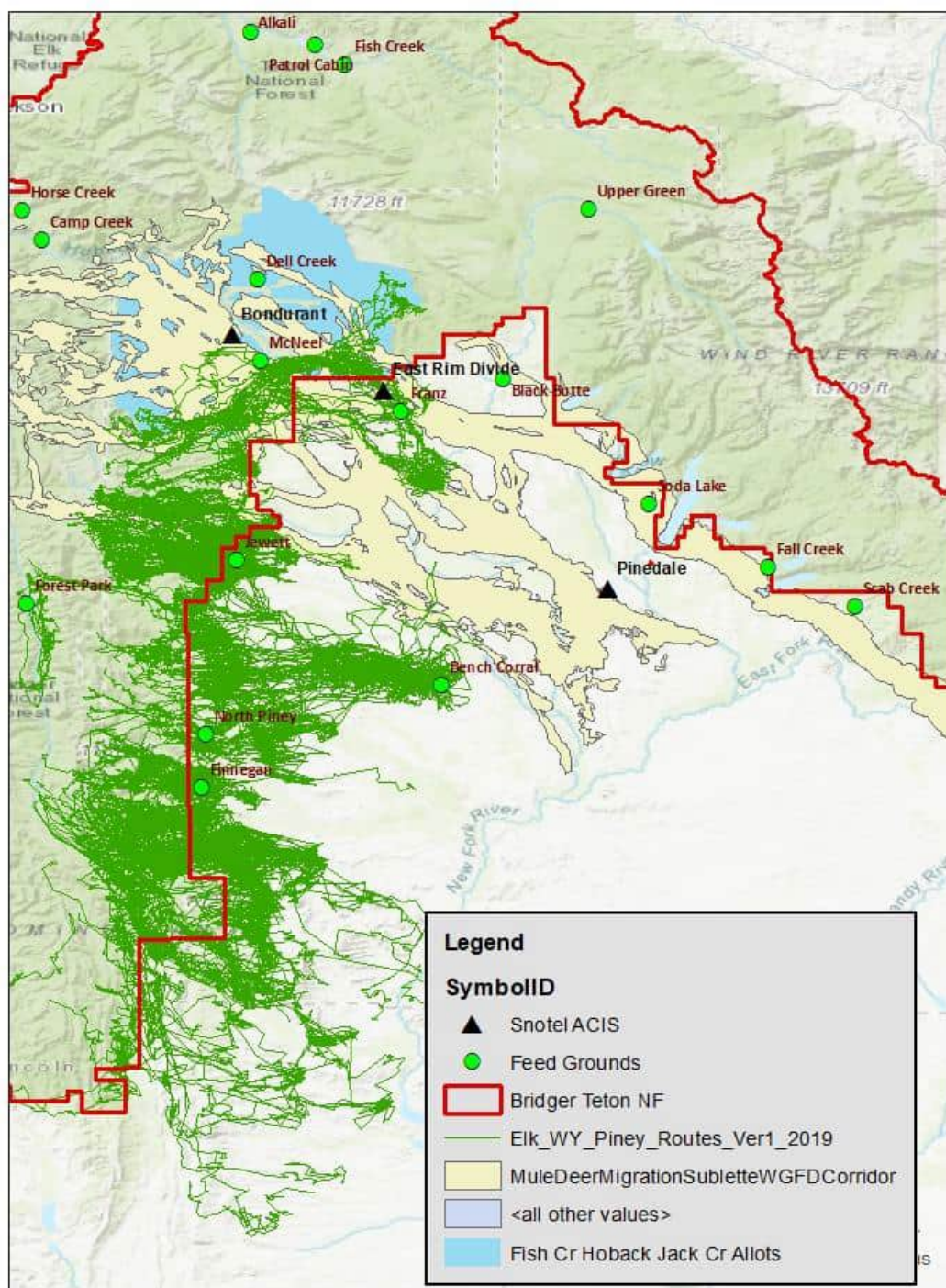


Figure 10. Snow Depth Monitoring Locations and Migration Routes

Figure 11. Bondurant ACIS Snow Depth

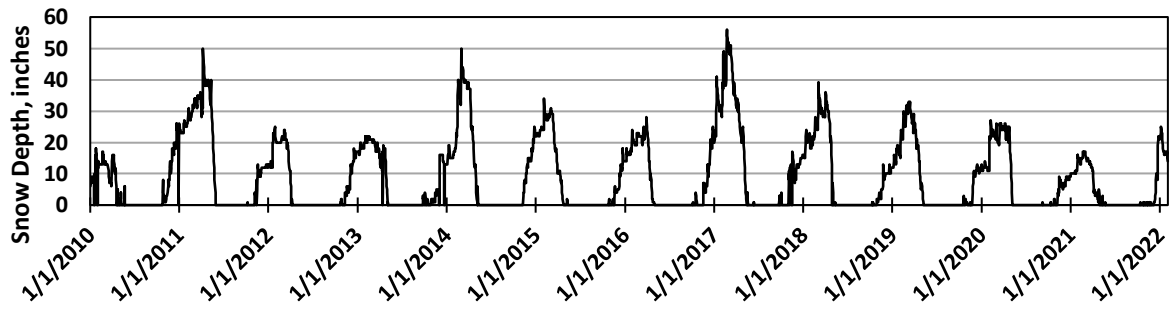


Figure 12. East Rim Divide SNOTEL Snow Depth

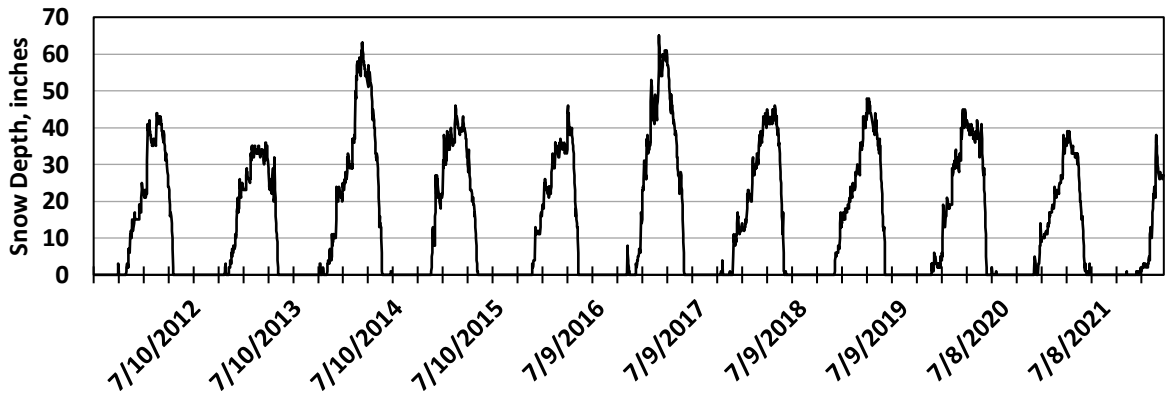
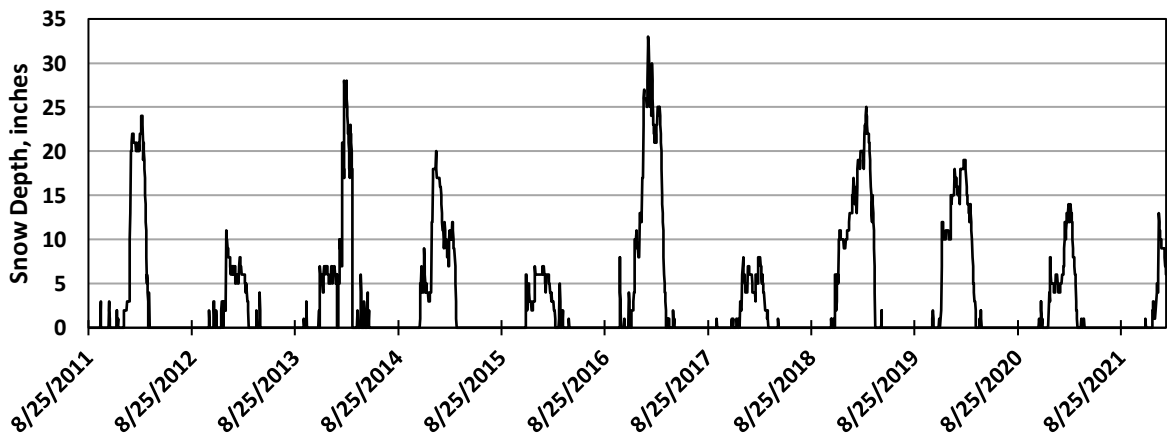


Figure 13. Pinedale ACIS Snow Depth



E. Phaseout of Dell Creek and Forest Park, and Providing Native Forage

According to the WEST report³³, Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135, far exceeding the ranges we found by analyzing snow depth. According to the WEST report, these long periods gave both FGs a poor ranking to have successful transitions to native range. The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range.

The McNeel FG is very near Dell Creek FG and would need to be included in the analysis. According to the WEST report, the McNeel quota is 600 elk with an average fed of 578 animals. McNeel has 36,699 acres of native potential range within a five-mile radius constituting 73% of that overall area. Any analysis of Dell Creek must consider the effects of McNeel and the native range for both. For Dell Creek, these crucial and parturition ranges would be partially included in the Fisherman Creek, Hoback and Jack's Creek allotments described above. See Figures 14 - 18 for migration routes and the overall relationship of all FGs to the BTNF and elk crucial and parturition ranges. The WEST report also noted that elk from McNeel FG move across the Rim to the Franz FG on BLM. As mentioned, we observe the elk here in Hoback Ranches in early winter, then some appear to move south through HR as the snow deepens.

Figure 14 shows the FGs, elk migration patterns, and the mule deer migration route in Sublette County. Elk movement relative to the FGs shows that elk from Forest Park FG move across to the east into Sublette County and the FGs adjacent to the BTNF. The McNeel FG migration pattern is also shown. What is missing from this WGFD data is the migration relative to Dell Creek FG. What we may say is that the presence of crucial, seasonal, and parturition range that is present in the five-mile radius from Dell or McNeel (WEST Report) would imply migration between those summer and winter habitats.

Ultimately, these FGs must all be closed to limit disease spread between wildlife species and between wildlife and livestock by reducing the seroprevalence in wildlife. However, closing Dell Creek and Forest Park can lead to the elk moving onto other existing FGs, thus continuing

³³ WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

the concentration of animals. Dell Creek elk could move to McNeel, for example. We advocate for closure of all FGs, including Dell Creek and Forest Park, which are the subject of this scoping. This EIS should be expanded to analyze all FGs on the BTNF with a selected alternative for closure of them all. In addition, the Forest Service must work with BLM and the State of Wyoming for closure of the remaining FGs. Any alternative and analysis that does not include addressing all FGs is not adequate because the cumulative effects of all FGs are a single problem, the FGs are interrelated and until they are all eliminated, CWD and other diseases will continue to have high seroprevalence and thus the continuing issue with livestock.

We recommend the following steps to address this issue:

1. Close Dell Creek and Forest Park FGs immediately upon issuing a record of decision. We have pointed out that there are other FGs the animals can access until all are closed, and that there is summer and winter range in the tens of thousands of acres within reach.
2. Require WGFD to reduce the feeding period at the other BTNF FGs. The scoping letter notes that feeding would occur between November 15th and April 30th. This overlaps the brucellosis risk period. The feeding period should be reduced to the minimum to escape the high-risk period of exposure at FGs. Ranchers can protect their hay stacks and winter feeding areas.
3. Because native forage and access to it is a key factor to provide alternatives to the FGs, an assessment of the current state of native forage and its seasonal availability must be determined. Forage capacity must be determined by field measurements. Snow depth measurements and modeling must be used to determine the seasonal availability of forage based on snow depth. We have shown some evidence here that neither the BTNF nor private landowners are leaving adequate residual forage for wildlife. Now this must be quantified by identifying all the crucial, parturition and seasonal elk habitat on the BTNF, measuring summer and winter forage availability, and adjusting livestock grazing to accommodate elk and other ungulates to inform the EIS analysis and support a meaningful alternative for closure of FGs.
4. Map, describe, and analyze the outcomes of all past habitat treatments implemented in association with the FGs and on BTNF managed lands, their current condition, native forage productivity, and capacity for wildlife.
5. Livestock allocations must be reduced in these elk habitats by: updating the capability and suitability analysis of all allotments that contain parturition and crucial range to current forage production and livestock forage consumption rates. Reduce the allowable use standards. Annually rest or permanently close pastures that occur in these critical habitat areas to reduce livestock/elk overlap or co-mingling. The science validates 25% allowable use criteria and the need for rest of grazed areas, and this must be accurately monitored by correcting current monitoring issues we have identified. Herding must be used to control livestock use and co-mingling in these areas preferred by elk.

6. Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex, among others.
7. Predators and scavengers must be protected so they can provide their essential role in dispersing animals, reducing the presence of contaminated animal remains, and reducing environmental contamination. The BTNF can effectuate this by using its Prohibition Authority to eliminate hunting and trapping of these animals within the bounds of the BTNF. We remind the Forest Service it has primacy over management on public lands and is a cooperating agency with the State of Wyoming, not its servant.
8. The BTNF must identify migration corridors for elk, deer, pronghorn, and moose that occur on the BTNF and ensure through quantitative monitoring that these migration routes are fully functional in terms of cover and forage, that migration barriers are eliminated, and that they also connect with migration routes in other ownerships.
9. Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF with a priority on grizzly bear habitat and security, elk habitat and security.
10. The State of Wyoming is conducting stakeholder meetings to address the long-term fate of FGs. Unfortunately, this process has already arrived at the predetermination by the State Director of WGFD that FGs will not be eliminated even though its own planning in the past has acknowledged that closing the FGs is important to control disease. The BTNF can do two things. First, close all FGs on the BTNF as there are past examples of this that work. Second, get engaged with the State, BLM, and private landowners to provide forage and migration for these animals on lands managed by other entities.

In our Attachment to these comments, we have provided the pros and cons of closure and a rebuttal to the arguments against closure by Mr. Lloyd Dorsey. The supporters of continued feeding are mainly hunters and livestock producers. We have shown the relative value of livestock production on the BTNF is minor to the local and regional economy. We have also shown that other states continue to sell licenses with much lower harvest success (46% in Wyoming vs as low as 11% in Washington with more hunters than Wyoming). Most livestock producers already fence their haystacks and can also fence their winter livestock feeding operations. Subsidies are available to help with this. WGFD would save over \$2 million in annual costs by not continuing feeding.

Please Reply To:



John Carter, Ecologist
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922

Michael Garrity – Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624

Sara Johnson – Executive Director
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

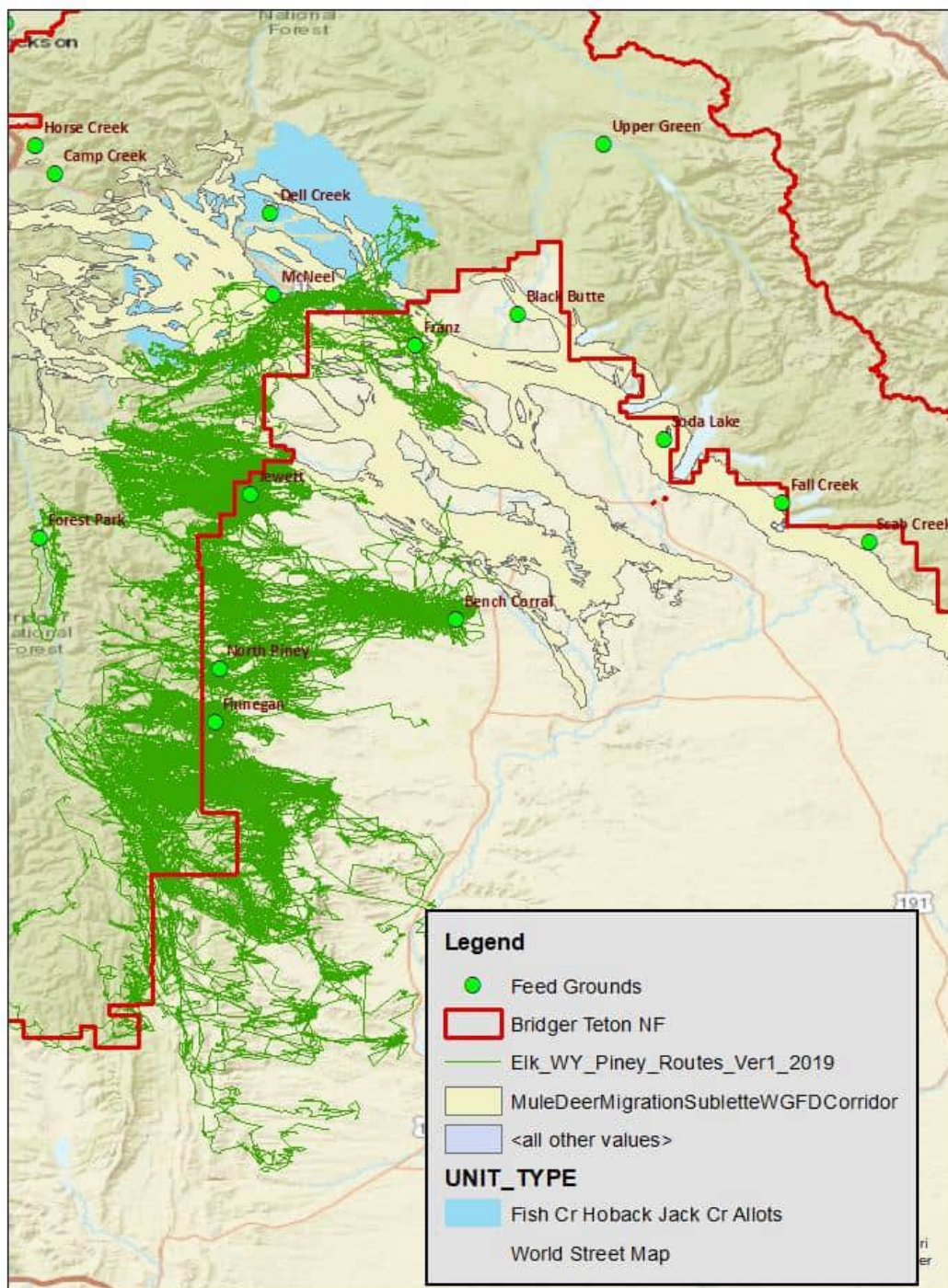


Figure 14. Elk Feedgrounds, Migration Routes and Grazing Allotments

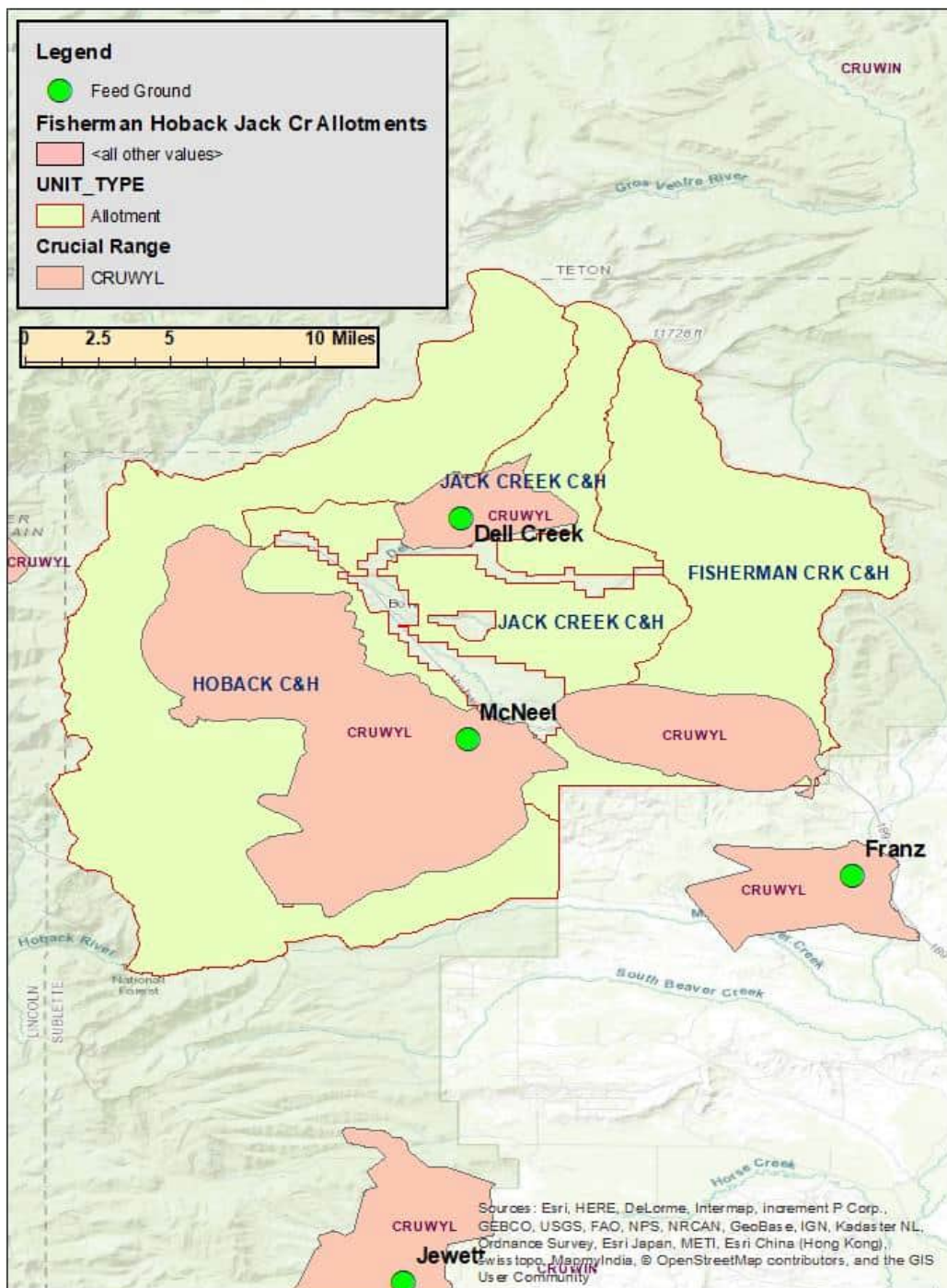


Figure 15. Dell Creek and McNeel FGs, Crucial Range and Grazing Allotments

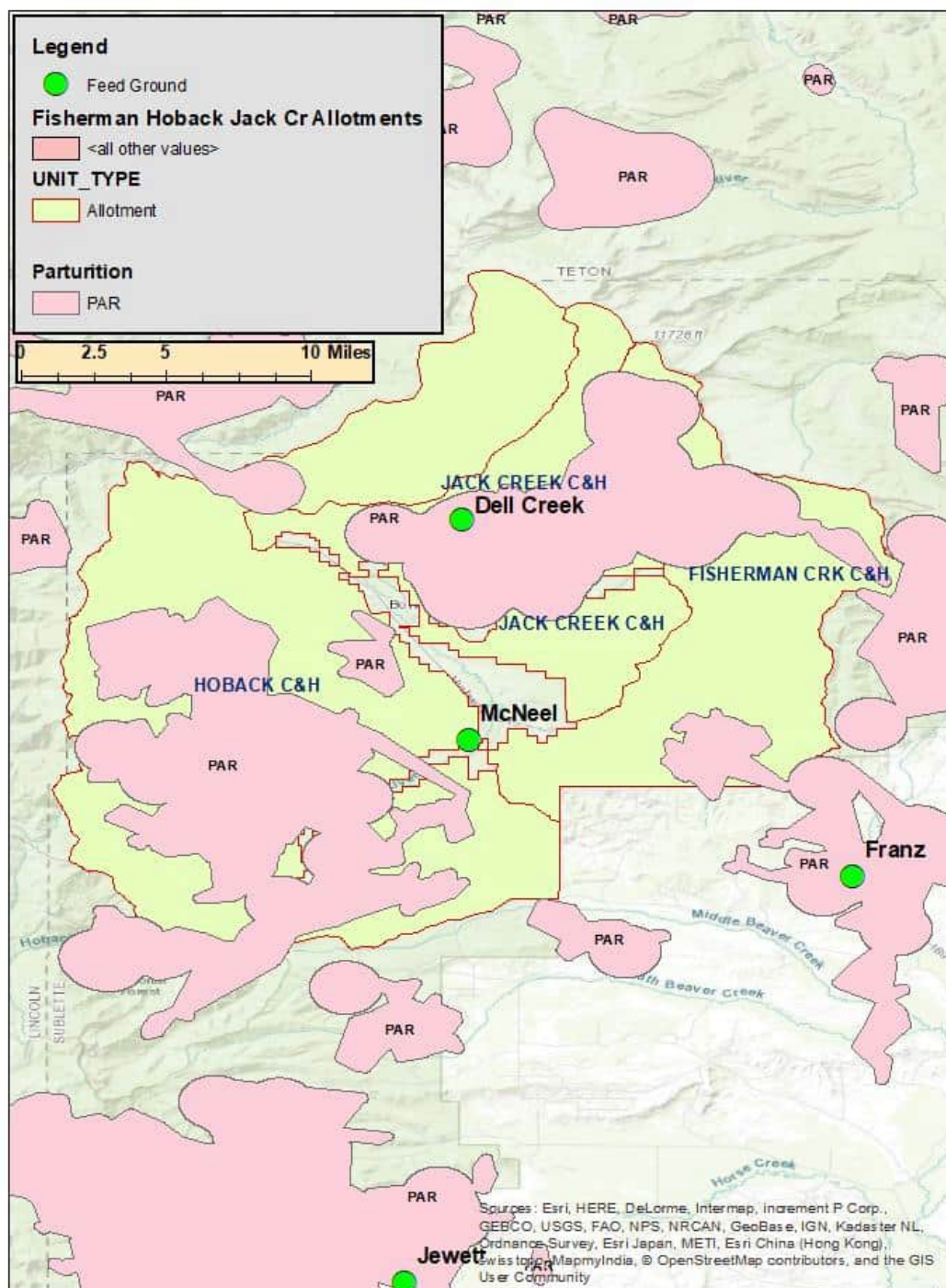


Figure 16. Dell Creek and McNeel FGs, Elk Parturition Range and Grazing Allotments

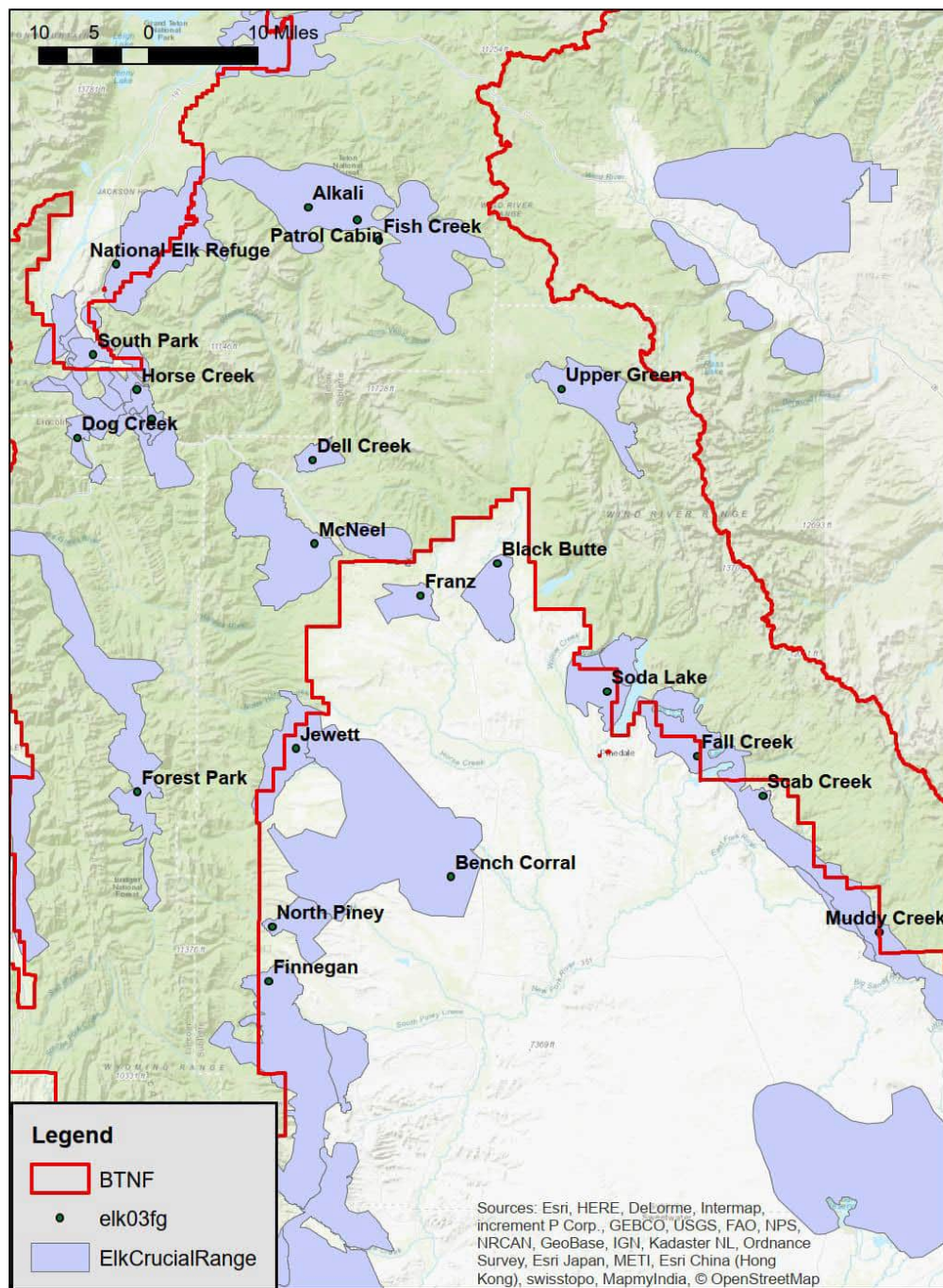


Figure 17. Elk Feedgrounds and Elk Crucial Range

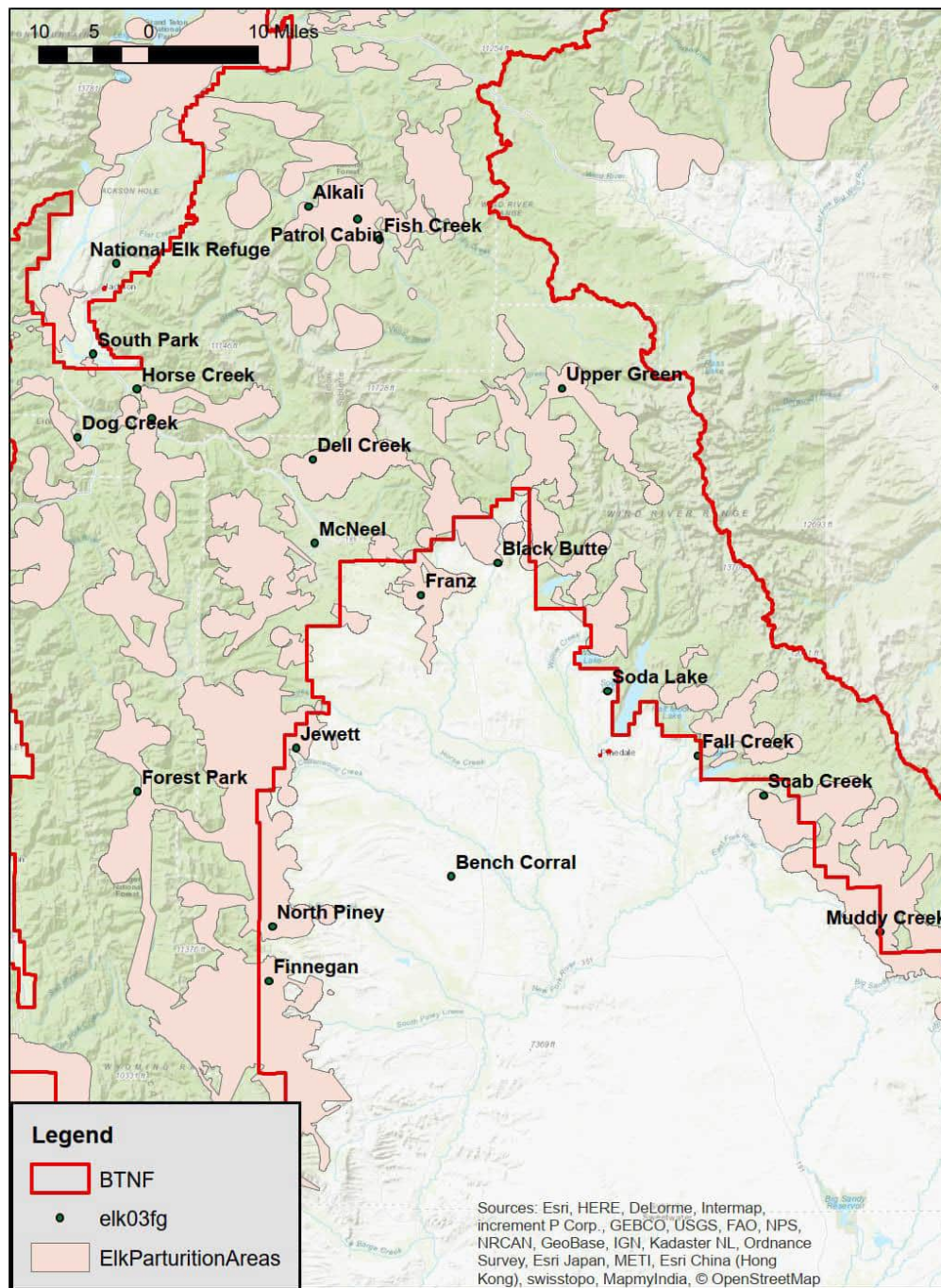


Figure 18. Elk Feedgrounds and Parturition Range

ATTACHMENT 1

Y2U, AWR and NEC Scoping Comments Dell Creek and Forest Park FGs

February 11, 2022

The following pages are notes summarizing content of information sources used in developing scoping comments for the Dell Creek and Forest Park FG EIS. They are not in any particular order, but can be word searched.

WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

Wy lost brucellosis free status in 2004 when it was found in a Sublette County herd. Increased surveillance, research, and brucellosis management action plan (BMAP), and lack of infection in 2005, Wy regained its brucellosis class-free status in 2006. Objectives of the BMAP were to: 1) document and analyze all available quantitative and qualitative data regarding brucellosis, 2) use available data to develop management options to reduce risk of brucellosis transmission among wildlife and from elk to cattle, and 3) select appropriate management options for implementation in the Big Piney Elk Herd Unit (BPEHU).

Currently, five feedgrounds are located within the BPEHU: Franz, Jewett, Bench Corral, North Piney, and Finnegan. All feedgrounds in this Herd Unit (excluding Bench Corral) are located along the border of BLM or private lands and USFS lands and were established “uphill” from livestock operations primarily to prevent damage to stored hay (and later, prevent commingling).

In the BPEHU, of 1,574 sq mi, 17% is in winter range categories. Brucellosis was likely transmitted from domestic livestock to free-ranging bison and elk just prior to 1917 (Meagher and Meyer 1994) after repetitive commingling and subsequent contact with aborted fetuses contaminated with brucellosis. Brucella transmission usually occurs via the oral route, with ingestion of bacteria that are shed by infected females in high numbers in aborted fetuses, fetal membranes and fluids, uterine discharges, and milk (Siello and Marys 1998). Determining if an animal is infected with *Brucella abortus* is accomplished only by removing select tissues (e.g., the reproductive tract and/or lymph nodes surrounding the reproductive tract) from the suspect animal and culturing the bacteria from these tissues.

23 winter elk feedgrounds exist in western Wyoming, including the National Elk Refuge. FGs are used as substitutes for native winter range and to minimize depredation of winter hay stores, winter mortality, and elk-cattle commingling. About 13,000 elk are fed on WGFD FGs annually.

Wyoming Livestock Board defined the exposure period for cattle as 1 Jan to 1 May. Brucellosis abortion events in captive and FG elk have been documented from late Feb to June.

Concentrating elk on FGs likely increases the rate of intraspecific transmission. This explains the seropositive levels of elk at 26%, 2% and 0% on, adjacent to, and completely independent of feedgrounds. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Elk from this allotment "are assumed" to be mostly independent of FGs, thus posing little risk.

A vaccination program for elk began in 1985 with 95% of calves vaccinated with Strain 19 annually on every feedground except Dell Creek. Dell Creek is a control site to assess the program. Between 29 - 62% of elk tested were protected by Strain 19. Seroprevalence between vaccinated and non-vaccinated elk are not significantly different.

Tout vegetation treatments as increasing herbaceous species used by elk, and may reduce the length of feeding season, reduce elk density on FGs, reduce intra-specific disease transmission, and influence distribution. Speculate that veg treatments in Buffalo Valley encouraged native forage utilization by that herd. The Buffalo Valley herd had lower seroprevalence (2.7%) than those using FGs (26%).

Brucellosis seroprevalence rates in elk attending feedgrounds with substantial habitat treatments and/or access to native winter range appear to be lower than those on feedgrounds with minimal to no access to additional feeding opportunities (WGFD unpublished data). Among the recommendations produced by the Brucellosis Coordination Team (BCT) was a call for further enhancement of winter elk habitat (Wyoming BCT Report 2005).

Field studies have documented scavengers consuming pseudo-aborted bovine and elk fetuses faster on (33hr, 18.9hr) than off (57.5hr, 33hr) feedgrounds. Primary scavengers (based on total mass of fetus consumed and/or removed) include coyotes, foxes, and eagles, with magpies and ravens as secondary scavengers. Coyotes can be infected with brucellosis, presumably from ingestion of contaminated tissues and/or fluids. no confirmed case of natural interspecific transmission has been observed (Forbes 1990). Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis. Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis.

Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, reducing the feeding season. Shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to feedgrounds is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due

to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. Shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling.

Short term objective is to reduce co-mingling and prevalence in elk. Long-term objectives to eliminate brucellosis in wildlife in the GYE, maintain producer viability, reduce, or eliminate dependence of elk on FGs, maintain herd objectives, improve range health, maximize benefits to all wildlife.

In 1995 elk were relocated from the long duration late season North Piney FG to Bench Corral using baited hay. Elk continued to migrate to Bench Corral after that. This decreased risk of inter- and intra-specific transmission, and costs. No differences in utilization in the three affected allotments were documented. North Piney reclassified as a staging area FG before migrating to Bench Corral.

Each FG is a separate situation, requiring a different approach. Some FGs may have no options given current herd objectives and other conditions. Cattle and elk must be separated during the risk period. Eight options are considered:

9. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- a. Suitable areas lower in elevation with no winter cattle operations
- b. Evaluate current habitat to determine production, veg health and potential
- c. All PFO BLM lands leased for grazing
- d. Purchase AUMs for forage reserve
- e. These five FGs are not candidates for this option due to potential for damage and co-mingling
- f. Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, reduce browsing on local native vegetation
- g. Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, increase competition with other species

10. Eliminate FGs

- a. Not an option given current herd objectives and current conditions. These would need to change.
- b. Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Pine EHU, reduce FG and vaccination expense.
- c. Cons include increase risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, reduce vaccination feasibility.,

11. Reduce elk numbers through harvest

- a. Reducing number thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, emphasis on females, and other strategies.

12. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option

13. Elk proof fencing of FGs or private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

14. Habitat enhancement projects in winter range

- a. Facilitated by options 2,3,4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high risk transmission period, and create vegetative diversity, improve range conditions for livestock and wildlife
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, may increase invasive species.

15. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, secure future revenue for WGFD,
- e. Cons are expensive, limited availability of land with potential, requires landowner willingness.

16. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, effective vaccine still lacking.

Coordination Meetings

WGFD - reclassify and manage North Piney FG as a staging area/FG but not for relocation or elimination. Elk that leave will not be hazed back, but allowed to migrate to Bench Corral. May consider baiting to Bench Corral, reducing feed, establish cutoff date for feeding.

WGFD, BLM, NRCS, APHIS - Discussed all options but 4, 5, 6, 7 of most interest. All agencies agreed that pursuit of Option 6 when feasible, but securing a forage reserve to assist implementation. This would be facilitated most by working to implement the conservation easement option.

Producers - First meeting attendance was poor, but all options discussed with no significant recommendations made. Second meeting provided draft BMAP. WGFD, BLM, APHIS attended along with 4 producers. No significant recommendations.

Producer Survey

Most producers supported relocation of FGs, Fencing stackyards and feedgrounds, vaccination. Most were opposed to eliminating FGs with modest opposition to acquiring native range. Opinions on other options were mixed.

Dorsey, L. 2015. What Happens When Elk Feeding Ends. Prepared for Wyoming Wildlife Advocates.

1. Eliminating FGs impractical - FGs have been successfully ended in Yellowstone, eastern Idaho, North Piney, and Deseret Ranch. Only 3% of Rocky Mtn Elk are fed. Rocky Mtn Elk do well without artificial feeding.
2. Development in winter range - Most lands in the three WY counties are public, thereby not developed with the 20 million acres GYE comprised of 80% public lands with vast areas of winter range. Colorado, with nine times the population of WY does not feed elk, yet has three times the elk and twice the cattle as WY.
3. Available habitat will require reduction of elk - The elk population objective is 81,275 which is 37% below the current population of 112,000.
4. Elk will starve in harsh winters - Other states have similar climates and the elk range freely and remain health through the winter. Moose, bighorn sheep, pronghorn, and deer also range freely and do well.
5. If not fed, elk will be in neighborhoods - Most of the area is open space and people can fence if concerned. If palatable plants are not planted, then the animals will move through. Most people value the wildlife in their area.
6. If no FGs, elk will get into haystacks and mingle with livestock - Most haystacks are fenced, which is normal. Fencing around livestock winter feedlines is also common. Money is available for fencing. Idaho requires fencing haystacks and feedlines.
7. Predators will go hungry and threaten people - Most of the hundreds of thousands of ungulates in the GYE are not fed and predators will not suffer from lack of prey. Bears, wolves, and mountain lions have not posed a threat to people. Domestic animals like horses, cattle, dogs kill dozens of people each year and no one thinks of them posing a threat.
8. Predators will follow elk into neighborhoods - While this happens, even in Jackson where feeding occurs, some do follow the elk and scare people. WGFD relocates or kills the animal. If fencing or not planting palatable plants is practiced, the elk will move through. Teton County passed an ordinance prohibiting feeding of deer and elk.
9. Reducing FGs or numbers of elk will harm the economy - the Jackson elk herd has declined in numbers, yet the local economy has improved. Over the long term, disease could lead to loss of elk, moose, and deer due to the concentration on FGs. Experts say to spread elk out, conserve abundant predators to keep herds spread out and healthy, so disease doesn't cause the loss. Phasing out FGs will pay dividends.
10. Hunting licenses and WGFD funding will suffer - WGFD could save over \$2 million by closing FGs. Could attract wildlife watchers for funding. Our hunting success rate is double that of surrounding states (40% v 20%). Could still sell the licenses and let the rate drop toward that of other states.
11. More elk on roads - Surrounding states have more elk than WY and don't feed, plus the number of elk on FGs is a small part of the population. People are used to deer, elk and

other animals crossing roads and in neighborhoods. Tools are available to mitigate risks to the wildlife and people.

12. Elk can't learn to migrate - Elk behavior is innate and if habitat is available, they will move from harsh climes to less harsh. Protected lands are large and connected, which means they can move across seasonal ranges if allowed.
13. If FGs end - Elk will be spread out across the vast protected landscapes and with predators on the landscape to keep herds dispersed and healthy.
14. Conclusion - CWD will arrive in the FGs and given that elk do well as free ranging herds and in our Rocky Mtn winters without feeding, that we have perfected fencing and have over or under passes and given science supporting ending FGs, it would be impractical not to quickly phase them out before it's too late.

Galloway, N. L., R. J. Monello, D. Brimeyer, E. K. Cole, and N. T. Hobbs. 2021. Supporting adaptive management with ecological forecasting: Chronic wasting disease in the Jackson Elk Herd. *Ecosphere* 12(10): e03776. 10.1002/ecs2.3776

Population data from management of the Jackson elk herd were modeled to consider potential effects of CWD on populations. CWD population effects were simulated based on data from the infected Rocky Mtn National Park population. The effects of management (hunting) were also incorporated into the model. It was estimated that CWD could reach 12% of the population but could range up to 20%. When superimposed on recruitment rates for the past two decades, the model predicted a prevalence of 7% in females would cause the population growth rate to drop below 1 which results in a population decline when female harvest was zero. They could not rule out this effect with a threshold as high as 23%. A time-invariant transmission rate was used, which could change with actual data from concentrated populations. Natural selection for resistance was not expected over the near term with expectations under "worst case" transmission scenarios reaching out to 75 - 100 yrs.

Other research cited observations from captive and free-ranging herds that indicate CWD may have "greater impacts on elk in relatively high-density settings". This is the case for the Jackson elk herd as well as other feedground situations.

In addition, the Bison and Elk Management Plan (2007) strategy is to reduce reliance on supplemental feeding. It is noted that reduction in elk population size and improvements to available natural standing forage "have been unsuccessful in reducing elk density on the refuge winter range."

Elk that migrate over long distances may have an advantage by spending more time over a large area, thus lower density. Intermixing on feedgrounds may negate this effect. [FGs bad under any scenario] Short distance migrants may have higher body condition, thus and their higher recruitment might mitigate impacts on populations growth, but negative factors would then include more vehicle collisions, more co-mingling with livestock, more property damage and decreased hunting opportunity.

"Given that the CWD effects in the model were based on Rocky Mountain National Park in a lower density elk population, it would seem advisable to reduce the areas of higher concentration on the refuge before CWD reaches endemic levels, which may prove to have a much larger impact than that estimated here on crowded herds typical of feed ground populations. Lower population densities may also have the added benefit of increasing recruitment rates (Proffitt et al. 2014), which are relatively low in this population, and allow the population to both handle a higher prevalence of CWD before λ is reduced below 1 and allow for a greater proportion of elk to be sustainably harvested on an annual basis."

Wilkinson, T. 2019. Wildlife Diseases: A Global Expert Takes Stock of Greater Yellowstone. Mountain Journal May 20, 2019.

Princeton scientist, Andy P. Dobson, studies the ecology of infectious diseases and the conservation of endangered and threatened species. His work has spanned the world and he compares the Greater Yellowstone Ecosystem to the Serengeti in Africa where most of the original fauna of the last 1,000 years is still intact. He worked with Yellowstone scientists on the issue of brucellosis and bison.

Of interest is his observation that pathogens and parasites play in natural ecosystems, suggesting that as much as 90% of biodiversity is parasitic on the 10 percent we study. Predators and herbivores carry pathogens that drain their nutritional resources and "occasionally gain an advantage that leads to epidemic outbreaks". He expresses a need for a better understanding of how natural communities operate and how populations are regulated that includes an understanding of the role played by parasites and pathogens. "Many ecological and wildlife management debates are acrimonious because people forget to consider the role of disease."

Dobson notes that brucellosis is "largely a consequence of feeding elk in winter in Wyoming when it might be better to let their populations settle to lower levels with healthier populations." "CWD presents an expanding and increasingly worrying threat to elk, mule deer and cattle. It's a consequence of loss of coyotes, wolves and other predators from the West over the last fifty years combined with efforts to ranch stock on really poor soils where they are so nutritionally deprived that they gnaw on old carcasses and become infected with prions from animals that have died from CWD." "if you have wolves, and coyotes they kill and consume these weakened animals and effectively remove CWD from the ecosystem."

"Wolves and coyotes are our strongest defense against CWD, particularly wolves – they are pursuit predators who always focus on the weakest animals in a group of potential prey. As CWD manifests itself by reducing locomotory ability, wolves will key in on this and selectively remove those individuals from the population. These animals are then not available to infect uninfected individuals in the herd – so there's a bonus knock-on effect of selective predation."

When asked about predators spreading the disease thru their own urine and feces, Dobson

notes, " Canids are not susceptible to prions, many millions of years of evolution as scavengers have insured this. During the BSE [Mad Cow Disease] crisis in the UK, it was estimated that a large number of domestic dogs in the UK was exposed to the prions. Not a single dog was ever recorded as infected. So wolves and canids do not transmit the prions/CWD in their feces and urine. It is nonsense to suggest so. Carnivores are also much more territorial in the West and only dispersing individuals range over areas comparable to those of elk, mule deer and pronghorn."

When asked about feeding of thousands of elk on feedgrounds in Wyoming, Dobson's opinion is that: "...it's really dumb. It's much better to let natural regulation reduce elk populations down to levels naturally supported by the landscape. Aggregating elk on feedgrounds at the time of peak Brucella transmission and with CWD looming is arguably the stupidest form of animal management I can imagine."

Thuermer, A. M. 2021. Feds to Reconsider Two Elk Feedgrounds Following CWD Discoveries. Wyofile November 18, 2021.

Angus Thuermer reporting in Wyofile describes the project background. Wyoming Game and Fish Department operates 22 elk feedgrounds that support 14,000 to 20,000 of the 112,000 elk in Wyoming. In addition, the National Elk Refuge supports the 11,000 elk in the Jackson Elk Herd which is managed by the US Fish and Wildlife Service. Fourteen of the feedgrounds are on federal property. Since 2020, CWD has been found in two feedground-supported elk herds. These herds include about 13,000 elk.

His report also provides an interview with the Forest Service which claimed continuing to issue the special use permit for the Dell Creek FG "will not reasonably contribute additional positive or negative impacts (including the potential for disease transmission) to wildlife in the project area" and could lead to "significant adverse effects to elk and cattle, including elk deaths and disease transmission".

Allen, S. and Edwards, H. 2021. Elk Feedgrounds & Infectious Disease. Presentations to the Stakeholders November 9, 2021.

Concentrating animals can lead to rapid transmission of disease. They gave an example of bovine tuberculosis in white tailed deer in Michigan. Cattle were the original source but it spills back and forth between cattle and white tailed deer. It was eliminated in cattle herds in 1974 - 1975 and Michigan attained "accredited-free" status in 1979. But, in 1994 - 1995 a second white tailed deer was found infected and more cases were found. This led to an eradication program, but in 1997, tuberculosis began appearing in cattle again, leading to loss of accreditation. Deer carrying capacities were at or beyond carrying capacity with high densities maintained through feeding. Problems were occurring in areas with (1) high cattle/deer populations, (2) artificial feeding, and/or (3) continuous interactions between cattle and deer. Can't eliminate tuberculosis in cattle without eliminating it in deer.

The Michigan eradication program included a ban on feeding deer, increased harvest quotas, eliminate contact between cattle and deer, continue monitoring for trends, educate stakeholders on managing deer to eradicate TB.

Brucellosis and Its Management on Elk Feedgrounds

Summary of CWD and Elk Feedgrounds:

- Impossible to eradicate once established & always fatal
- No treatments & no vaccines at this time
- Likely to decrease populations over the long-term
- Zoonotic disease?
- Elk feedgrounds become “hot spot” of CWD transmission from prion contamination
- Transmission to deer, elk, and moose
- Prion source likely to sustain elevated prevalence

Summary of Brucellosis & Elk Feedgrounds

- Difficult to eradicate once established in a reservoir population
- Rarely fatal, but causes elk to abort
- No vaccines for elk available
- Currently, with feeding, no impact to elk populations over the long-term
- Within Designated Surveillance Area, economic/trade challenges for cattle producers
- Zoonotic disease
- Elk feedgrounds concentrate elk, which results in more transmission and sustained infected population

Brucellosis is zoonotic, causing abortion in cattle and infects a range of wild and domestic animals. Vaccination can prevent in cattle, but not in elk. Not found in meat and killed by cooking, so low risk to humans from hunting. Bacteria become active in third trimester with fetus and fluids infected. Risk present after Feb 1. Brucellosis decreases livestock production, transmissible to other animals, must quarantine or destroy, increased testing and vet expenses.

Except for the GYA, the US is free of cattle brucellosis. In the Designated Surveillance Area, within the GYA, about 2.6 cattle or domestic bison herds exposed each year. Transmission from elk. High risk herds have movement restrictions, increased testing, vaccination, quarantine. Overall, the state maintains a Brucellosis Free status.

In elk and bison, the abortion rate is 61% and 82%, respectively. In elk leads to a 24% reduction in reproduction. Elk on FGs have a seroprevalence of 25 - 30%, while in bison it is 65%. The map on slide 14 shows the distribution of brucellosis in Wyoming coinciding with the FGs. The WGFD management approach for FGs includes:

- Surveillance
- Elk/Cattle Separation
- Habitat Enhancement
- Feedground Management
- Vaccination
- Adaptive Management

In non-FG elk includes monitoring outside FGs focused on hunter killed cow elk with blood collection kits. The entire state is covered every 4 - 5 years. Seroprevalence in the area of the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 time period. Monitoring in FGs covers 3 - 5 FGs each year to look at seroprevalence over time.

Test and Slaughter worked at Muddy Creek to reduce seroprevalence from 37 - 5% over 5 years, but when the slaughtering ended, the rate increased from 6 - 56% over the next 10 years. Dell creek has a high seroprevalence that has cycled over time with low of 8% in 2004 to a high of 88% in 2019. (Chart)

Methods to separate cattle and elk include winter feeding, elk hazing and stack yard fencing. A map of wildfires and treatments in the FG area reveals a significant number of both covering a large area. (could use files). On FGs, carcass removal and feeding on clean snow are used. Used vaccination from 1985 - 2015 on about 2,500 calves each year.

Adaptive management based on March to May as peak transmission period. The longer the feeding season, the more disease. Using low density feedlines led to a 75% reduction in elk-fetus contacts. Collar data mapped in the presentation shows elk pretty much covering the east and west slopes around the basin. The map on p31 is illustrative of the transmission and high-risk transmission periods.

Chronic Wasting Disease

Long incubation period (18 - 48 months) with no signs during the incubation period. During the last 4 - 8 weeks of the disease signs appear as weight loss, drooling, droopy ears, change in behavior, hair, and coat changes. Prions can be shed in feces, urine, and saliva for months to years during incubation. Transmission increases with density. Mechanisms include ingestion of contaminated feed and soil, mineral licks and contaminated surfaces, carcasses. Prions persist in the environment over the long term (16+ yrs scrapie). CWD is equally distributed in bull and cow elk, and in mule and white tailed deer it is more common in bucks.

Slide 10 shows the CWD prevalence in WY mule deer herd units with prevalence increasing and population decreasing. CWD positive female survival is 37% while negative females it was 79%. Mountain lions and CWD are leading causes of mortality. The FG area is shown lacking infection.

Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.

Slides show pattern of increase of CWD across Wyoming with deer having the highest prevalence. Southeastern elk herd trends graphed showing increases over 20 years. In surrounding states CWD ranges from 6.5 - 28% in elk.

If feeding stopped, CWD will be low initially and increase slowly or stabilize. Mortality rates with supplemental feeding could be high and irreversible with environmental contamination and transmission. Stopping supplemental feeding over several years would lead to a decline in population. "Disease experts fear CWD will significantly decrease elk populations. Feedgrounds will become year round "hotspots" of transmission to all cervids; greatly expanding the distribution and prevalence of CWD across the landscape." (slide 26).

Modeling of CWD in FGs indicates that prevalence will increase rapidly on FGs with highest elk density, elk populations will decrease as prevalence increases, decrease in hunting opportunity as populations decline. They recommend limiting supplemental feeding once CWD detected.

"Most experts think there is a good chance that wolves will be able to select for, and remove CWD positive animals from the population. Wolves are rarely found on feedgrounds, but may be found in areas surrounding the feedground. WGFD does not kill predators on feedgrounds, but WGFC-Chap 21 allows wolf removals in set circumstances." (slide 35).

Prions are detected in coyote feces for up to 3 days from being fed CWD infected elk brain, but infectivity decreased through the digestive tract. Crows fed scrapie mouse brain with infectious prions detected four hours post infection. Conclude prions remain infectious after passage thru digestive system of coyotes and crows.

WGFD. 2020. Wyoming Chronic Wasting Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

The Plan is not a statewide or regional approach. Instead, strategies will be "tailored to local herd and disease dynamics, and broad and diverse public support must be garnered before being implemented."

As of February 2020, CWD had been identified in 31/37, or 84% of Wyoming mule deer herds, 9/36, or 25% of elk herds, and wherever white-tailed deer occur. The long-term objective is to reduce or limit prevalence and spread where possible. Eradication is not feasible at this time. Strategies include reducing artificial cervid concentration and hunter harvest management.

High concentrations of cervids are commonly observed on traditional deer and elk winter ranges, or artificial sources consisting of modified habitat in urban and rural communities where citizens feed wildlife, or green space such as golf courses. Agricultural operations such

as mineral licks, water developments, haystacks, irrigated hayfields. And, FGs.

WGFD will develop recommendations to the Wyoming State Legislature to provide authority to regulate feeding of wild cervids, but Ag practices will not be included. Work with local governments to develop and implement ordinances on feeding. WGFD will identify areas with unnaturally high concentrations and work with landowners to decrease concentrations through hunting seasons or culling; eliminate the source such as fencing stackyards, salt/mineral feeders that exclude wildlife; engage Ag community to develop management practices.

Management strategies include:

- Use hunter harvest to maximize removal of positive animals
- Use regulations
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration
- Develop strategies to decrease cervid concentrations to minimize transmission
- Experimental hunter harvest strategies in some areas to increase harvest of mature male mule deer and/or reduce cervid densities
- These strategies will not be proposed on a large scale in the absence of peer-reviewed research indicating they are a viable means to reduce CWD over the long term.
- In the event such harvest strategies are proven to effectively reduce CWD prevalence, additional public outreach and strategies may be proposed pending public support.

"Since the initial discovery of CWD in 1985 in a free-ranging mule deer in Wyoming, the Department has not implemented any formal strategies to combat the spread or prevalence of this disease. Unfortunately, CWD has since been documented throughout most of the state, with many mule deer and white-tailed deer herds now exhibiting CWD prevalence levels high enough to potentially impact population performance. The need to develop proven methods to manage CWD is now readily apparent and doing nothing to combat this disease is no longer acceptable, a sentiment strongly echoed within hunter survey data."

Modeling efforts suggest CWD may have significant population level effects in Rocky Mtn National Park elk, Wyoming white tailed deer and Wyoming mule deer.

Surveillance for CWD has been conducted since 1997 using hunter-harvested cervids, targeted cervids (symptoms), and road killed cervids. This is a rotating multi-year program to measure prevalence every five years.

WGFD will engage in a localized collaborative process in Teton, Sublette, and Lincoln counties. The collaborative group is to "serve in an advisory capacity to the Department on how to best manage CWD in relation to Department-operated elk feedgrounds." The collaborative process will likely, " 1) review management plans, policies, and literature related to CWD and

feedgrounds; 2) develop feedground-specific disease management plans that encompass not only CWD, but brucellosis, necrotic stomatitis, and other diseases; 3) conduct site-specific feedground evaluations; 4) address proper carcass disposal for suspected CWD-positive elk that die on or near feedgrounds; and 5) evaluate research and monitoring opportunities and needs."

Feeding management strategies will continue to include:

- Low density feeding to reduce intraspecific brucellosis transmission
- Reduction of the feeding season
- Expand feeding areas onto clean snow or new areas to reduce environmental contamination effects

Other Feedground Plan Requirements

- WGFD will identify, remove, and test all cervids with CWD symptoms on and around feedgrounds
- Coordinate with state and federal agencies on CWD
- Coordinate CWD surveillance in NW Wyoming, and coordinate with GTNP and NER on their CWD management plans for elk and bison to manage wintering populations and reduce reliance on supplemental feed.
- Collaborate with stakeholders to acquire critical winter range habitat and migration corridors where possible
- Work with partners to implement habitat improvement projects
- Consider source of hay in relation to known CWD endemic areas
- Determine if closures of specific FGs can occur where dispersal of elk will not cause damage, conflict, or co-mingling issues with private property or create a need to drastically reduce elk numbers.
- Consider CWD dynamics in developing herd unit population objectives, hunting seasons, feedground quotas, and other.
- Continue intensive CWD surveillance in Jackson and Pinedale regions
- If CWD detected in FG, monitor FG and surroundings intensively, remove the animal and properly dispose of it.
- Maximize feeding area to decrease animal to animal contact, feed on clean snow, decrease days of feeding to disperse elk, take additional actions to decrease elk concentrations consistent with other wildlife and FG practices
- Expand research into migration in Jackson and Pinedale Regions to understand mechanisms behind spread of CWD.
- Monitor predatory animal presence and their impacts on FG elk, including implementation of proper management actions for gray wolves causing unacceptable impacts at state operated feedgrounds
- WGFD will continue to consider the potential role of predators and scavengers to remove CWD infected animals and carcasses to reduce CWD transmission

The recent collaborative process used to develop this plan began in 2018 and involved public meetings, CWD working group meetings, reporting to the public and final input and review of the CWD working group. A hunter perspective survey was conducted in 2019 regarding CWD in deer in Wyoming. Taking no action and letting CWD take its natural course was the least acceptable action. Most acceptable was use of special management hunts to remove deer in localized areas of high prevalence.

DOI. 2007. Record of Decision Final Bison and Elk Management Plan and Environmental Impact Statement National Elk Refuge and Grand Teton National Park. U.S. Department of Interior and U.S. Fish and Wildlife Service National Elk Refuge. Jackson, Wyoming.

The ROD claims there have been many benefits associated with wintering bison and elk on the refuge, high animal concentrations have created an unnatural situation that has contributed to increased risk for disease, damage to and loss of habitat due to browsing of willow, cottonwood and aspen stands, low winter mortality which affects predators and other species and requires intensive hunting programs, and a high level of brucellosis in the elk and bison herds.

The ROD recognizes the effects of the herds on surrounding habitats and that the plan will contribute to the herd objectives set by WGFD and objectives established by the Forest Service related to elk, bison, and their habitat in the BTNF.

Goals of the plan are to:

- 1) provide "secure, sustainable ungulate grazing habitat that is characterized primarily by native composition and structure within and among plant communities and that also provides for the needs of other native species."
- 2) Sustainable populations that are at reduced risk of disease, perpetuate to the greatest extent possible, natural processes and the interactions of bison and elk with natural environmental fluctuations influenced by fire, vegetation succession, weather, predation, and competition. Support elk reductions in GTNP when needed to achieve objectives, support hunting in the Memorial Parkway
- 3) Contribute to herd objectives to the extent compatible with Goals 1 and 2
- 4) Work with Wyoming to reduce prevalence of brucellosis to protect the economic interest and viability of the livestock industry and reduce the risk of adverse effects from diseases not currently found in the Jackson populations

The Decision Alternative 4 to adaptively manage habitat and populations to achieve desired conditions over 15 years. Mostly vague generalities, improve summer and winter habitat, ensure biotic integrity is sustained, work with WGFD to implement a dynamic framework for decreasing the need for supplemental feeding.

- Habitat restoration projects
- Work with partners to minimize bison and elk conflicts, financial resources
- Public education

- Identify criteria for beginning and ending feeding each year
- Develop adaptive management actions with triggers to transition from feeding to greater reliance on native forage based on
 - Level of forage production and availability
 - Desired herd sizes and ratios
 - Mitigation of co-mingling
 - Winter distribution of bison and elk
 - Prevalence of brucellosis, CWD other diseases
 - Public support
- Maintain Jackson elk herd objective of 11,000 with 5,000 wintering on the Refuge. Further reductions based on triggers and changing social, political, or biological conditions. Hunting will be used to assist the state in managing herds.
- Maintain 500 bison (current 1,100)
- Permit ceremonial taking by tribes
- Permit WGFD to vaccinate elk

Other alternatives:

- Alt 2 Minimal Management of Habitat and Populations
 - Herds would fluctuate with reduced numbers, establish migration out of Jackson to other wintering areas, feeding phased out over 10 - 15 yrs, eliminating hunting on the refuge to increase use of transitional habitats and over time natural densities would reduce prevalence of brucellosis.
 - Not selected due to negative public reaction due to higher winter mortality, competition for forage with other ungulates, higher depredation to stored hay, landscaping, numbers of elk could fall below objectives, impacts to grizzly bears due to lower elk numbers and higher competition for forage in the Green River basin. Little public support.
- Alt 3 Restore Habitat, Support Migrations and Phase Back Supplemental Feeding
 - Restore habitat by reducing elk numbers, reduce supplemental feeding over 10 years, with feed provided only in most severe winters 2 out of 10. Hunting would continue, brucellosis decrease over time as a result of fewer concentrated animals, vaccines with higher efficacy used when developed.
 - Not selected due to negative public reaction due to decrease in elk numbers in the refuge, decrease elk hunting opportunities, increase winter mortality, similar depredation effects and effects to grizzlies. No public support.
- Alt 5 Restore Habitat, Improve Forage, and Continue Supplemental Feeding
 - Supplemental feeding in 9 of 10 yrs, about 5,000 - 7,000 elk winter on the refuge, elk hunting continue, disease reduction through spreading out feed and moving feeding locations, vaccination continued, woody vegetation restored for other species.
 - Not selected as it remains similar to current management which would continue high disease levels, impacts from non-endemic disease and woody vegetation

destruction, habitat damage would negatively impact other wildlife species from migrant birds to bighorn sheep, potential for transmission to infect mule deer and moose with non-endemic diseases. Stakeholder groups, general public and other agencies opposed this alternative with some support among stakeholders and general public.

- Alt 6 Restore Habitat, Adaptively Manage Populations, and Phase Out Supplemental Feeding.
 - Phase out feeding over 5 years, continue hunting and herd reduction program. 2,400 - 2,700 elk would winter on the refuge and could increase to 3,200 with 1,200 - 1,600 summering in the park, habitat would be managed to improve available winter grazing, woody vegetation initially restored.
 - Not selected as eliminating supplemental feeding and reducing numbers in 5 years could be difficult to achieve and not acceptable to some stakeholder groups, local residents, and the State of Wyoming.
 - Alternative 6 could decrease elk hunting and viewing opportunities, slightly increase elk and bison annual winter mortality, and would likely lower Jackson elk herd numbers below the WGFD's objective in some years. In the short term, competition for forage with other ungulates in some areas and the likelihood of higher depredation on stored hay and damage to crops and landscaping (similar to Alternative 2 effects) would increase.
 - Alternative 6 would result in the greatest overall benefit to the biological and physical environments. Alt 4 was not the preferred alternative but " it will contribute to significant environmental benefits in a manner that is consistent with regional herd management objectives; it better balances the divergent views and interests and perspectives of other agencies, stakeholder groups and the public; it builds upon success implemented on the ground; and it enables managers to adapt to new information and changing conditions."
- Section 7 Consultation
 - "This consultation concluded that the preferred alternative may adversely affect grizzly bear in Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway due to potential hunter conflicts, and that it may affect but is not likely to adversely affect bald eagles and wolves on either Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway or the National Elk Refuge due to increased availability of elk carcasses. (Alternative 4 will have no effect on Canada lynx and yellow-billed cuckoo)."

WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

Review of the history and rationale for feedgrounds. They were established to: (1) change elk distribution and prevent crop or private property damage; (2) reduce winter mortality of elk so herds like those in the Jackson area would not have to be reduced; (3) reduce elk and cattle

interaction during periods of high risk for brucellosis transmission (Feb 15 - June 15).

Feedgrounds were "the least painful remedy for producing immediate results to appease differing groups: agricultural interests that desire rapid resolution to crop damage; and pro-wildlife constituencies that oppose reductions in elk populations despite wildlife-human conflicts and dwindling habitat." A perceived benefit is maintaining a larger number of elk than native winter ranges could support, which is a high priority for sportsmen groups. The major problems with FGs include:

1. High cost
2. Habitat degradation due to high concentrations of elk that damage surrounding vegetation, such as aspen, serviceberry, willow, and other deciduous woody vegetation
3. Public perception - FGs have resulted in less concern for conservation of native range because people feel native range is unnecessary to support elk
4. Disease transmission - the role of FGs in spreading disease, e.g. significant levels of brucellosis in wild elk occur only in the GYE where many elk rely on FGs. "Of the estimated 1 million elk in North America, significant levels of brucellosis in wild elk occur only in areas associated with feedgrounds." Other diseases are of concern, including pasteurellosis, bovine viral diarrhea, scabies, and CWD.
5. Wildlife migration and connectivity - FGs have interrupted elk migration from summer to winter ranges which has fragmented their habitat. This situation could become permanent because of reduced concern for native winter ranges.

The report ranked the FGs in terms of their potential for distributing elk off FGs and into native ranges (without reducing numbers, increasing damage to private property, or increasing risk of brucellosis transmission to livestock). Factors considered included (1) the average number of elk at each FG, (2) duration of feeding, (3) amount of potential native range on public lands within 5 miles, (4) potential damage to private property without the FG, and (5) potential for brucellosis transmission.

The report noted that elk populations were above objective across the herd units. Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The average annual cost for feeding at Dell Creek was \$82/elk and at Forest Park it was \$58/elk. Dell Creek is in the Hoback Herd Unit and is intended to stop elk migration short of lower elevation private property. This is a high snowfall area with low winter temperatures which limits opportunity for elk to forage on native winter range. The Forest Park FG is in an area where private property damage and agricultural conflicts don't exist. Subdivision development in and around Alpine creates potential barriers.

The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135 days gave them a poor ranking because FGs with shorter durations were more likely to have successful transitions to native range. The fewer the number fed, it was assumed the greater likelihood of successful transition. Dell Creek at 400 quota was given a high rating of 1 out of 4,

while Forest Park at 750 was ranked 2 out of 4.

The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range. WGFD rankings showed Dell Creek closure would result in the worst ranking for private property damage, with Forest Park least. Dell Creek ranked high in brucellosis transmission risk, while Forest Park ranked low.

In a final summation, the report considered Dell Creek to have the low potential for distributing elk onto native range with Forest Park having moderate potential.

Maloney, M., J. A. Merkle, D. Aadland, D. Peck, R. D. Horan, K. L. Monteith, T. Winslow, J. Logan, D. Finnoff, C. Sims, and B. Schumaker. 2020. Chronic wasting disease undermines efforts to control the spread of brucellosis in the Greater Yellowstone Ecosystem. *Ecological Applications* 30(6): e02129. 10.1002/eap.2129

This paper modeled management strategies using spatial and economic factors. Elk migratory behavior and population densities were modeled with and without feeding. Their model indicates that continuing to feed elk in the region around Pinedale "could result in substantial welfare losses" and to maximize the present value of economic benefits based on the arrival of CWD, "wildlife managers may wish to consider discontinuing elk feedgrounds while simultaneously developing new methods to mitigate the financial impact to ranchers of possible brucellosis transmission to livestock."

The paper also verified the rationale of feeding to reduce winter mortality and support larger elk herds than could be sustained on native range. Also that FGs truncate natural migratory routes thus limiting the time spent on private, low-elevation ranchlands during winter and reducing brucellosis transmission to cattle. But FGS increase the prevalence of brucellosis in elk. A CWD outbreak would negatively affect tourism and hunting. Citing Scurlock and Edwards, they note there is a brucellosis prevalence of 21.9% in FG elk and 3.7% in unfed populations.

The Pinedale region contributes a small part of regional elk harvest. The model suggests a social welfare loss of \$19 million if feeding continues and CWD is introduced into the study area. With CWD, elk management results in lower elk populations to reduce density effects and environmental transmission. Economically it is better to eliminate feeding and increase population targets relative to targets with FGs.

"The benefits and costs of elk management in response to CWD risks accrue differently to hunters and ranchers. Discontinuing feeding will, especially in the first year, increase brucellosis and depredation costs for ranchers associated with elk using private lands. However, our model predicts that these costs are outweighed by the economic benefits to hunters, guides, outfitters, and other regional businesses that provide goods and services to hunters. These benefits accrue to a relatively large and diffuse number of people, whereas the

increased brucellosis-related costs fall on a relatively small number of local ranchers."

The gains for hunters could be used to offset losses to ranchers, while discontinuing feeding is economically optimal. As a "result, the costs of continuing to feed elk after the introduction of CWD outweigh the benefits".

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

FSM 2610.2 - Objectives

1. To develop and maintain partnerships with the appropriate State agencies to jointly establish and meet wildlife, fish, and threatened, endangered, and sensitive species habitat goals, objectives, and standards.
2. To cooperate with other agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive species habitat management.

FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

1. Use management indicators to address issues, concerns and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability for management indicators.
4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including

endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

Jones, J. D., Kauffman, M. J., Monteith, K. L., Scurlock, B. M., Albeke, S. E., and Cross, P. C. (2014). Supplemental feeding alters migration of a temperate ungulate. *Ecol. Appl.* 24, 1769–1779. doi: 10.1890/13-2092.1

A study of supplemental feeding on migration habits of elk was conducted in 18 of the 22 State of Wyoming managed feeding operations in 2009 to 2011. The study tracked behavior of collared elk that were fed and those that were not. Migration is an important evolutionary adaptation that allows animals to access nutritious forage and thereby "enhancing demography and population growth". Factors that disrupt the natural migration patterns include roads, habitat loss, agriculture, supplemental feeding, and climate change. Ranching, hunting and FG establishment have altered historical patterns of migration.

FGs were established in Wyoming beginning in 1912 to intercept elk migrating from higher elevations on public lands to prevent them entering private lands in the valleys. This was to limit damage to stored crops and avoid transmission of diseases to livestock. The study identified winter ranges of fed and unfed elk. Fed elk winter range included herbaceous species, shrubs, conifer, and agricultural lands, while unfed elk relied upon riparian areas with willow, sage-steppe, aspen and conifer.

Study results showed that fed elk migrated shorter distances (35.4 km) than unfed elk (54.6 km). Fed elk spent less time on summer range by arriving later and departing earlier and arrived back on winter range earlier than unfed elk. Fed elk resided on summer range 26 days less and departed 10 days earlier than unfed elk. Fed elk relied on stopovers for 11 more days in spring and 13 more days in autumn.

Shortening the number of days for the feeding operation from 134 to 74 days lead to fed elk following a migration pattern and occupancy of summer range similar to unfed elk by responding to plant greenup in a similar way. Feeding for the longer period delayed migration to summer range until plant greenup reached an NDVI threshold value of 0.17 at which point, fed elk began to arrive on summer range. During years when plant greenup was delayed this delay effect due to feeding was more pronounced. Fed elk responded to elevation, decreasing temperatures, and increasing precipitation by leaving summer range earlier than unfed elk.

An important outcome is that while feeding has changed patterns of migration, it has not altered the propensity to migrate. When leaving winter range, both fed and unfed elk left at

about the same time, but fed elk tended to remain near the FGs. Feeding appears to condition the elk to leave summer range earlier which limits use of forage during the growing season.

Since elk feeding is within the brucellosis endemic area in Wyoming, prolonged time on winter or nearby transitional ranges may lead to delaying cattle turn-out dates to reduce transmission between cattle and elk. Ending feeding earlier would "encourage fed elk to migrate and spend more time on summer range, thereby increasing access to high-quality forage and maximizing their distance from cattle. Shortening the feeding season also would reduce intraspecific disease transmission, because FGs crowd elk and expose them to higher disease risk."

Schumaker, Brant A.; Peck, Dannelle E.; and Kauffman, Mandy E. (2012) "Brucellosis in the Greater Yellowstone Area: Disease Management at the Wildlife–Livestock Interface," Human–Wildlife Interactions: Vol. 6 : Iss. 1 , Article 7. DOI: <https://doi.org/10.26077/95s0-ah13>

A study of brucellosis in the Greater Yellowstone area (GYA) by University of Wyoming researchers provides insight useful to management relative to elk FGs. Brucellosis is found mostly in the "wildlife-livestock interface" in the GYA and is thought to have "originated from cattle kept within the boundaries of Yellowstone National Park (YNP) for park employees." It was thought that brucellosis was observed in bison in YNP and subsequently transmitted to elk.

The goal of elk feeding was to deter elk from moving onto private lands where they eat hay and mingle with cattle. Because elk infected with brucellosis tend to abort fetuses while they are on FGs, this increases exposure and maintains high levels of the disease among the fed elk.

"Exposure to brucellosis and subsequent infection are, therefore, maintained at relatively high levels among elk that overwinter in Wyoming FGs."

Contamination of parturition sites with brucellosis from infected elk that give birth in mid-May to mid-July can remain present into August, depending on weather. Elk clean up some of the tissues and fluids from birth, which reduces risk of exposure. Brucellosis contamination in soil, vegetation and tissue at birth or abortion sites remained viable for 43 days in April and 26 days in May. The proportion of FG elk testing positive for brucellosis antibodies was 22% compared to 3.7% in free-ranging elk in tests conducted in 2008 and 2009. There appeared to be an increasing incidence of positive tests in non-FG elk. It was suspected that increasing herd sizes and hunting pressure was concentrating elk on private lands not accessible to hunting and these increasing congregations have become a likely source of transmission.

Recommendations for cattle risk management included fencing haystacks, modifying winter feeding practices, hazing elk off private property, vaccinations, spaying heifers, and changing livestock type. Vaccinating elk at FGs, shortening feeding periods, and spreading hay over a larger area have been used to reduce risk. Some producers were delaying grazing on high-risk grazing allotments that overlap with FGs. Converting to steers and spayed heifers was another change some producers were employing. Isolation of elk from cattle by delaying cattle grazing in spring where elk overwinter or excluding elk from areas grazed by cattle in spring and early

summer. Predator-prey relationships, hunter access and land use in disease dynamics are also mentioned.

USDA Forest Service. 2006. Science Update: Elk, Deer and Cattle: The Starkey Project. Pacific Northwest Research Station. Issue 13.

The Starkey Project compared interactions and habitat use between mule deer, elk, and cattle. Elk tended to avoid cattle and will use lower elevations if no cattle are present. But move to higher elevations when cattle move onto lower elevation areas.

Coe, Priscilla K.; Johnson, Bruce K.; Stewart, Kelley M.; Kie, John G. 2004. Spatial and temporal interactions of elk, mule deer, and cattle. In: Transactions of the 69th North American Wildlife and Natural Resources Conference: 656-669

Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer overlapped likely due to depletion of forage.

Kie, J., Evans, C., Loft, E., and Menke, J. 2007. Foraging behavior by mule deer: The influence of cattle grazing. Journal of Wildlife Management 55(4):665 - 674.

Where cattle were grazed, deer home ranges were larger and hiding cover for fawns reduced.

Julander, O. (1962). Range management in relation to mule deer habitat and herd productivity in Utah. Journal of Range Management, 15(5), 278-281.

An early study from Utah looked at range condition and mule deer productivity. Summer range condition was compared to fetal production per doe with good condition range providing higher ovulation rates and productivity than poor condition range. This is important in looking at how forage depletion by livestock may reduce production of deer or elk.

Szcodronski, K. E., and P. C. Cross. 2021. Scavengers reduce potential brucellosis transmission risk in the Greater Yellowstone Ecosystem. Ecosphere 12(10):e03783. 10.1002/ecs2.3783

A current study from the Greater Yellowstone Ecosystem determined that scavengers reduce potential brucellosis transmission risk. Using remote cameras at 264 sites with simulated abortion materials, they determined that time to removal was slower at sites where mammalian scavengers were reduced (6.5 days) to those with no scavenger reduction (4.1 days). Coyotes, red foxes, golden and bald eagles, and turkey vultures were the dominant scavengers. In areas where cattle and elk congregate there was a 90% probability that abortion materials would be removed by scavengers within 16 days.

WGFD. 2021. Hunting in Wyoming - 2020 Annual Reports of Big and Trophy Game Harvest. <https://wgfd.wyo.gov/Hunting/Harvest-Reports/2020-Harvest-Report>

The Wyoming statewide elk harvest success rate in 2020 was 46%.

Backcountry Chronicles. 2020. Newest Elk Harvest Data - Comparison of Western States for 2019 Elk Hunt. <https://www.backcountrychronicles.com/elk-harvest-comparison-western-states/#:~:text=Wyoming%20claims%20an%20amazing%20overall,waiting%20on%202017%20harvest%20data>).

This article summarized state reports of elk hunting statistics. Some interesting points are that the average number of elk hunters for the states ranged from 57,834 in Wyoming to 220, 092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington, yet even at Washington's lower success rate, it still had more hunters than Wyoming.

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

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FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

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2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability

for management indicators.

4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

February 14, 2022

Patrica O'Connor
Forest Supervisor
Bridger-Teton National Forest
PO Box 1888
Jackson, WY 83001

RE: Big Piney Ranger District and Greys River Ranger District; Bridger-Teton National Forest; Wyoming, Dell Creek and Forest Park Elk Feedgrounds: Long-Term Special Use Permits

Dear Forest Supervisor O'Connor,

Thank you for the opportunity to provide scoping comments in response to the proposed environmental impact statement to analyze the effects of reauthorizing long-term use permits that will allow the Wyoming Game and Fish Commission (WGFC) and Department (WGFD) to operate and manage the Dell Creek and Forest Park winter elk feedgrounds in Sublette and Lincoln counties.

Our organizations have long-standing, grave, and ever-increasing concerns about permitting and operating any elk feedgrounds on the Bridger-Teton National Forest (BTNF), including the Forest Park and Dell Creek feedgrounds. We oppose the proposed action to continue feeding for at least 20 more years at the two specified feedgrounds. Our concerns with continued feeding remain as we have previously articulated in numerous communications to the U.S. Forest Service (USFS) and are well summarized in scoping comments we submitted in 2016 regarding feeding on Dell Creek and Forest Park feedgrounds. Unfortunately, with little progress toward ending the ecologically harmful practice of winter elk feeding, our 2016 comments remain just as relevant today as they were when written six years ago.

Therefore, we incorporate those 2016 comments in their entirety, including all supporting references, into this comment letter, and you will find them attached to this letter (**Attachment 1**).

As stated in the Federal Register notice, "the WGFC's proposal is to continue long-term use (20 years) of the Dell Creek feedground (35 acres), Forest Park feedground (100 acres), and existing facilities for their winter elk management program." There are three proposed alternatives.

Alternative 1: No Special Use Authorization Alternative: Use of National Forest System lands for WGFC's winter elk management activities would not be permitted at Dell Creek and Forest Park feedgrounds. WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Alternative 2: Phase-Out Alternative: Use of National Forest System lands for WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds for less than 20 years. The number of days elk would be fed would decrease over time. Upon expiration of the permit, use of National Forest System lands for WGFC's winter elk management activities would be terminated and WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Alternative 3: Emergency Feeding Only Alternative: Use of National Forest System lands for WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds for emergency use only. Upon expiration of the permit, use of National Forest System lands for WGFC's winter elk management activities would be terminated and WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Support of Alternative 1 as proposed by the USFS for Forest Park

Because of the existing conditions at Forest Park such as disease transmission, noncompliance with the forest plan, and other factors, we support the No Special Use Authorization Alternative for this feedground. The immediate closure of existing facilities and rehabilitation of impacts would minimize the detrimental effects of the artificial feeding of wildlife in this specific area. Additionally, the BTNF objective to "provide suitable and adequate habitat to support game and fish populations established by the WGFD, as agreed to by the Forest Service" would be supported by rehabilitation of the 135 acres currently impacted by the feedground. Finally, since only one (Forest Park) out of the twenty-three feedgrounds managed by the WGFD would be affected by this action, the often expressed concern about mass elk starvation without feedgrounds would be extremely unlikely. The relatively small number of elk that are fed at Forest Park could easily disperse to natural winter range.

Support of Alternative 2 with modifications for Dell Creek

The Phase-Out Alternative described by the USFS has the potential to be a solid solution for managing disease transmission and increasing the health of wildlife, but the proposed time frame for phase out is far too long. We suggest that the USFS implements a phase out plan lasting no more than three years.

As proposed, Alternative 2 provides a path forward for phase out of feedgrounds but would also allow for feeding to continue for up to 20 years. As Bruce Smith wrote back in 2013, "I'm among those who argue that winter feeding serves neither the long-term health nor conservation of wildlife, and therefore is not in the public's best interests. As CWD has recently infected cervids within 50 miles of several elk feedgrounds, two fundamental questions arise: "What happens when CWD reaches those feedgrounds, and should something be done now to address this threat?" (Smith, 2013). Considering that Bruce Smith wrote this back in 2013 and chronic wasting disease (CWD) is now at the doorstep and very likely already present on feedgrounds,

we cannot afford to wait another twenty years to phase out feeding. If we want prevalence rates of CWD to remain low in populations of elk, we cannot continue to provide the living petri dish of perfect conditions to allow the disease to spread that currently exists on feedgrounds. A reasonable phase out alternative would be no more than three years, with the number of days of feeding to decrease each year with no possibility of additional permit renewals.

The WGFD designated winter range totals 84,563 acres, last updated in 1987. This designation leaves out the Bacon Creek-Fish Creek area where elk typically winter and an area that will be included on the WGFD seasonal range overlay map in the next update. Including this area, there are an estimated 106,581 acres available for elk to winter on in the Gros Ventre drainage. Plentiful natural forage exists to accommodate elk that winter in the Gros Ventre. Elk that cannot find food in the Gros Ventre can travel further south along historic migration routes to areas with less snowpack and more snow-free slopes. Indeed, one of the stated goals of the Bridger-Teton National Forest Land and Resource Management Plan is to “[h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients” (Objective 1.1(g)). As has been demonstrated by other efforts to phase out feedgrounds in other states, this goal is realistic and achievable. One notable example is provided by the Deseret Land and Livestock Company in Rich County, UT in the early 2000s. A combination of positive and negative reinforcements were used successfully to modify elk behavior and achieve the goal of either not feeding elk at all on the ranch or only feeding in emergency situations (Magnus, 2011).

Positive reinforcements to encourage elk to return to natural winter range included:

1. Range Improvements
2. Strategic Livestock Grazing
3. Dispersed Supplemental Feed (aka Spot Feeding) - supplemental not replacement feed
4. Sanctuary or ‘Safe Zones’

Negative reinforcements to encourage elk to return to natural winter range were:

1. Hunting
2. Herding and Hazing

Positive reinforcements were better at changing elk behavior than negative reinforcements. In comparison to the Afton and Big Piney herds that were used as a control, no elk were fed in the 2005-2006 or 2006-2007 winters at Deseret Land and Livestock Company, while 73% and 76% of elk were fed in the Afton and Big Piney herds respectively during the same years. Perhaps the most prudent lesson learned from the Magnus (2011) study is, “When managers wish to reduce the occurrence of undesired behaviors and/or increase desired behaviors, the most effective method is to modify the consequences of those behaviors through management. Unfortunately, managers have not been trained to think in terms of behavior principles and their application in management. We simply assume animals behave by —instinct without appreciating the roles of learning in culture in everything they do. Critically, we must come to realize animals are not machines and genes are not destiny.” Using the lessons learned from

this study, it seems reasonable to assume that elk elsewhere can be retrained to move to different areas and avoid conflict with humans if we apply pressure and positive reinforcement effectively.

There is no reason that elk in Wyoming accustomed to feedgrounds cannot be retrained the way the Deseret Land and Livestock elk were. Knowing the harmful effects to elk, cost of feeding, and impacts to the land, Dell Creek feedground should be phased out as expeditiously as possible with full closure after a maximum of three years from starting phase out.

The Bigger Picture of Elk Management in the Western U.S

First, let's examine occupied elk habitat in the United States. Figure 1 shows current elk habitat in green. The blue polygons are public lands that generally could offer less fragmented habitat and far lower potential for conflicts, while private lands, shown in white, would have more fragmented habitat and more potential conflicts. The areas where elk are artificially fed are in red. As is immediately evident from this map, there is only one area in the United States where significant numbers of elk are artificially fed. The few feeding operations run by other states are so small as to be invisible at this scale. This information is from the WGFD's document titled Western State Management of Wintering Elk, dated December, 2021 (Attachment 2).

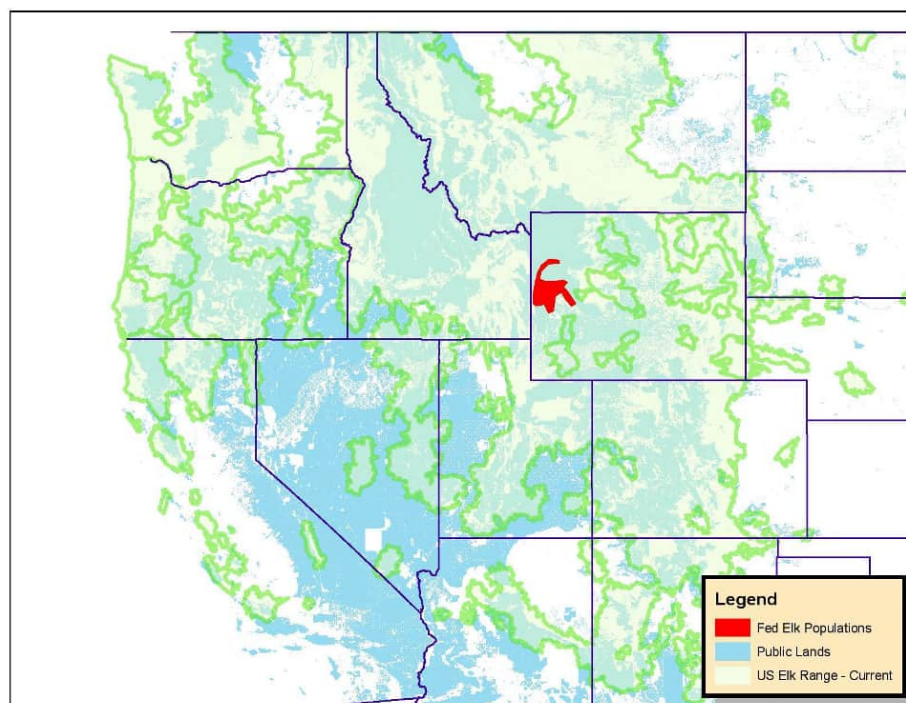


Figure 1. This map visualizes current elk range in the Western United States, and the small amount of elk that are artificially fed hay in Western Wyoming.

An estimated 1.2 million elk live in the United States today. Of that 1.2 million, approximately 27,000 or 2% are artificially fed, almost all of these within the 23 elk feedlots in west-central Wyoming. The artificial feeding of elk does not make sense in the larger scope of elk populations in the United States. Below we compare the differences between the 2% of elk habitat where the network of elk feedlots has been established versus the 98% of elk habitat where elk populations are not artificially fed.

1. There is no difference in elk-livestock conflicts between the habitats. States, like Colorado and Montana, and other areas of Wyoming have mitigated conflicts with livestock operations with proper fencing and other conflict mitigation strategies.
2. In general, road density is significantly lower in the 2% of elk habitat in the network of feedlots than the 98% of elk habitat where populations are not artificially fed, such as the far higher population states like Colorado. So, are elk-based vehicle accidents significantly higher in the 98% of elk habitat without artificial feeding? The short answer is no. Colorado has nearly triple the elk density of Wyoming. Colorado is far more fragmented, with far higher road density, far higher human population density and the same amount of livestock production. However, Colorado does not artificially feed their elk populations. Montana has nearly 50% more elk than Wyoming and is far more fragmented, far higher road and population density and has double the livestock density of Wyoming but none of Montana's elk are artificially fed.

If the specious rationale put forward by the WGFD were true then we should see starving elk across the western U.S., high numbers of elk collisions and few hunting opportunities in the 98% of elk range where artificial feeding does not occur. However, robust data shows this is not the case.

The Special Use application submitted by the WGFC posits this baseless rationale for continuing the status quo despite the known problems that elk feedlots create:

“Feedground is needed to reduce the risk of brucellosis transmission to livestock, prevent vehicle collisions on Highway 191, and to maintain population objectives. No new construction or significant operation costs are anticipated.”

“Feedgrounds will allow WGFD to maintain elk population objectives in the Hoback herd unit, while reducing negative impacts to livestock operators in the area.”

“Continued use of the feedground will allow WGFD to maintain elk population objectives in this herd.”

On September 21, 2021, U.S. District of Wyoming Judge Freudenthal ruled that the permit authorizing the WGFC's use of the Dell Creek feedground expired in 2016, and that annual feeding allowed since has been without a valid permit. Under 36 CFR 251.50, an authorization is required for this use of public lands on national forests. We are happy to see that the BTNF

took Judge Freudenthal's ruling into consideration that the USFS must comply with the National Environmental Policy Act (NEPA) and complete a full environmental analysis based on current best available science that includes alternatives for phasing out artificial winter feeding.

The recent court decision invalidating the USFS's practice of allowing feeding without proper permitting offers the USFS and the WGFD a chance to stop feeding on Dell Creek and Forest Park feedgrounds and start figuring out how to allow and encourage elk to resume natural migration behaviors on natural winter habitats, while minimizing interactions with domestic livestock. Elk have existed for thousands of years in what is now the western United States, migrating between summer ranges in the high country to lower elevation winter ranges in the basins and valleys. Colorado, New Mexico, Utah, and Idaho all have elk herds with healthy populations and natural migration patterns and low elk/cattle conflict rates. The behavior of migrating is innate to elk and they readily make these choices to move from harsh climates to less harsh environments. Protected lands in Wyoming are vast and connected. That means elk and other migratory wildlife can disperse across seasonal ranges if we allow it.

In this recent ruling, the court found:

CWD is an incurable and invariably fatal disease caused by an abnormal protein that affects the central nervous system of ungulates, including elk, mule and white-tailed deer, and moose. AR3549. Its effects are devastating; the onset of disease is slow, and those infected "show weight loss, reluctance to move, excessive salivation, droopy ears, increased drinking and urinating, lethargy, and eventually death." *Id.*

Further, "CWD is highly transmissible via multiple direct and indirect pathways between and among cervid species." AR486. It is transmitted through contact with infected animals or carcasses, and through contact with soil, plants, or feed contaminated with urine, feces, and/or saliva from infected animals. *Id.* CWD exhibits a long latency period (twelve to thirty-six months), during which an infected animal is asymptomatic yet still capable of passing the infectious prions to others. AR487; AR1802. Thus, a single infected animal can transmit the disease to a substantial portion of the population before its presence is detected. AR1798.

Moreover, recent research has shown that CWD, which is "resistant to most general disinfectants," can contaminate soil and remain infective in the environment "for years to decades." AR1802-03 (CWD "prions bound to soil are more infective than free prions, so soil may serve both as an environmental reservoir and a facilitator of CWD prion transmission."). Hence, uninfected animals are at risk of contracting CWD from the environment long after an infected individual has visited the area or died. *Id.*; AR489-90. Once introduced into a population, CWD "by itself can exceed natural rates of mortality," reduce survival of adult females, and decrease population growth of elk herds. AR492-93.

There is no dispute that “congregating elk at very high densities at feedgrounds is likely to increase the spread of disease because of an increased number and rate of potential infectious contacts with infected individuals and an infected environment.” AR486; see also AR1803 (Feedgrounds “increase the risk of [CWD] transmission” by “exacerbating [] densities, increasing contact rates, altering normal behavior, and prolonging exposure to potentially contaminated areas.”)

We provide a few items of note from the September 2018 ruling by the same judge that need to be kept in mind during this process.

As discussed in more detail in a later under the NEPA section, the judge stated:

An EIS must also assess the direct, indirect, and cumulative impacts of the proposed action, including unavoidable adverse environmental effects. 30 CFR § 1508.25.

Those “unavoidable adverse” effects have to include the contamination of soils, water and plants as a result of the proposed action.

The judge stated:

NEPA requires an agency to take a “hard look” at environmental consequences of its actions and to adequately disclose those impacts to the public. *Baltimore Gas*, 462 U.S. at 97-98; *Middle Rio Grande Conservancy Dist.*, 294 F.3d 1220, 1225 (10th Cir. 2002).

The ruling summarized the issue of CWD:

CWD, the equivalent of “mad cow disease,” is a fatal prion disease of cervids, which include elk, white-tailed deer, mule deer, and moose. AR29034; AR10283. The disease is easily transmitted,” the prion (TSE) agent can contaminate the environment for long periods,’^ and management strategies have failed to stop its spread. Id\ AR28854; AR28876. As additional challenges, clinical signs of CWD are not diagnostic, there is a long incubation period, there is no treatment, there is no prevention in the sense of vaccination, and CWD is invariably fatal once clinical signs develop. AR18430. These challenges make surveillance difficult and expensive; hence the emphasis on preventing its introduction into the region. AR18431. Once this chronic disease is introduced into a population, “CWD can exceed natural rates of mortality, reduce survival of adult females, and decrease population growth of elk herds.”

It continued:

CM/ECF Document (“Doc.”) 43, p. 16; AR17781 (seasonal concentrations of elk create “an unnatural situation that has contributed to . . . an increased risk of potentially major outbreaks of exotic diseases,” and “damage to and loss of habitat”). Further, at least one expert with the USDA Animal and Plant Health Inspection Service (“APHIS”) thinks

"long-term feedgrounds are detrimental to the health of the wildlife." AR26800. The Service itself recognizes "that the WGFC action of feeding elk results in the artificial concentration of elk during winter and early spring that increases risk of disease transmission" (AR11108), and that prevalence of CWD is likely "functionally related to ungulate density" (AR28876). Indeed, in its brief the Service states, "the practice [of supplemental feeding] concentrates elk during the winter months and contributes to the spread of diseases such as brucellosis and CWD." Doc. 62, p.II.

Also, the Brief of Amici Curiae Scientists discusses the very high population density estimates of elk at Alkali Creek Feedground, the behavior changes that occur as elk population densities grow (higher frequency and duration of contact), and the corresponding significant risk of disease transmission, both directly between animals and indirectly through the environment. Doc. 55, p.15; AR26284; 24695.

Further, both the NFS and NFWS agree that "elk concentrated on feedgrounds is likely to facilitate the spread of [CWD] when it reaches [the GTNP and Refuge]. As such, an overarching strategy to achieve the goals of the 2007 BEMP is to reduce reliance on winter supplemental feeding of bison and elk, and to transition to complete reliance on natural standing forage at an undetermined time in the future." AR28174.

Finally, one court found that the 2007 BEMP for the Refuge "might well have been unreasonable had the agencies categorically refused to phase out the winter feeding program in spite of all the evidence in the record about the dangers of supplemental feeding." *Def. Of Wildlife v. Salazar*, 698 F.Supp.2d 141, 148 (D.C.D.C. 2010), *affd* 651 F.3d 112, 118 (D.C.Cir. 2011) ("There is no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System").

Regarding irreversible commitments, the court stated:

There is also little to suggest the Service took a hard look at the irreversible and irretrievable commitment of resources. Both considerations are required by 42 U.S.C. § 4332(C). There is no question that Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat.

Further chastising the Forest Service for its NEPA failures, the court found:

Relevant to the Service (and not simply within WGFD jurisdiction) are the problems that artificial feeding increases the risk of disease transmission, increases the risk that the site will be contaminated with prions for a very long time, and also appears to blindly

support WGFD's goal of managing elk movements to prevent commingling with livestock and danger to agricultural land, notwithstanding the BTNF Land and Resource Management Plan that includes a stated goal to "[h]elp re establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients." ARI 19. Based on the record, feedgrounds seem to undermine this goal.

Regarding cumulative impacts, the court ruled:

Petitioners argue the Service failed to meaningfully analyze the cumulative impacts of the region's feedgrounds on wildlife resources, in violation of NEPA. Specifically, Petitioners complain that the Service refused to examine the impacts of Alkali Creek Feedground in conjunction with the other feedgrounds located in the BTNF, or the artificial feeding program conducted by the NFWS on the Refuge. Rather, the Service restricted its evaluation of cumulative impacts to include effects only from Alkali Creek and the other feedgrounds in the Gros Ventre drainage (Fish Creek and Patrol Cabin), thereby severing analysis of this action's impacts from the effects of other nearby feedground operations impacting the same elk herd, as well as the effect of the 2007 BEMP on the Refuge which anticipates a step-down approach to phase out artificial feeding.

Petitioners argue these feedgrounds are all part of an integrated program which cumulatively impacts the Jackson elk herd, and the restricted analysis by the Service violates NEPA.... As to cumulative impacts, the Court again agrees with Petitioners. The finality of the 2008 FEIS does not eliminate the need for the Service to consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission and mitigation since the 2008 analysis.

We provide both rulings, in their entirety, for your review as Attachment 3.

Concern over the risk of CWD concentration on feedgrounds.

The inherent and unavoidable concentration of elk during artificial winter feeding increases the risk of CWD and has a significant effect on the environment; winter feeding of elk also increases the prevalence of brucellosis and many other transmissible diseases in the herd. Winter elk feeding is highly controversial, with many scientists and members of the public fully aware of its detrimental impacts. It certainly has effects that pose unique risks to the Greater Yellowstone ecosystem's elk herds. The Greater Yellowstone ecosystem is an ecologically critical area; and continued winter feeding of elk may cause the loss or destruction of significant wildlife resources within that ecosystem. These risks are not speculative: rather, they are known, imminent, and rapidly increasing, with documented cases of chronic wasting disease discovered every year in elk and mule deer, now literally adjacent to elk feedgrounds.

Thus, even though the USFS's listed resource conditions does not include impacts on elk from wildlife diseases and other wildlife diseases, the agency's present scoping analysis should consider how its decision to authorize further artificial feeding at Dell Creek and Forest Park will contribute to the spread of CWD and other diseases within and between elk herds that use habitat on the BTNF. To the extent the USFS refuses to consider potential disease impacts, the agency must explain why it has decided to contravene its own guidance under 73 Fed. Reg. 43,091 (July 24, 2008). Because elk feedgrounds have such profound effects (significant by any rational evaluation), the practice of artificial winter feeding is highly controversial, artificial feeding significantly impacts ecologically critical areas, and continuing to allow artificial winter feeding may cause significant losses of wildlife resources (Galloway et al., 2021).

USFS staff have openly acknowledged that winter feeding is harmful and should stop. See our attached comments from 2016 for explicit quotes from BTNF biologists and administrators. To dispel any doubt about the risk of chronic wasting disease becoming established on feedgrounds, review the WGFD's map of CWD positive areas, which clearly shows that the disease now surrounds the Dell Creek area (See Figure 2).

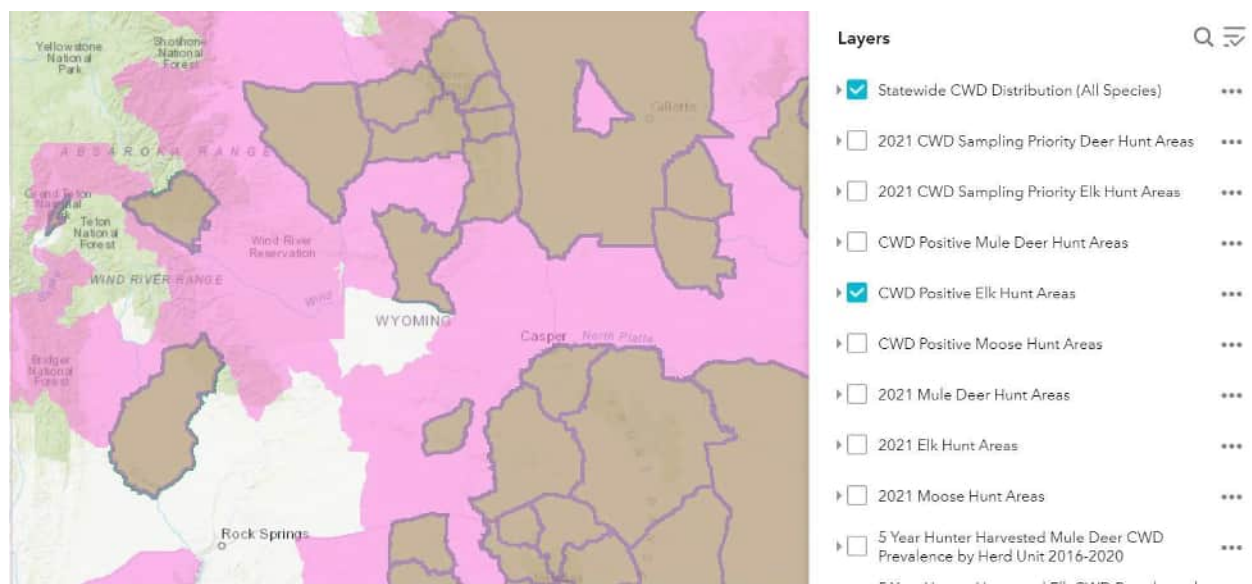


Figure 2: WGFD's map of CWD positive areas.

(<https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Wildlife-Disease/CWD-in-Wyoming-Wildlife/CWD-Map>)

Given the proximity of the disease to feedgrounds, the catastrophic risk of intraspecific and cross-species CWD transmission in and between herds of elk, deer, and moose, the long-term persistence of infectious prions in the environment, and the known harmful effects of concentrating thousands of elk for months each winter in the face of the highly infectious and 100% fatal CWD and several other contagious diseases, the USFS should consider the preparation of this EIS as a golden opportunity to fully evaluate the effects of feedgrounds and begin the process of phasing out of all feedgrounds on Forest Service land now. In the absence of feeding, mortality rate from CWD will likely be low initially and increase slowly (or stabilize)

(Galloway, 2021). Mortality rates could be high with supplemental feeding and CWD rates could be irreversible with sufficient environmental contamination/transmission (Galloway, 2021). Disease experts, such as Wyoming state veterinarian Sam Allen, fear that CWD will significantly decrease elk populations and that feedgrounds will become “hotspots.”

Concern for the welfare of elk from diseases exacerbated by feedgrounds

Hoof rot

Elk hoof disease, now referred to as Treponeme associated hoof disease (TAHD), is a bacterial-associated syndrome causing severe lameness in elk and livestock. Elk with the disease can have deformed, overgrown, broken, or sloughed hooves. These lesions can be painful and cause limping or lameness when walking. Elk that show these signs do not necessarily have elk hoof disease, as there are many other potential diseases or injuries that could cause similar abnormalities to elk hooves. Some bull elk also have deformities of the opposite antler depending on the timing of the hoof infection with antler growth. Treatment of any disease in free-living wildlife is difficult. In livestock, hoof diseases are often treated with repeated antibiotics and foot baths and managed by keeping their pens clean. Similar actions to treat wild elk are not practical. New research by Washington State University (2021) shows healthy elk can contract the rapidly spreading disease, known formally as Treponeme-associated hoof disease (TAHD), by simply walking on soil contaminated previously by infected hooves. The trampled and moist areas of elk feedgrounds will very much exacerbate hoof rot and this should be another consideration of phasing out elk feedgrounds quickly before both wildlife and livestock are affected.

Brucellosis

Brucellosis is a bacterial disease primarily of Rocky Mountain elk and bison. The disease is limited to northwestern Wyoming and adjoining portions of Montana and Idaho. Cows often abort their first fetus after becoming infected. Abortions may occur in subsequent pregnancies but diminish over time. Brucellosis also infects domestic cattle. A state/federal eradication program has almost eliminated the disease in cattle, but infected elk and bison pose a continuing threat. In the wild where there is no supplemental feeding, Wyoming elk are virtually brucellosis-free. In concentrated feedgrounds, however, elk test from 8% to 54% seropositive for exposure to brucellosis. As long as there are feedgrounds, there will be high percentages of seroprevalence in elk, and Wyoming's brucellosis-free status for livestock will be in continued jeopardy. The Brucella bacteria can survive in the environment for more than 180 days in cool and moist conditions. Like hoof rot and CWD, brucellosis is exacerbated by the use of artificial feedgrounds in Wyoming.

Bovine Tuberculosis

Bovine tuberculosis (bovine TB) is a disease found in mammals caused by the bacteria Mycobacterium bovis (M. bovis). In North America, bovine TB is most commonly found in domestic cattle and captive and wild cervids such as white-tailed deer, mule deer and elk. Bovine TB is spread primarily through the exchange of respiratory secretions between infected and uninfected animals. This transmission usually happens when animals are in close contact

with each other. Thus, animal density is a major factor in the transmission of M. Bovis. Bacteria released into the air through coughing and sneezing can spread the disease to uninfected animals. Research suggests that bovine TB can also be contracted from ingesting contaminated feed. Survival of M. Bovis in the environment is primarily affected by exposure to sunlight. Reports on the length of survival of M. bovis vary from 18-332 days at temperatures ranging from 54-75 F. In a number of studies under laboratory conditions, M. Bovis has been isolated for up to 8 weeks from various feeds kept at 75 F and 14 weeks from various feeds kept at 32 F. However, under field conditions, it is difficult to isolate M. bovis from pastures grazed by animals known to be infected with bovine TB (Michigan DoG, 2022). Non-cervid animals most likely contract TB from feeding on infected tissues from deer carcasses.

Bovine TB is a chronic disease, and it can take years to develop. M. Bovis grows very slowly and only replicates every 12-20 hours. The lymph nodes in the animal's head usually show infection first and as the disease progresses lesions will begin to develop on the surface of the lungs and chest cavity. In severely infected deer, lesions can usually be found throughout the animal's entire body. Non-cervid animals on the other hand do not develop the disease as extensively and lesions are usually not found in lungs or other tissues.

Bovine TB has been greatly reduced in the cattle industry since the National Cooperative State-Federal Bovine Tuberculosis eradication program began in 1917. Currently, most states are accredited as "Bovine Tuberculosis-Free" by the United States Department of Agriculture, however, sporadic outbreaks do still occur throughout the United States. Continuing to feed elk in Wyoming could be a major risk to the cattle industry in Wyoming, if Bovine TB gains prevalence.

Scabies aka psoroptic mange

Psoroptic mange, or the disease known as scabies is prevalent in many mammals. Scabies results in hair, fluid, and heat loss and ear canal occlusions. Secondary infections include decreased weight gain and mortality in domestic and wild animals. Like many other diseases, scabies is more common on elk feedgrounds.

"Scabies isn't rare, but it seems to be more common in higher density herds like those found in the [National Elk Refuge]," - Eric Maichak (2019), habitat biologist for the Game and Fish.

The risk of all the diseases listed above, and many more, remain a great threat to wildlife and livestock both, as long as wildlife is artificially fed, which concentrates them unnaturally and spreads bacteria and diseases with ease.

Purpose and Need is inadequate

The purpose and need as described by the USFS for this EIS process is to "analyze the proposal to assure that the Wyoming Game and Fish Commission is managing elk in a manner

that allows the health of the land to be sustained and to meet the goals and objectives of the 1990 Bridger-Teton Land and Resource Management Plan with Amendments.”

Due to the aforementioned adverse effects of feedgrounds on the health of elk and the presence of diseases that may last for decades on feedgrounds, it’s clear that the WGFC is not managing elk to meet the needs of the health of the elk nor the land. The BTNF forest plan (p. 11) states:

“Historical elk migration routes should be re-established to enhance the outfitting and guide industry.”

Therefore, the benefits to restoring natural elk migrations would benefit not only the health of elk populations in Wyoming, but also the outfitting and guide industry.

According to the Bridger-Teton forest plan (p. 37), “Maintaining elk feedgrounds has adversely changed composition of plant communities surrounding some feedgrounds.”

Continuing to feed for an additional 20 years will continue to deteriorate vegetative conditions in and around Dell Creek and Forest Park. Additionally, the decision to continue feeding elk for 20 years at Dell Creek and Forest Park goes against the BTNF Forest Plan *Big-Game Winter Range Standard* (p. 155)

Human activity and disturbance in crucial big-game winter range will be restricted from November 15 to April 30 if big-game are present in the area.

Lastly, the BTNF *Grazing Use of the National Forest* (p.150) states that grazing must sustain or improve overall range, soils, water, wildlife, and recreation values or experiences. Objective d. States that the BTNF:

“must require that suitable and adequate amounts of forage and cover are retained for wildlife and fish.”

The USFS must take into consideration the fact that feedgrounds are deemed “necessary” for winter elk forage, and then in turn, look into the health of natural winter forage ranges and the impacts that cattle grazing has on wildlife.

The impacts of feedgrounds must be considered comprehensively rather than just for Dell Creek and Forest Park

In response Western Watersheds Project, et al., vs. Vicki Christiansen (Chief, U.S. Forest Service), et al, (Case No. 17-cv-202-NDF) decided on September 14, 2018, attorneys (Meyer Glitzenstein & Eubanks LLP) for the petitioners sent the USFS Chief and the Supervisor of the BTNF a letter, dated September 26, 2018, that describes in part:

“(H)ow the Forest Service should address the National Environmental Policy Act (“NEPA”) and Administrative Procedures Act (“APA”) issues recently remanded to the agency in light of the ruling by the U.S. District Court for the District of Wyoming in *Western Watersheds Project v. Christiansen*, No. 17-cv-202-NDF (D. Wyo. Sept 14, 2018).”

In that letter, among several legal and environmental issues discussed, it points out that:

“These concerns are universal to all elk feedgrounds on the BTNF. Therefore, it is Petitioners’ view that this decision applies to Alkali Creek Feedground, and to all future requests for renewals of special use permits to operate elk feedgrounds on NFS Lands.” (Furthermore,) “(c)onsidering the Court’s holding that the Forest Service must “consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD [chronic wasting disease] risk, transmission, and mitigation since the 2008 analysis,” Petitioners strongly urge the Forest Service to prepare an EIS for all feedgrounds on the BTNF. The piecemeal approach of examining individual feedgrounds tends to obscure or minimize the severity of adverse impacts and hinders the Forest Service’s ability to examine alternatives to phase out artificial feeding across the BTNF. In contrast, a comprehensive EIS examining the entire “integrated feeding program” would enable the Forest Service to gain a more complete understanding of the impacts of artificial feeding on the BTNF and its resources, and efficiently and effectively consider phase-out and reduced impact alternatives to minimize and mitigate those impacts.”

Take, for example, the Dell Creek feedground, you can not rationally examine the alternatives without relation to the other feedground. It makes little difference across all the issues we have discussed if the elk simply move to the next nearest feedground. The Forest Service must examine the full network of feedgrounds in order to take the “hard look” that NEPA requires.

National Forest Management Act (NFMA) compliance

The BTNF must also act within the mandates of the National Forest Management Act. NFMA directs the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.” (16 USC Sec. 1604(g)(B)) Under this authority, the Forest Service’s regulations require it to provide ecosystem components including ecosystem integrity, ecosystem diversity, and maintain viable populations of species of conservation concern. (36 CFR Part 219.9) Elk feedgrounds are the opposite of healthy ecosystems, they prevent healthy wildlife populations, and, thus, do not comply with NFMA.

National Environmental Policy Act (NEPA) compliance

NEPA Section 102(2)(C) states that an EIS must be a detailed statement on

“(i) the environmental impact of the Proposed action,

“(ii) any adverse environmental effects which cannot be avoided should the Proposal be implemented,

“(iii) alternatives to the Proposed action,

“(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of

long-term productivity, and

“(v) any irreversible and irretrievable commitments of resources which would be involved in the Proposed action should it be implemented.” (Emphasis added.)

There are many irreversible commitments that are being proposed by the Forest Service here. Given the scientific certainty of CWD already on these feedlots or arriving shortly, given the 100% infection rate on exposure to prions, given the 100% mortality rate for infected individuals, given high levels of infectious materials deposited on these feedlots and given the essentially permanent contamination that results due to prions remaining infectious for decades, the issuance of these permits is an irretrievable commitment of resources.

In addition to these obvious direct impacts, there are a range of indirect impacts which must be considered.

For example, Riling Draw runs down the middle of the Dell Creek feedlot. Elk consume approximately 11 pounds of forage per day, so the 700 elk would produce approximately 3 and a half tons of waste per day. So that is some 315 tons of waste matter for a 3 month feeding season. During the peak spring run off period, large quantities of that waste matter would wash into Dell Creek. There are numerous major irrigation diversions downstream of Riling Draw that would spread these feces across the irrigated hay fields. Prion contamination would be taken up in the plants and soils which would significantly increase the scale of contamination. These impacts must be analyzed.

What is the liability to the Forest Service and WGFC should downstream landowners sue for the damages to their private lands due to the essentially permanent contamination by prions? These impacts must be analyzed.

Recently there have been significant discussions within the county governments of the 3 elk feedlot counties regarding the cost, difficulty and liability of the disposal and destruction of infected animals. Facilities capable of destroying the infectious prions will cost millions of dollars. This is an indirect impact of the Forest Services proposed action.

A “hard look” would be examining the information gathered by each county on carcass destruction.

Changed conditions and newer scientific findings

The BTNF should be aware of the changed conditions and newer scientific findings during the years since Forest Park and Dell Creek were last permitted in 1998 and 1996 respectively. See in particular BTNF employee Tyler Johnson's June 2014 Chronic Wasting Disease Literature Review Technical Report (Attachment 5) to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015. Some of the many important findings described in that June 2014 review by Johnson include:

"Owing to highly efficient direct transmission of CWD among cervids, the number, duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD (p .5)."

Cross et al. 2013 demonstrated that "in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed (p. 6)." (E)lk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area. (p. 6)"

"(S)tudies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National forest and nearby areas (p. 7)."

Naturally occurring populations of elk have shown that mortality from chronic wasting disease by itself can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello et al. 2014)." p.7

"Free-ranging elk herds in Wyoming (Cross et al. 2013, Williams et al. 2014) and Canada (Vander Wal et al. 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km² Elk density at the average state feedground in Wyoming is 1976.6 elk/km², based on the reported average of 600 elk on 75 acres." p.8

"I clearly understand and acknowledge that the Commission's action of feeding results in artificially high concentrations of elk during winter and early spring which increases disease transmission (Johnson, 2014; Attachment 5; and in the 2015 Final SEIS)." (Id.:6)
"When chronic wasting disease becomes established on the Bridger-Teton National Forest, there is a moderate to strong likelihood that the population limiting effects of chronic wasting disease to elk, mule deer, and moose may be hastened by supplemental feeding." (Id.:6)

Patricia O'Connor, has also recently acknowledged that elk feedgrounds should cease on USFS lands stating:

"The continued westward expansion of chronic wasting disease detected during the 2015 hunting season punctuates the need for exploring opportunities for change. In making this decision, I am recommending that the WGFC/WGFD transition away from the need for supplemental feeding for elk. Use at Alkali Creek feedground is not intended to be permitted in perpetuity. My staff will prepare a report annually that identifies changing conditions and recommends any needed adjustment in feedground management." (O'Connor 2015:5 in Final Record of Decision for the Alkali Creek elk feedground SEIS)

CWD exists in western Wyoming in the elk feedgrounds region. It is indisputable that CWD is now in western Wyoming in the region where the WGFD and the US Fish and Wildlife Service feed some 22,000 densely concentrated elk at 23 locations each winter. A moose tested positive for CWD in Star Valley in 2008 (Moose Hunt Area 23). Three doe mule deer tested positive for CWD in Green River, Wyoming, in late 2012 (Deer Hunt Area 132). A dead doe mule deer positive for CWD was discovered in Star Valley early summer of 2016 (Deer Hunt Area 145). A buck mule deer harvested by a hunter near Dubois, Wyoming, tested positive for CWD (Deer Hunt Area 128). More recently, a buck mule deer in Grand Teton National Park tested positive for CWD in November of 2018 and an elk in the park tested positive for CWD in December, 2020. A buck mule deer was confirmed positive for CWD in February of 2022 (Deer Hunt Area 143).

All these CWD endemic areas are either west of the Continental Divide in Wyoming, or adjacent to the Continental Divide; all are near- or are connected via cervid migrations to- elk feedgrounds. Forest Park elk feedground in the Greys River drainage is only 13 miles from where the CWD-infected moose was found in 2008, and only 18 miles from where the CWD-infected mule deer was found in 2016. It is located within a CWD endemic area as determined by the Wyoming Game and Fish Department. Dell Creek elk feedground near Bondurant, Wyoming, is along the migratory path of mule deer from the lower Green River Basin; CWD was found in mule deer in the town of Green River in 2012. Dell Creek feedground is bracketed by CWD endemic areas 31 miles to the northeast (Deer Hunt Area 128), and 26 miles to the southwest (Deer Hunt Area 145), respectively.

Elk, deer, and moose are known to share habitats throughout this region; it is virtually assured that elk, deer, and moose move from CWD endemic areas to currently non-endemic areas every year. The risk is significant that elk that attend both Forest Park and Dell Creek will be or already are exposed to CWD. Given the proximity of the disease, the catastrophic risk of intraspecific and cross-species infection to herds of elk, deer and moose from CWD, the persistence of the infectious prions in soil and plants, and the known harmful effects of concentrating hundreds and thousands of elk for months each winter in the face of this infectious and fatal disease, the BTNF must consider and thoroughly analyze alternatives to elk feedgrounds. Merely "monitoring" elk feedgrounds for symptomatic elk or other cervids is not sufficient and does

virtually nothing to mitigate the risk to elk, nor does removing symptomatic elk or other cervids. Additionally, the BTNF must not allow hay harvested from CWD endemic areas to come onto BTNF lands.

- **Contamination of lands in and around feedgrounds - Soil, water, plants, feces, and urine**

Scientists believe CWD proteins (prions) likely spread between animals through body fluids like feces, saliva, blood, or urine, either through direct contact or indirectly through environmental contamination of soil, food, or water. Once introduced into an area or farm, the CWD protein is contagious within deer and elk populations and can spread quickly (CDC, 2021). Experimental studies have also shown that prions can be taken up by certain plants, including alfalfa, corn, tomatoes, and wheat, and remain infectious (CIDRAP, 2020). Knowing these factors and continuing to expose elk to the prions that cause CWD and potentially make it worse is ignoring the science.

“Scientists searched for prions at Mineral licks – areas where deer seek out essential nutrients and minerals – in the CWD endemic area across south-central Wisconsin. Out of 11 sites, nine had detectable levels of the disease-causing misfolded proteins. Prions were found both in soil and in water from the sites, as well as in nearby fecal samples from one site” (*Outbreak News Today*, 2018).

Given the reality that infectious CWD prions can be in soil, plants, water, feces and minerals, *and, when ingested, may be infectious for mammals*, the BTNF must analyze the potential effects of hay grown and harvested in CWD endemic areas being fed to feedground elk. The BTNF must also consider the effects of mineral licks, both natural licks and minerals placed by people for livestock use, on wildlife and the environment. The BTNF must also consider the effects on wildlife *and human health* given the potential for infectious prions to be in plants, water, and soil, and the potential of elk feedgrounds to amplify the distribution and prevalence of CWD in deer and elk, and consider the effects to wildlife *and people* of increased exposure to CWD prions.

The BTNF must require appropriate disposal of the carcasses of CWD-infected elk or other cervids discovered and/or removed by the WGFD or anyone. The vector of CWD is called a prion, which is a misfolded brain protein known for its near indestructibility and knack for persisting in the natural environment, including in soil and water. Prions are so persistent that attempts to remove them from the environment have mostly proven unsuccessful. Deer and elk holding pens in Sybille, CO, were left empty for six months to one year after all animals were removed and killed. New animals were introduced that had no previous contact with infected deer and elk. Elk in the pens came down with CWD within five years after the attempt at facility sterilization (Forester media et al, 2003). Prions that will be found on both the Dell Creek and Forest Park feedgrounds will not only infect elk today, but have the potential to infect animals for years, even decades, to come. A plan for proper destruction and removal of all elk carcasses at feedgrounds will need to be conducted by the Forest Service during this process.

- **Human health concerns**

In addition to the risk of CWD to elk, deer, and moose, there also exists a human health risk (Waddel et al., 2018; Osterholm et al., 2019). Since 1997, the Centers for Disease Control and the World Health Organization have recommended that agents of any prion disease should not enter the human food chain. Bovine spongiform encephalopathy (mad cow disease), a prion disease, became epidemic in the United Kingdom in the 1980s and 1990s after infected beef was consumed by humans causing significant social and economic disruption. Teton County, Wyoming, Health Officer, Dr. Travis Riddell, M.D., penned a column (2019) in the health section of the Jackson Hole News and Guide warning, “the situation with wild game in Wyoming is eerily similar to that of mad cow disease in the U.K. 20 years ago, and things didn’t turn out so well for humans there.”

Leading researchers are highly concerned about the risk of transmission of CWD to humans concluding that “[t]he past century has provided compelling evidence that effective public health interventions are needed to prevent the transmission of prion-related transmissible spongiform encephalopathies (TSEs) between animals and humans and between humans...Available data indicate that the incidence of CWD in cervids is increasing and that the potential exists for transmission to humans and subsequent human disease” (Osterholm et al., 2019). A human health epidemic could cause similar disruptions with resulting economic consequences for the economy of Wyoming and neighboring states dependent on wildlife-related recreation (Peterson, M.J., 2003; Local News 8, 2019).

Decision to continue artificially feeding elk does not comply with BTNF forest plan

The Bridger-Teton National Forest(s) plan’s main *Resource Management Goal for Recreation Management* lists the Forest’s top priority as “to maintain and improve the health, diversity, and productivity of forest ecosystems for the enjoyment of current and future generations”. The USFS must consider wildlife viewing as very much a part of the recreationist’s experience while visiting national forests in Wyoming.

Also, the USFS must ensure that the decision complies with the BTNF Land and Resource Management Plan. The decision to permit WGFC to continue to feed elk would go against Objective 2.1 (a):

“to [h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients”

Continuation of artificially feeding elk limits the ability for elk herds to restore their historic migratory patterns. Feedgrounds have interrupted elk migration from summer ranges to traditional winter ranges, resulting in a functional fragmentation of their habitat. With reduced concern for the conservation of native winter ranges, this fragmentation is likely to become

permanent unless action is quickly taken to phase out feedgrounds. Additionally, feedgrounds have resulted in less concern for the conservation of native ranges because some people feel these ranges are unnecessary to support elk (Western EcoSystems Technology, Inc.). In other words, they have accepted winter feeding as mitigation for development and other habitat loss. More emphasis on rehabilitation of winter range for elk should be a priority for the public and land management agencies. Alternative 1, would provide this needed rehabilitation from the impacts of decades of feeding at Forest Park and Alternative 2 would provide the same at Dell Creek.

Carnivore tolerance can benefit healthy elk herds

Increasing tolerance for wolves in CWD-infected areas can be a strategy for containing this disease. Human/predator interactions are often viewed through the lens of 'conflict' or 'risk' to human communities, such as livestock depredation, impacts on abundances of game species, and threats to human safety. However, carnivores can also benefit humans by pest control, waste and carcass disposal, and nature tourism. On the topic of elk feedgrounds, carnivores are especially helpful when it comes to culling sick animals out of the population. A recent study finds that “predators may create healthier prey populations by selectively removing diseased individuals (Brandell, et al., 3).” *Examination of the interaction between age-specific predation and chronic disease in the Greater Yellowstone Ecosystem*, published in the *Journal of Animal Ecology*, in 2022 shows that wolves selectively remove animals that are infected years before humans can detect that an animal is infected with CWD. Ungulates that are infected are likely to have symptoms which, even in the early stages of illness, make them less wary, and less able to avoid predators, long before the disease progresses to the point of death. So, wolves, by the way they hunt, are likely to single out these animals and remove them long before they would have succumbed to the illness. If they take the infected animal out six months or a year earlier than they would have died, it can reduce all those potential transmission to other elk or deer, therefore reducing the spread of CWD. Wolves and other canines are not susceptible to the illness and thus are unable to spread it.

Additionally, research published in 2021 in the *Proceedings of the National Academy of Sciences* highlights an underappreciated benefit of wild wolf populations: the large predators frighten deer and elk away from dangerous roadways, saving money and lives in the process. Most of the reduction in collisions was due to the “landscape of fear” that wolves create (2021). Wolves tend to follow clear paths through the landscape, like streams. In an area that has been developed by humans, wolves follow roads, trails, and pipelines. Deer adapt to the wolves’ presence by staying away, which would reduce the chance that they would get hit by a car. Since car-elk collisions are one of the concerns that comes with closures of feedgrounds, promoting the health of wolves could be a great mitigation strategy.

Impacts on wildlife protected under the Endangered Species Act

Dell Creek and Forest Park feedgrounds are located in critical Canada lynx habitat (USFWS, 2014) and grizzly bear occupied and Demographic Monitoring Area (WGFD 2016). Canada lynx and grizzly bears are protected under the Endangered Species Act (ESA). Since the promulgation of elk feedgrounds by the BTNF adversely affects the health of prey species such as deer, moose and elk, elk feedgrounds have the potential to adversely affect carnivores including those protected under the ESA. The EIS will need to address the long-term effects to Threatened and Endangered Species if elk populations plummet due to disease. Due to these impacts on ESA-listed species, the Forest Service also needs to consult with the US Fish and Wildlife Service about potential effects to listed species under the ESA on any elk feedground permit regardless of term.

The BTNF must also consider the beneficial effects of abundant predators of elk and deer on the prevalence of CWD and other diseases in elk and deer and whether the existence of elk feedgrounds will affect the ability of predators to influence the health of elk and deer herds.

Professional wildlife management agencies recommend phasing out feeding

a. AFWA

- i. The American Association of Fish and Wildlife Agencies (of Which the Wyoming Game and Fish Department is a member) states in their Best Management Practices for Prevention, Surveillance, and Management of Chronic Wasting Disease, “There is currently no evidence that baiting and feeding of free-ranging cervids can be conducted to mitigate increases in the opportunity for disease transmission. There is also no evidence the practice is likely to increase harvest sufficiently to overcome the negative effects of those increases by disease transmission. Evidence to date suggests that “restrictions on feeding quantity would not mitigate the potential for disease transmission” and that putative mitigating practices such as spreading feed or bait over a specified area, or restricting the kinds of food items that can be used, did not substantially reduce the potential risk for disease transmission” (Palmer and Whipple 2006; Thompson et al. 2008).

b. The Wildlife Society

- i. The official statement from The Wildlife Society in 2020 is to “encourage fish and wildlife agencies, wherever possible, to phase-out supplemental feeding of wild ungulate populations, both in-house and by the general public, and to manage populations at levels that are compatible with the long-term carrying capacity of the habitat.”

Regional effects to wildlife from Wyoming’s elk feedgrounds

Elk feedgrounds in Wyoming do not just affect the state but have detrimental effects across the entire Greater Yellowstone ecoregion. The Montana Fish and Wildlife Commission sent a letter to Wyoming asking wildlife managers to reconsider the use of winter feeding grounds in order to

help prevent chronic wasting disease (Montana Fish & Game, 2017). They stressed that feedgrounds make Wyoming's wildlife populations less stable, less healthy, and more susceptible to a catastrophic disease event. They also acknowledged that if we do not address CWD, we will all be culpable in leaving a greatly devalued landscape to future generations. In closing, they asked that Wyoming begin the process of closing feedgrounds.

What Happens When Elk Feeding Ends

As a result of hearing a wide range of questions and concerns about ending the addiction to feeding created by the WGFC in this area, Wyoming Wildlife Advocates examined the common excuses provided for maintaining the status quo of the elk feedlot operations in west-central Wyoming. Please see Attachment 4 for this white paper.

The Forest Service's Public Trust Responsibilities

In 2016, the Forest Service commissioned law and policy experts to research the role and duties of the Forest Service in regard to wildlife management. The legal review was published in 2017 in the journal *Environmental Law*. We provide this review, in its entirety, as Attachment 7. The Forest Service's role here is not simply ministerial, the approval of a Special Use Permit, the Forest Service's role here is the conservation and protection of wildlife. This role and duty cannot be shuffled off to the state.

The executive summary of this review is as follows:

This Article reviews the authority of federal and state governments to manage wildlife on federal lands. It first describes the most common assertions made by state governments regarding state powers over wildlife and then analyzes the relevant powers and limitations of the U.S. Constitution and federal land laws, regulations, and policies. Wildlife-specific provisions applicable within the National Park System, National Wildlife Refuge System, National Forest System, Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered, as is the Endangered Species Act. We reviewed an extensive collection of cases of conflict between federal and state agencies in wildlife management on federal lands. These cases show how federal land laws, regulations, and policies are frequently applied by federal agencies in an inconsistent and sometimes even unlawful fashion. They also demonstrate how commonalities found in state wildlife governance, such as sources of funding and adherence to the North American Model of Wildlife Conservation, often exacerbate conflict over wildlife management on federal lands.

Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. We debunk the myth that "the states manage wildlife and federal land agencies only manage wildlife habitat." The myth is not only wrong from a legal standpoint but it leads to fragmented approaches to wildlife conservation, unproductive battles over agency turf, and an abdication of federal

responsibility over wildlife. Another problem exposed is how the states assert wildlife ownership to challenge the constitutional powers, federal land laws, and supremacy of the United States. While the states do have a responsibility to manage wildlife as a sovereign trust for the benefit of their citizens, most states have not addressed the conservation obligations inherent in trust management; rather, states wish to use the notion of sovereign ownership as a one-way ratchet—a source of unilateral power but not of public responsibility. Furthermore, the states' trust responsibilities for wildlife are subordinate to the federal government's statutory and trust obligations over federal lands and their integral resources.

The Article finishes by reviewing the ample opportunities that already exist in federal land laws for constructive intergovernmental cooperation in wildlife management. Unfortunately, many of these processes are not used to their full potential and states sometimes use them solely as a means of challenging federal authority rather than a means of solving common problems. Intergovernmental cooperation must be a mutual and reciprocal process, meaning that state agencies need to constructively participate in existing federal processes, and federal agencies should be provided meaningful opportunities to participate in, and influence, state decision making affecting federal lands and wildlife. (emphasis added)

We also request a complete review of Attachment 7 - Wildlife Health and Public Trust Responsibilities for Wildlife Resources, 2016. The paper is directly related to the federal government's responsibilities regarding wildlife disease transmission.

Provided as Attachment 8 is the Wildlife Society's Technical Review 10-01 The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada. This Technical Review provides an in-depth review of the government's Public Trust duties and responsibilities.

WGFD quotes that make solid arguments against elk feedgrounds

"Quite naturally, all the groups interested in these elk have not seen eye to eye as pertains to their management. In some instances disputes have arisen. Much of this disagreement, however, is because at times prejudices, distortions and emotions have been substituted for facts. At other times the available facts have not always been recognized in their proper perspective by everyone concerned. Unfortunately, all that is known is not common knowledge, nor have all the facts been brought to light."

-A.F.C. Greene, Wyoming State Game and Fish Commissioner, in the Forward to Chester C. Anderson's The Elk of Jackson Hole (1958)

"Feeding is most common in winter when well-intentioned people think wildlife need extra energy, but data collected over the last 50 years indicates that feeding causes a great deal of harm and may actually decrease winter survival. Feeding increases

disease transmission, causes habitat degradation, can upset the normal digestive process, interferes with wildlife social structure and may attract predators and other problem wildlife.”

“When animals are fed, they tend to congregate in unnaturally high numbers. This high density allows disease to be transmitted much more quickly.”

“TB should not only be a concern for wildlife enthusiasts. The disease may infect domestic livestock and well as humans...once this disease is well established, it is very difficult to completely eradicate it from a wild population. One of the best preventative steps in this effort is to not feed wildlife.”

“The evidence is undeniable. Wildlife are adapted to survive winter without supplemental feeding. Feeding causes many more problems to wildlife than it solves. Additionally it can be harmful to humans and domestic animals.”

“[Brucellosis] is virtually nonexistent in elk herds that are not fed or closely associated with herds that are fed. There is no doubt that feeding has allowed the disease to persist. Likewise, there is little doubt that if feeding were discontinued and elk used native winter ranges, the disease would eventually disappear over time.”

“Finally, it can be questioned whether feeding wildlife is even ethical.”

The Wyoming Game and Fish Department - Feeding Wildlife: A Recipe for Disaster

“The supplemental feeding of elk, or any big game species, is not recommended. Concentrating animals in such a manner increases the potential for disease transmission (including brucellosis and scabies), as well as dependence upon unnatural food sources. This may result in less healthy populations and reduced reproduction. Supplementary fed animals are less inclined to forage for themselves and can lose their natural wariness, increasing the chance of predation. Concentrating elk may result in range degradation to the area surrounding the feedground. Collisions with motor vehicles while elk are feeding near highways and elk grazing damage to fields and haystacks are other undesirable possibilities resulting from supplemental feeding.”

“Keep in mind that elk populations are neither stagnant nor constant. They fluctuate annually, higher in years of mild weather and/or plentiful forage and lower in years of severe weather and/or poor forage production. Big game herds do not, nor should they be expected to, remain at a constant level year after year. Though starvation of big game animals is not pleasant, it is a natural process that removes less fit animals the range simply cannot support at the time. To intervene in this process is to remove natural selection from elk population dynamics and jeopardize the future condition and capacity of the range to support elk.”

Landscape connectivity and big game winter ranges

There are vast areas of protected public lands in western Wyoming that allow for wildlife to free-range. The only counties in western Wyoming with elk feedgrounds are Sublette County, Lincoln County, and Teton County. These three counties' combined acreage is almost 8.6 million acres of which 83% is federal land. More than 7 million acres in these counties are managed by the National Park Service, the US Forest Service, the US Fish and Wildlife Service and the Bureau of Land Management. Very importantly, there are 1.74 million acres of big game winter range in these counties, as designated by the Wyoming Game and Fish Department.

In adjacent counties, well within migratory capabilities of elk, there are even more natural winter ranges acknowledged by wildlife management agencies. In the context of this large area (Sublette, Lincoln, and Teton Counties and surrounding counties), human settlement is relatively sparse on comparatively small acreages. These critical wildlife habitats have better protections for wildlife than they did during settlement times in the late 19th and early 20th centuries. Federal agencies and the WGFD restrict or prohibit many human activities on winter ranges to protect wildlife. Some elk, deer and other big game are known to undertake local and large-scale, long-distance migrations among their seasonal habitats throughout this region (Wyoming Migration Initiative 2016). The BTNF must consider the innate ability of elk to migrate between seasonal ranges in western Wyoming, and the fact that winter feedgrounds impede that ecologically beneficial behavior and harm the health of elk and the ecosystem. The BTNF must consider alternatives that do not bait elk onto disease-ridden small parcels for the winter months, but allow elk to naturally free-range among their natural, healthier seasonal habitats throughout the region. The BTNF must consider a healthier paradigm than feedgrounds to manage elk on the USFS lands.

Economics of sustainable wildlife management

Direct expenditures (plus a multiplier effect of expenditures) of wildlife watchers in Wyoming during 2011 were \$556 million dollars. A 2018 study found that people spent \$802.2 million in Wyoming on wildlife-based recreation in 2017. From that direct spending, the state saw the benefit of \$1.065 billion in total economic activity (Sweetwater Now, 2019). While the three counties in western Wyoming where elk feedgrounds are located are only a portion of the state of Wyoming, the annual revenue from wildlife-related recreation in Sublette, Teton and Lincoln counties is undoubtedly many millions of dollars annually. The allowance of elk feedgrounds that promulgate diseases in elk and other wildlife threatens the tourism and wildlife-based economies of western Wyoming and the Greater Yellowstone Ecosystem. The BTNF must consider these facts and must consider the impacts of diseased elk feedgrounds on the economy, and must consider a transition to a healthier more sustainable paradigm of wildlife and habitat management, which will better serve the regional economy in the future.

Climate change

Climate change is affecting the natural ecosystems of Wyoming and the Greater Yellowstone Ecosystem. “The frequent warm years coincide with a reduction in the frequency of extremely low (<-20 degrees C) January temperatures . . . ” (Shuman, 2011).

Wildlife are affected by changes in climate. “The ecology of ungulates in the (Rocky Mountains and Upper Columbia Basin) is strongly influenced by climate” (NPS 2010:48). “One of the key issues for ungulate management is wildlife disease, the spread and virulence of which is likely to be exacerbated by climate change (Harvell, 2002).” (Id.) It is known that elk feedgrounds exacerbate the incidence of diseases in elk (Smith, 2001; Peterson, 2003). “Climate change will likely increase the range, frequency, severity, and impact of plant and wildlife disease (Harvell, et al., 2002)” (NPS 2010:17). “Plant communities and wildlife that are faced with multiple stressors are the least likely to resist the emergence of novel diseases” (Id.). The BTNF must consider the effects of climate change on elk and elk habitat and must consider alleviating stressors on elk (such as density dependent diseases and diseased habitats) and implementing less harmful alternatives to managing elk than confining them on feedgrounds every winter.

The BTNF must also consider available natural forage for elk on important habitats such as native winter ranges. The impacts of seasonal livestock grazing on USFS and BLM lands that also serve as big game winter ranges must be considered and managed to allow for residual forage to sustain wintering elk and other big game.

Separation from livestock

The BTNF must consider alternative ways (other than elk feedgrounds) to maintain separation between elk potentially exposed to or infected with brucellosis and livestock vulnerable to brucellosis infection on private lands adjacent to or near the BTNF. One method to maintain separation is to fence in the livestock with elk proof fences, or construct elk proof fences to prevent elk from entering into private land where vulnerable livestock are pastured, and allow elk to free range. There are already elk proof fences on USFS land (and other jurisdictions) in the area of Soda Lake near Pinedale, Muddy Creek near Boulder, and along the Star Valley Front south of Alpine to mitigate commingling. It is important to fence as little area as possible so as not to affect natural wildlife movements including wildlife migrations more than necessary to accomplish the goal. Another way to separate elk from livestock is to ship the livestock to winter elsewhere.

Conclusion

Elk that attend winter feedgrounds in western Wyoming, including on the BTNF, have elevated seroprevalence for exposure to *Brucella abortus*, which can cause brucellosis in elk, and elevated levels of other diseases, in comparison to elk that free range (Smith 2001). These are serious indicators that these elk herds are unhealthy and at risk of other diseases such as CWD, and that a change in the management paradigm for elk including those elk that use the BTNF is needed. Since deadly CWD is expanding throughout Wyoming at an alarming pace, time is of the essence to manage elk and habitat on the BTNF in a more holistic way. Rather than manage elk according to artificial objectives such as numbers of elk as determined by the

Wyoming Game and Fish Commission regardless of their health or the health of the habitat, the BTNF and other agencies must strive for a healthier ecosystem and more sustainable objectives to manage the public's wildlife. Extensive, connected habitats and the conservation of predators can serve as natural capital to improve the health of the elk herds that are currently sick, at high risk, and confined on small feedgrounds months at a time. Predators can, if conserved in abundance, steward the game herds, remove infected individuals, and help ensure healthy wildlife. Elk feedgrounds are an archaic method of wildlife management whose time has passed. We support **Alternative 1**, immediate closure, of **Forest Park Feedground** and **Alternative 2**, phase out within three years, for **Dell Creek Feedground**.

We are submitting this joint comment letter on behalf of the organizations listed below:

Sierra Club, a non-profit environmental organization founded in 1892, has 5,000 members and supporters in Wyoming and 3.8 million members and supporters nationwide. Its mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

Wyoming Wildlife Advocates (WWA) is a non-profit organization focused on informing, educating, and empowering communities to preserve our wild legacy and protect our shared wildlife resources. WWA envisions a Wyoming that leads the nation in exceptional and innovative wildlife management; all stakeholders are valued equally, and management decisions are driven by the best available science. Headquartered in Jackson, Wyoming, WWA has thousands of supporters in Wyoming, the Greater Yellowstone Ecosystem, and nationwide.

Western Watersheds is a non-profit conservation organization founded in 1993 with the mission of protecting and restoring western watersheds and wildlife through education, public policy initiatives, and litigation. Headquartered in Hailey, Idaho, Western Watersheds Project has 2,000 members and field offices in Idaho, Montana, Oregon, Wyoming, Arizona and California.

Yellowstone to Uintas Connection is a 501c3 public interest organization whose staff and members have and will continue to work to protect the integrity of habitat for fish and wildlife as well as recreate in this region. We are concerned about the loss of integrity of the Regionally Significant Wildlife Corridor that connects the Greater Yellowstone Ecosystem and Northern Rockies to the Uinta Wilderness and Southern Rockies. Yellowstone to Uintas Connection is headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming.

Buffalo Roam Tours is a Greater Yellowstone Ecosystem guiding company founded in 2012 based out of Teton County Wyoming. We specialize in connecting 1000's of tourists annually, through experiential outdoor interpretation to the wonders of the natural world. Buffalo Roam's mission of Human and Nature Connection is founded on science based teaching to explain,

experience and re-connect visitors to the amazing interconnection of wildlife, landscapes and humans.

Gallatin Wildlife Association (GWA) is a non-profit volunteer wildlife organization of approximately fifty members. Headquartered in Montana, GWA is composed of dedicated hunters, anglers, and other wildlife advocates in Southwest Montana and beyond. GWA's mission is to protect habitat and conserve fish and wildlife for future generations. GWA has long standing interests in supporting the sustainable management of fish and wildlife populations through fair chase, public hunting and fishing opportunities that will ensure these traditions are passed on for future generations to enjoy.

Jackson Hole Conservation Alliance (JHCA) is a non-profit organization with the mission to protect the wildlife, wild places, and community character of Jackson Hole. JHCA represents thousands of Wyoming residents with an interest to protect our wildlife based on the best available and most accurate science, and through proactive community engagement. Since 1979 the Alliance has effectively worked as a watchdog to keep Jackson Hole wild and beautiful.

Thank you again for the opportunity to provide these scoping comments. We look forward to continuing to engage in this important decision-making process.

We incorporate by reference the comments submitted by:

- 1) Lloyd Dorsey
- 2) Dr. John Carter - Yellowstone to Uintas Connection
- 3) Clint Nagel - Gallatin Wildlife Association

Sincerely,

Kristin Combs
Executive Director
Wyoming Wildlife Advocates
PO Box 1772
Wilson, WY 83014
Kristin@wyowild.org

Jonathan Ratner
Wyoming Director
Western Watersheds Project
PO Box 171 Bondurant, WY 82922
jonathan@westernwatersheds.org

Kaycee Prevedel
Conservation Organizer
Sierra Club Wyoming Chapter
Laramie, WY 82070
kaycee.prevedel@sierraclub.org

Clinton Nagel
President
Gallatin Wildlife Association
P.O. Box 5317
Bozeman, MT 59717
clint_nagel@yahoo.com

Chelsea Carson
Conservation Program Manager
Jackson Hole Conservation Alliance
685 S. Cache St. / PO Box 2728
Jackson, WY 83001
chelsea@jhalliance.org

John Carter
Board Member
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922

Matt Fagan
Owner/Guide
Buffalo Roam Tours
Jackson, WY 83001
info@buffaloroamtours.com

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Please see additional attachments

Attachment 1: 2016 Organizational scoping comments

Attachment 2: Western State Management of Wintering Elk

Attachment 3: Court Case Rulings

Attachment 4: What Happens When Elk Feeding Ends

Attachment 5: Chronic Wasting Disease Literature Review Technical Report

Attachment 6: Fish and Wildlife Management on Federal Lands

Attachment 7: Wildlife Health and Public Trust Responsibilities For Wildlife Resources

Attachment 8: The Public Trust Doctrine

[Link to Attachments](#)

Appendix 1

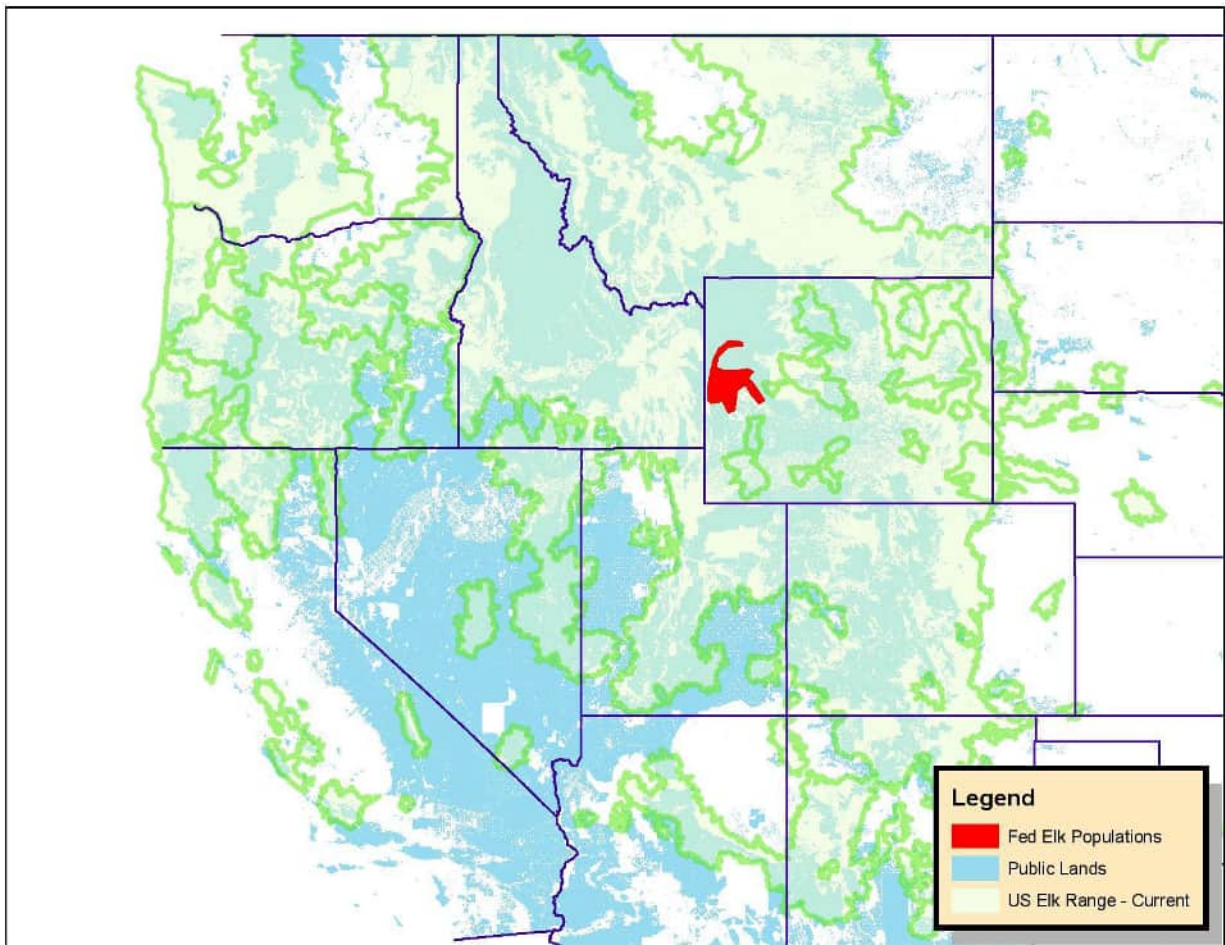


Figure 1. This map visualizes current elk range in the Western United States, and the small amount of elk that are artificially fed hay in Western Wyoming.

Appendix 2

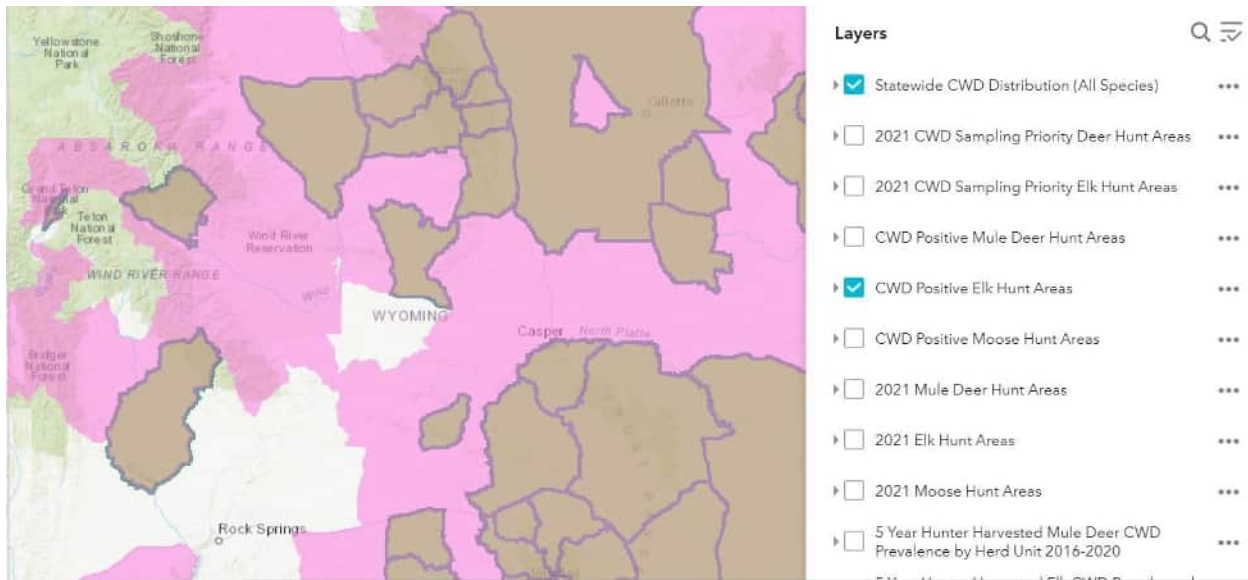


Figure 2. WGFD's map of CWD positive areas that clearly shows chronic wasting disease established on the Bridger Teton National Forest.
(<https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Wildlife-Disease/CWD-in-Wyoming-Wildlife/CWD-Map>).

Appendix 4

Court Case Rulings

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF WYOMING

WESTERN WATERSHEDS PROJECT, et
al.,

Petitioners,

vs.

VICKI CHRISTIANSEN (Chief, U.S.
Forest Service), et al.,

Respondents.

Case No: 17-CV-202-NDF

MEMORANDUM DECISION AND ORDER

Petitioners Western Watersheds Project, Sierra Club, Wyoming Wildlife Advocates and Gallatin Wildlife Association (collectively, "Petitioners") challenge the United States Forest Service's ("Service") approval of the request by the Wyoming Game and Fish Department ("WGFD") Commission to amend a special use permit to include Alkali Creek Feedground, located in the Bridger-Teton National Forest ("BTNF"), as an elk winter feeding location for use through 2028. In general, Petitioners allege the Service's 2015 Final Supplemental Environmental Impact Statement ("2015 FSEIS"), Record of Decision ("ROD"), and special use permit for Alkali Creek Feedground are contrary to the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370m, and the Administrative Procedure Act (APA), 5 U.S.C. § 706. Petitioners complain that the Service's analysis of the impact of the Alkali Creek Feedground on Chronic Wasting Disease ("CWD") was faulty. Petitioners request the Court vacate and remand the

Service's decision to grant the special use permit. After considering the filings in this matter, the Court concludes the Service failed to comply with the procedural requirements of NEPA. Because of this, the Court VACATES and REMANDS the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of National Forest Service lands for winter elk feedground activities at Alkali Creek Feedground.¹

BACKGROUND

I. Statutory and Regulatory Background

A. *NEPA Procedural Requirements*

NEPA requires federal agencies to consider the environmental impacts of their actions, disclose those impacts to the public, and then explain how their actions will address those impacts. *Baltimore Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983). To accomplish these goals, NEPA requires federal agencies to prepare an Environmental Impact Statement ("EIS") for all "major federal actions" that may "significantly affect[] the quality of the human environment." 42 U.S.C. § 4332(C). Among other considerations, the EIS must describe (1) "the environmental impact of the proposed action," (2) "any adverse environmental effects which cannot be avoided," and (3) "alternatives to the proposed action." 42 U.S.C. § 4332(C)(i)-(iii). An agency need not include every possible alternative, nor analyze consequences of alternatives it has in good faith rejected "as too remote, speculative, or .

¹ Nothing in this decision or order adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) special use permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim past practice. *See, e.g.*, AR17733-71.

. . impractical or ineffective.” *WildEarth Guardians v. National Park Service* 703 F.3d 1178, 1183 (10th Cir. 2013) (citation omitted). Further, an EIS must also assess the direct, indirect, and cumulative impacts of the proposed action, including unavoidable adverse environmental effects. 30 CFR § 1508.25. Cumulative impacts result from the “incremental impact[s]” of the proposed action when added to the impacts of other past, present, and reasonably foreseeable future actions, whether undertaken by other federal agencies or third parties. *Id.* at § 1508.7.

NEPA prescribes the process, not the end result, of agency action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). In this regard, NEPA only requires an agency to take a “hard look” at environmental consequences of its actions and to adequately disclose those impacts to the public. *Baltimore Gas*, 462 U.S. at 97-98; *Middle Rio Grande Conservancy Dist.*, 294 F.3d 1220, 1225 (10th Cir. 2002).

B. *Substantive Management Requirements for National Forest System Lands*

In the Organic Administration Act of 1897, Congress established “a limited multiple-use mandate for management of the National Forests”, authorizing use of the forests for the purposes of “improv[ing] and protect[ing] the forest[s],” “securing favorable conditions of water flows,” and “furnish[ing] a continuous supply of timber for the use and necessities of citizens of the United States.” *Wyoming v. U.S. Dep’t of Agriculture*, 661 F.3d 1209, 1221 (10th Cir. 2011) (quoting 16 U.S.C. § 475). In the Multiple-Use Sustained-Yield Act of 1960, Congress expanded that limited multiple-use mandate to include use of the national forests for the additional purposes of outdoor recreation, range, timber, watershed, and wildlife and fish purposes. *See* 16 U.S.C. § 528.

Congress delegated the forest management authority to the U.S. Department of Agriculture (“USDA”), and in turn, the Service, to manage National Forest System (“NFS”) lands consistent with Congress’s multiple-use mandate.

The National Forest Management Act, passed in 1976, instructs the Service to manage each forest unit at two different levels (programmatic level and project or site-specific level) pursuant to multiple-use and sustained yield principles. 16 U.S.C. § 1604. Specific to this case, Congress instructed the Service “[a]t the project or site-specific level, [to] implement[] the forest plan² by approving or disapproving particular projects using an environmental impact statement, an environmental assessment, or a categorical exclusion,” *Utah Environmental Congress v. Bosworth*, 443 F.3d 732, 737 (10th Cir. 2006), and to ensure that each project complies with the applicable forest plan, *see id.* (citations omitted); 16 U.S.C. § 1604(i).

By these laws, Congress intended the Service’s discretion and authority to regulate NFS lands to be “broad”. *Wyoming*, 661 F.3d at 1235. The regulatory scheme Congress enacted provides for the Service to cooperate with state and local governments in making land management decisions. *See, e.g., id.* § 1604(a) (requiring the Forest Service to develop its Forest Plans in coordination “with the land and resource management planning processes of State and local governments”); 40 C.F.R. § 1506.2(b) (providing that “[a]gencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements”); *accord id.* § 1506.2(c) (same). However, in the end, the statutory framework makes clear that

² The BTNF Land and Resource Management Plan can be found in the record at AR1-388.

Congress contemplated that all final decision-making authority rests with the Service and not in a state or local governmental body.

II. Factual Background

A. *The Jackson Elk Herd and Elk Feedgrounds in General*

The Jackson elk herd comprises one of the largest concentrations of elk in North America. AR17778. The elk migrate across several boundaries, including the BTNF, Grand Teton National Park (“GTNP”), and the National Elk Refuge³ (“Refuge”). In 2013, the Jackson elk herd had an estimated population of 11,600, with less than a ten percent interchange with adjacent herd units. AR28852; AR28974. Since 1998, wolf activity has influenced the movement of the elk herd in the Gros Ventre drainage,⁴ resulting in one large group (as much as 3,221 animals) congregating on one feedground and then moving to another feedground in the drainage. AR22037, 28774.

Wyoming first started to provide supplemental feed to elk in the early 1900’s to prevent large-scale die-offs during hard winters. AR28970. Since those early years, feedgrounds have also become an important tool for the State to reduce damage to haystack yards and winter pastures on private lands⁵ and to reduce the potential or transmission of brucellosis to livestock.⁶ AR10208. On NFS lands, elk feedgrounds are strategically placed near the boundaries to gather elk as they transition from summer

³ The National Fish and Wildlife Service (NFWS) manages the Refuge, which is part of the National Wildlife Refuge System. NFWS has an agreement with the WGFD which calls for a maximum of 7,500 elk on feed at the Refuge during any given winter. AR28971.

⁴ East of Jackson Hole lies the Gros Ventre drainage, a semiarid valley running east to west in the middle of approximately one million acres of the BTNF and Shoshone National Forest with no paved roads. AR18879.

⁵ Wyoming state law imposes liability on the WGFD Commission to pay for damages to crops caused by big game animals.

⁶ Brucellosis is a highly contagious bacterial disease that typically causes an infected female to abort her first calf following infection, and even subsequent calves. AR28977.

ranges down to lower elevations, mostly preventing elk from migrating through private lands in route to lower elevations. *Id.* Service regulations require authorization for feedground use and occupancy on NFS lands.

State-operated feedgrounds are located on BLM, Forest Service, State, and private lands.⁷ In terms of the Gros Ventre drainage and in addition to the Refuge, three state-operated feedgrounds provide supplemental winter feed to the Jackson elk herd: Alkali Creek, Patrol Cabin (on state land), and Fish Creek. AR21977. The practice of supplemental feeding is quite controversial and has been the subject of litigation. *See, e.g., Defs. of Wildlife v. Salazar*, 651 F.3d 112 (D.C. Cir. 2011); *Greater Yellowstone Coal. v. Tidwell*, 572 F.3d 1115 (10th Cir. 2009).

B. *Alkali Creek Feedground*

Alkali Creek Feedground encompasses 91 acres of NFS lands, including an elk tagging corral, a horse corral, a tack shed, a haystack yard containing two hay sheds, a water facility, and a feeding ground. AR27483. It is located about 12 miles from the Refuge, at the bottom of a topographic bottleneck that naturally limits down-river westerly elk movement. AR19144; 28853; 28877–78. This location effectively limits elk movement further down onto the Refuge, as well as onto nearby private lands. AR28878. The WGFD explained to the Service that the objectives of Alkali Creek Feedground were to prevent elk from co-mingling with livestock on private lands and prevent damage on

⁷ Currently, the WGFD manages 22 state-operated feedgrounds. AR17885. In addition, the Refuge, managed by the NFWS, engages in winter feeding.

private property.⁸ *Id.* Elk population density estimates at this feedground are quite high compared to those at the Refuge or at other WGFD feedgrounds.⁹ Wolf activity influences elk distribution in the Gros Ventre drainage, resulting in elk aggregating into one large group of up to 2,845 animals. These elk typically congregate on one feedground and move to another feedground in the drainage in response to wolf pressure. AR10208.

C. *Chronic Wasting Disease (CWD)*

CWD, the equivalent of “mad cow disease,” is a fatal prion disease of cervids, which include elk, white-tailed deer, mule deer, and moose.¹⁰ AR29034; AR10283. The disease is easily transmitted,¹¹ the prion (TSE) agent can contaminate the environment for long periods,¹² and management strategies have failed to stop its spread. *Id.*; AR28854; AR28876. As additional challenges, clinical signs of CWD are not diagnostic, there is a long incubation period, there is no treatment, there is no prevention in the sense of vaccination, and CWD is invariably fatal once clinical signs develop. AR18430. These challenges make surveillance difficult and expensive; hence the emphasis on preventing its introduction into the region. AR18431. Once this chronic disease is introduced into a

⁸ The WGFD contends that without Alkali Creek Feedground, elk-to-cattle brucellosis exposure would be much higher because of Alkali Creek’s key location in preventing elk movement downstream and onto private lands. AR28879; Doc. 63, p. 18.

⁹ A “high-density” elk population, as defined by a Rocky Mountain National Park study, is one that ranges from 10-100 elk per square kilometer. AR27771. The density for the Refuge is an estimated average of 59.3 elk per square kilometer. AR26284. Average population densities at Wyoming state feedgrounds are much higher, at nearly 2,000 elk per square kilometer. *Id.* Higher still is the estimated population density at Alkali Creek Feedground, which has been estimated between 2,470 to 8,600 elk per square kilometer. *Id.*

¹⁰ There is no evidence that the disease can be transmitted to humans or domestic livestock. AR28978.

¹¹ “Evidence suggests the disease can pass directly from infected animal to uninfected animal; by contact with soil, plants, or feed contaminated with the prion; or by direct or indirect contact with the carcass of an animal that has died from CWD.” AR19635.

¹² “The agent is extremely resistant to chemical disinfectants as well as to physical methods of inactivation. It is still not known whether environments contaminated with TSE agents can ever be completely disinfected.” AR18711.

population, “CWD can exceed natural rates of mortality, reduce survival of adult females, and decrease population growth of elk herds.” AR19277.

While CWD is well-established in south-central Wyoming and northern Colorado, it has yet to reach the Jackson elk herd. AR28876; AR28853. However, research indicates that the disease will continue to slowly spread west on a protracted time-scale.¹³ AR28876. Current models projecting the arrival of CWD in the Jackson elk herd are uncertain and predict a broad range of outcomes. AR28854.

As noted above, there is controversy about feedgrounds and their contribution to the introduction and spread of CWD.¹⁴ Petitioners refer to the joint 2007 Bison and Elk Management Plan (“2007 BEMP”), prepared by the NPS and the NFWS for the Refuge, which reported feedgrounds are a significant risk factor for the introduction and rapid spread of CWD. CM/ECF Document (“Doc.”) 43, p. 16; AR17781 (seasonal concentrations of elk create “an unnatural situation that has contributed to . . . an increased risk of potentially major outbreaks of exotic diseases,” and “damage to and loss of habitat”). Further, at least one expert with the USDA Animal and Plant Health Inspection Service (“APHIS”) thinks “long-term feedgrounds are detrimental to the health of the wildlife.” AR26800. The Service itself recognizes “that the WGFC action of feeding elk results in the artificial concentration of elk during winter and early spring that increases risk of disease transmission” (AR11108), and that prevalence of CWD is

¹³ However, a 2014 briefing paper notes “[s]cientists predict that CWD may arrive at NFS feedgrounds in the near future, as soon as within one year, subsequently affecting the ecosystem food web.” AR19635. CWD has been detected (in deer) within 60 miles of Alkali Creek Feedground. AR28853.

¹⁴ “CWD is not the only disease that could spread as a result of artificial feeding practices; there are a host of other debilitating or infectious diseases as well,” (e.g., foot rot, bovine tuberculosis, scabies, paratuberculosis, brucellosis). *Defrs of Wildlife v. Salazar*, 698 F.Supp.2d 141, 144 (D.C.D.C. 2010); AR28853.

likely “functionally related to ungulate density” (AR28876). Indeed, in its brief the Service states, “the practice [of supplemental feeding] concentrates elk during the winter months and contributes to the spread of diseases such as brucellosis and CWD.” Doc. 62, p.11. Also, the Brief of Amici Curiae Scientists discusses the very high population density estimates of elk at Alkali Creek Feedground, the behavior changes that occur as elk population densities grow (higher frequency and duration of contact), and the corresponding significant risk of disease transmission, both directly between animals and indirectly through the environment. Doc. 55, p. 15; AR26284; 24695. Further, both the NPS and NFWS agree that “elk concentrated on feedgrounds is likely to facilitate the spread of [CWD] when it reaches [the GTNP and Refuge]. As such, an overarching strategy to achieve the goals of the 2007 BEMP is to reduce reliance on winter supplemental feeding of bison and elk, and to transition to complete reliance on natural standing forage at an undetermined time in the future.” AR28174. Finally, one court found that the 2007 BEMP for the Refuge “might well have been unreasonable had the agencies categorically refused to phase out the winter feeding program in spite of all the evidence in the record about the dangers of supplemental feeding.” *Def. Of Wildlife v. Salazar*, 698 F.Supp.2d 141, 148 (D.C.D.C. 2010), *aff’d* 651 F.3d 112, 118 (D.C.Cir. 2011) (“There is no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System”).

Intervenor-Respondent State of Wyoming (“the State”) is a bit more circumspect in its briefing¹⁵ on the risk of CWD and feedgrounds. The State puts forward two theories – one which postulates that a feedground might attract elk from a large catchment area and congregate them, thereby increasing the introduction of CWD to a new herd area. Doc. 63, p. 20; AR29039. Another theory suggests, based on known low-prevalence rates for the disease in wild elk, there may be little to no impact on elk populations because the purpose of most feedgrounds is to intercept elk migration corridors and prevent further migration. *Id.*; AR29039; 28979. Thus, according to this second theory, feedgrounds could isolate herds from each other and limit inter-herd transmission of CWD. *Id.*

III. Procedural Background

The process resulting in the reissuance of the amendment to the special use permit at issue began prior to 2008 when the WGFD Commission asked to continue to operate (or to expand) six feedgrounds on NFS lands. AR10212. Three of these feedgrounds (Alkali Creek, Fish Creek, and Patrol Cabin, including its proposed expansion) provide supplemental feed to the Jackson elk herd in conjunction with the Refuge. AR21977. In response, the Service prepared a Final Environmental Impact Statement (“2008 FEIS”). The 2008 FEIS analyzed three alternatives: a no action alternative denying the special use request; a mid-range action authorizing only the requested feedgrounds but not the

¹⁵ The State’s brief discusses these two theories but WGFD separately acknowledges “[m]ost wildlife disease professionals consider artificial feeding a potential health threat to the fed animals due to the belief that prolonged congregation of animals around a feeding site increases the probability of disease transmission. This increased probability is generally irrespective of how the disease is transmitted, i.e., direct contact, aerosol, environmental contamination, or infected feces and urine.” AR17889.

expansion of Patrol Cabin; and an action fully granting the permit as requested. AR10217–20. As a result, in 2008 the Service granted the permit for several locations but did not authorize the Patrol Cabin expansion and postponed a decision on Alkali Creek Feedground to conduct additional analyses. AR11104–07.

Prior to the 2015 decision on Alkali Creek Feedground, the Service prepared the 2015 Final Supplemental EIS (2015 FSIES), which tiered to the 2008 FEIS. The Service limited the objective and purpose of its 2015 FSEIS to whether the Alkali Creek Feedground permit should be reissued, and if so, under what terms and conditions. AR28776. In light of this objective, the Service analyzed two alternatives in detail and eliminated alternatives from detailed consideration. AR28783–88. Important to the issues raised in this case, the Service eliminated an alternative to improve winter range on the BTNF and eliminate all elk feeding in an effort to restore historical migration routes. AR28787. As to these eliminated alternatives, the Service concluded it was already working to improve winter range through habitat projects (AR28787), and it lacked the authority to direct the WGFD to stop elk feeding because, even without the permit, the WGFD would continue to feed elk on private, State, and other federal lands. AR28787. The Service also eliminated an alternative to construct elk-proof fencing around private lands in the Gros Ventre drainage, concluding this was implausible, would fence in private property to the detriment of landowners, and would negatively affect migration routes. AR28787; 21895. As part of its analysis and specific to the spread and prevalence of CWD, the Service generated a Literature Review Technical Report. AR29160; 29034–45.

On December 1, 2015, the Forest Service amended the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk feedground activities at Alkali Creek Feedground. AR30635. The final decision added additional mitigation and monitoring requirements to address potential impacts of CWD.¹⁶ AR30636.

DISCUSSION

I. Threshold Questions

A. *Standing*

As an initial matter, the Service argues that Petitioners lack Article III standing to pursue their claims for relief because they have failed to demonstrate “redressability.” Article III standing is a “threshold jurisdictional question” that a court must decide before it may consider the merits. *Steel Co. v. Citizens for a Better Env’t*, 523 U.S. 83, 93-101 (1998).

Here, Petitioners are suing on behalf of their members. “An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization’s purpose, and neither the claim asserted, nor the relief requested requires the participation

¹⁶ Use of hay obtained from CWD endemic areas is prohibited from being used anywhere on the BTNF. In addition, the following requirements were imposed on the WGFD:

- Annually test the soil on BTNF feedgrounds to monitor for incidence of CWD prions and annually submit reports of findings if a feasible and economical soil test for prions is developed in the future. Sampling methodology would be jointly determined by WGFD and the FS, in consultation with APHIS. (Note-as of 2017, this test was not economically feasible. [AR31044]).
- Annually report CWD mitigation actions that have been taken with regards to feedground management on NFS lands in western Wyoming. AR 30636; 30852.

of individual members in the lawsuit.” *Friends of the Earth, Inc. v. Laidlaw Envtl. Sevs.*, 528 U.S. 167, 181 (2000).

The only issue presented is whether Petitioners’ members would otherwise have standing to sue in their own right. To establish Article III standing, Petitioners bear the burden of demonstrating, through their members, that: (1) they have suffered an “injury in fact” that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the defendant’s challenged action; and (3) that it is likely, as opposed to merely speculative, that a favorable judicial decision will prevent or redress the injury. *Summers v. Earth Island Inst.*, 555 U.S. 488, 129 S.Ct. 1142, 1149 (2009). This requirement assures that “there is a real need to exercise the power of judicial review in order to protect the interests of the complaining party.” *Schlesinger v. Reservists Comm. to Stop the War*, 418 U.S. 208, 221, 94 S.Ct. 2925, 41 L.Ed.2d 706 (1974). Where such a “real need” does not exist, allowing courts to oversee legislative or executive action “would significantly alter the allocation of power . . . away from a democratic form of government,” *Summers, supra*, 555 US at 1149, citing *United States v. Richardson*, 418 U.S. 166, 179, 94 S.Ct. 2940 (1974) (Powell, J., concurring).

By the Amended Complaint and further supported by affidavits, Petitioners allege their members have interests in improving public land management, promoting species and habitat protection on public lands, protecting Wyoming wildlife, viewing and enjoying wildlife within the Greater Yellowstone Ecosystem, and supporting the sustainable management of fish and wildlife populations. Petitioners allege the legal violations by the Service in renewing the permit cause concrete injury to these interests,

including adversely affecting the behavior of elk and creating an enormous risk of disease transmission in the elk and other wildlife populations of interest to Petitioners' members. Petitioners further allege a vacatur of the challenged permit pending full compliance with NEPA and other legal requirements will remedy Petitioners' injuries.

The Service and the State (collectively, "Respondents") argue the Jackson elk herd will continue to use the two other state feedgrounds and the Refuge in the Gros Ventre, regardless of whether the Service issues a permit for the use of NFS land at Alkali Creek Feedground. Further, nothing in the record supports the notion that the spread of CWD can be halted. Thus, according to Respondents, a favorable decision will not afford Petitioners the kind of tangible, meaningful results in the real world necessary for Article III standing.

As to standing, the Court agrees with Petitioners. The issue isn't whether the spread of CWD can be halted, or whether WGFD will continue to use feedgrounds to manage elk in the Gros Ventre. The issues concern the long-term use of NFS lands at Alkali Creek as a feedground, and whether that use was reasonably approved as consistent with law, following the required procedures, and after a consideration of all relevant factors. Whether Petitioners' arguments are persuasive is a merits-based matter separate from standing. Petitioners need only allege the long-term use of Alkali Creek Feedground will have *some* impact on and pose *some* risk to their interests. *Consumer Data Indus. Ass'n v. King*, 678 F.3d 898, 902 (10th Cir. 2012).

Not only have Petitioners made this showing but the Service admits the alternative of not issuing the long-term use permit "would remove the small contribution of the

Alkali Creek Feedground ‘toward increased prevalence, incidence, and persistence of CWD in the Jackson elk herd unit and elk herds in Western Wyoming, should the disease become established during the period allowed by the permit.’” Doc. 62, p. 61-62 (citing AR28881). Whether Alkali Creek Feedground poses a small or somewhat larger risk is immaterial, as the risk is not speculative. *Friends of the Earth, Inc.*, 528 U.S. at 181 (the redressability prong is met when “it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision”). Therefore, Petitioners have adequately demonstrated Article III standing.

B. *Exhaustion*

The Service argues Petitioners now apparently seek a phase-out alternative at Alkali Creek Feedground (as opposed to all NFS lands), and no one raised this alternative during the administrative process. Petitioners reply by arguing the objections raised during the administrative process were sufficient to alert the agency of the need to consider the phase-out alternative.

To seek judicial relief, Petitioners were required to first raise their concerns with the agency to allow “the agency to give the issue meaningful consideration.” *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 553-54 (1978); *Department of Transp. v. Public Citizen*, 541 U.S. 752, 764 (2004); *Forest Guardians v. FS*, 495 F.3d 1162, 1170 (10th Cir. 2007). The purpose of this rule is to ensure that reviewing courts do not substitute their “judgment for that of the agency on matters where the agency has not had an opportunity to make a factual record or apply its expertise.” *New Mexico Environmental Imp. Div. v. Thomas*, 789 F.2d 825, 835 (10th

Cir. 1986). Further, claims cannot be “only vaguely and cryptically referred to.” *Ark Initiative v. U.S. Forest Service*, 660 F.3d 1256, 1261 (10th Cir. 2011) (citation omitted). However, the waiver concept behind the principle of exhaustion does not apply to problems underlying claims that are “obvious, or otherwise brought to the agency’s attention.” *Id.* at 1262 (citing *Forest Guardians v. U.S. Forest Service*, 495 F.3d 1162, 1170 (10th Cir. 2007)).

The Court again agrees with Petitioners. The issue before the public was the long-term use of NFS lands at Alkali Creek. Many comments urged leadership by the Service in phasing out “artificial feeding” on NFS lands, and then focused on reasons why the Alkali Creek location is significant to the Jackson elk herd (e.g., location and migration patterns). *See, e.g.*, AR19144. Others commented about the need to transition elk to natural forage by “phasing out specific feedlots.” AR26847. The NFWS and NPS specifically recommended the Service consider, *for the Alkali Creek Feedground permit*, the goal of reducing reliance on winter supplemental feeding by transitioning elk to complete reliance on natural forage at an undetermined time in the future. AR28175. Then, prior to the decision on the permit, a project leader at the Refuge forwarded to the Service the district court and circuit court decisions concerning supplemental feeding on the Refuge, and recommended the Service “pay close attention to” portions of the circuit court opinion and how the decisions might have been otherwise “[i]f we were refusing to eventually end supplemental feeding.” AR34191-218. The Service responded, “Something to consider when drafting the decision for Alkali.” AR34191. With this record, there is absolutely no merit in suggesting the agency’s attention was not drawn to

a phase-out/transition alternative at Alkali Creek. Exhaustion does not bar any of Petitioners' claims.

II. Standard for Review

Under the APA, courts "shall . . . hold unlawful and set aside agency actions, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or "in excess of statutory jurisdiction, authority, or limitations." 5 U.S.C. § 706(2)(A), (C). An agency's decision is arbitrary and capricious if the agency (1) "entirely failed to consider an important aspect of the problem," (2) "offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise," (3) "failed to base its decision on consideration of the relevant factors," or (4) made "a clear error of judgment." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 704 (10th Cir. 2009) (quoting *Utah Envtl. Cong. v. Troyer*, 479 F.3d 1269, 1280 (10th Cir. 2007)).

"The APA's arbitrary and capricious standard is a deferential one; administrative determinations may be set aside only for substantial procedural or substantive reasons, and the court cannot substitute its judgment for that of the agency." *Utahns for Better Transp. v. U.S. Dept. of Transp.*, 305 F.3d 1152, 1164 (10th Cir. 2002) (citation omitted). "A presumption of validity attaches to the agency action and the burden of proof rests with the appellants who challenge such action." *Citizens' Comm. to Save Our Canyons v. Krueger*, 513 F.3d 1169, 1176 (10th Cir. 2008) (quoting *Colo. Health Care Ass'n v. Colo. Dep't of Soc. Servs.*, 842 F.2d 1158, 1164 (10th Cir. 1988)). However, this presumption

does not shield the agency from a “thorough, probing, in-depth review.” *Olenhouse v. Commodity Credit Corp.*, 42 F.3d 1560, 1574 (10th Cir. 1994). Further, the “[d]etermination of whether the agency acted within the scope of its authority requires a delineation of the scope of the agency’s authority and discretion, and consideration of whether on the facts, the agency action can reasonably be said to be within that range.” *Id.*

III. Compliance with NEPA

A. *Reasonable Range of Alternatives*

Petitioners argue the Service failed to examine a reasonable range of alternatives in violation of NEPA. In support of this argument, Petitioners contend the Service improperly analyzed only two alternatives in detail – the “no action” alternative and the grant of the permit alternative – and failed to offer a reasoned explanation for its refusal to examine phase-out alternatives.

In response, the Service argues it reasonably eliminated the phase-out alternative from further study because it does not have the authority to direct the WGFD to stop winter feeding and that the State intends to continue to feed elk on private, state and other federal lands. AR28787; 30642. The Service refers to *WildEarth Guardians*, 703 F.3d at 1184, in support of the proposition that, where state agency responsibility for management of wildlife is necessary for an alternative to be feasible, NEPA does not force a federal agency to consider alternatives rendered infeasible by the unwillingness or lack of cooperation of the responsible state agency. In addition, the State argues any action short of authorizing the feedground at Alkali Creek with mitigation and

modifications would have been a denial of the special use permit, which was the second alternative analyzed. Thus, the Service properly considered a reasonable range of alternatives.

In reply, Petitioners argue reliance on *WildEarth Guardians* is misplaced as the record here provides ample support for the practicability of phase-out alternatives, even without the support of the WGFD. Petitioners argue that despite this record, the Service relied solely on WGFD's stated lack of support to reject the phase-out alternative, without any analysis as to whether support could be negotiated or was even necessary.

WildEarth Guardians recognizes the "rule of reason" in the agency's choice of alternatives to include in its analysis. *Id.* at 1183. That case concerned the choice by the NPS to take off the table the option of reintroducing a naturally reproducing wolf population as an alternative in preparing a new elk and vegetation management plan for Rocky Mountain National Park. The "natural wolf option" was not eliminated based on state agency jurisdiction because wolves could be reintroduced in the park without state approval. *Id.* at 1185. The option was eliminated because of feasibility (small size of the park, near certainty that wolves would leave, and the resulting need for state agency management of wolves outside the park).

While instructive, *WildEarth Guardians* is not controlling. Notwithstanding the Service's efforts to argue otherwise, the Court is not dealing with jurisdictional issues surrounding the management of elk. The Court is presented with a straight-forward request by a state agency to continue the long-term use of facilities on NFS lands at Alkali Creek as an elk winter feedground. Commenters asked the Service to improve

winter range on the BTNF, then eliminate all elk feeding and restore historical migration routes. AR27484. Obviously, the commenters focused on function – the artificial feeding of elk – which the Service seized upon and then readily dismissed by saying it “does not have the jurisdiction to stop elk feeding.” AR27485. But the “rule of reason” controls. Was it reasonable, within the agency’s jurisdiction, and feasible for the Service to consider a shorter-term, reduced impact, and/or phase-out alternative for the use of Alkali Creek as a feedground, while taking steps to transition elk to natural winter range and support historical migration routes? The answer to this question was and is yes. The Service’s focus on jurisdiction *when the issue concerns WGFD’s use of NFS land*, was not a reasoned explanation for its refusal to examine phase-out alternatives.

Further, the argument that any action other than wholesale approval would be equivalent to the no-action alternative is unsupported by the record. While the State makes this argument, there is no citation to the record of any affirmative statement by the State that something other than approval of long-term use would result in the State ceasing its winter feeding activities at Alkali Creek. Indeed, since the Service’s action authorizing the existing 2008 long-term special use permit for other feedgrounds, the Alkali Creek Feedground has operated under temporary (one year) special use permits. *See, e.g.*, AR17733-71.

B. “*Hard Look*” at Environmental Consequences

Petitioners argue the Service failed to take a “hard look” at the environmental consequences of artificial feeding and its impacts on the introduction and spread of CWD in the Jackson elk herd, even if the precise extent of the effect is less certain. Petitioners

claim the Service “washed its hands” of the problem by insisting the responsibility for managing the disease ultimately fell to WGFD, and they provide as an example, the Service’s action in issuing the 2015 FEIS and draft ROD prior to the finalization and approval of WGFD’s CWD Management Plan. Doc. 42, p. 43-44. Petitioners claim the literature review and deference to WGFD did not constitute a meaningful analysis of how Alkali Creek Feedground *itself* contributes to the risk of CWD introduction and spread, especially given Alkali Creek’s unique location which forms a natural bottleneck for elk movement in the drainage that is the “most likely point of entry” for CWD into the Jackson elk herd.¹⁷ AR28884; 18851; 18706. In short, Petitioners argue the Service never explained why it could not even attempt to use the well-established methods described in the scientific literature to quantify the impacts expected from the introduction of CWD. *Id.* at p. 54.

In response, the Service argues it took the requisite hard look at the likely impacts of CWD, pointing to the white paper prepared by the Service synthesizing the best available science on CWD in elk. AR29033-45. The Service’s analysis revealed that, while “models projecting the arrival and subsequent transmission of CWD in the Jackson Hole area are highly uncertain[,] ... it is probable that [CWD] will spread throughout Wyoming.” AR28853. The Service continued by focusing on the Jackson elk herd and concluded “[b]ecause other feedgrounds in western Wyoming and the Gros Ventre drainage are likely to remain operational in the absence of elk management at Alkali

¹⁷ The Service takes issue with this statement arguing the references are not peer reviewed and none of the best available science in the record supports the proposition that the Gros Ventre drainage is the most likely entry point for CWD into the Jackson elk herd. Doc. 62, p. 63, n. 18.

Creek Feedground, the timing and arrival for new diseases such as CWD in the drainage and region is not likely to be greatly affected by elk management at Alkali Creek itself.” AR28876. Further, the Service discussed how “Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming,” [AR28884] while also including the opposing discussion that Alkali Creek Feedground “would be less likely to become contaminated with prions” under the no-action alternative. AR28879. The Service also concluded that “feeding operations at Alkali Creek would, to a minor extent, contribute to population-level effects” AR28886. Finally, the Service argues its decisionmaker was aware of the risks posed by CWD. AR 30638 (“I clearly understand and acknowledge that the Commission’s action of feeding . . . increases risk of disease transmission”). The Service argues this satisfies NEPA’s procedural requirement that the agency take a hard look at the environmental consequences of the proposed action, disclose those consequences, and apply the best available scientific information. Finally, the Service disagrees with the argument that it should have waited until WGFD finalized its new CWD management plan as no state management plan has been able to stop the spread of CWD and conditions were imposed allowing revocation if the plan was insufficient. AR29026-27.

The State advances many of the same arguments as the Service, in support of the claim that the agency took the requisite hard look at the effects common to both alternatives. The State argues Petitioners disagree with the Service over the impact of a single feedground on disease transmission and the conclusion of the technical report. However, disagreement is not the same as not taking a hard look. The State argues the

Service adequately obtained expert opinions in the form of reports and studies, and reviewed and synthesized the reports and studies into a single report, which was then peer reviewed. AR29160; AR29034-45. Further, the Service gave careful scientific scrutiny to the material, responded to all legitimate concerns that were raised, and fairly found the science regarding the influence of a single feedground to be overall – inconclusive. According to the State, this complies with NEPA’s requirement that the agency take a hard look at the environmental consequences before taking a major action.

NEPA requires an agency look at the environmental impact of the proposed action, any unavoidable adverse environmental effects, the alternatives to the proposed action, the relationship between local short-term uses of man’s environment, and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources. 42 U.S.C. § 4332(C). A court determines whether the agency “took a ‘hard look’ at information relevant to the decision,” *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 704 (10th Cir. 2009), by asking whether the agency “entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.” *Biodiversity Conservation Alliance v. Forest Service*, 765 F.3d 1264, (10th Cir. 2014) (citation omitted). NEPA does not impose substantive limits on agency conduct. *Robertson v. Methow Valley Citizens’ Council*, 490 U.S. at 350. “Rather, once environmental concerns are ‘adequately identified and evaluated’ by the agency, NEPA places no further constraint on agency actions.” *Friends of the Bow v. Thompson*, 124

F.3d 1210, 1213 (10th Cir. 1997) (citation omitted). Nonetheless, NEPA's "action-forcing" purpose "gives the public the assurance that the agency 'has indeed considered environmental concerns in its decisionmaking process.'" *Robertson v. Methow Valley Citizens' Council*, 490 U.S. at 349 (citation omitted).

The record reflects the Service took a hard look at certain environmental impacts of the proposed action and no-action alternative. However, the Service's failure to consider a reasonable range of alternatives results in the conclusion that the Service failed to take a hard look at the alternatives to the proposed action, some of which might mitigate impacts.

Further, while not a specific focus of the arguments by the parties, there is little to indicate the Service took much of a look at the relationship between a stepped, phase out approach compared to longer-term use of the site as a feedground, and the maintenance and enhancement of long-term productivity. There is also little to suggest the Service took a hard look at the irreversible and irretrievable commitment of resources. Both considerations are required by 42 U.S.C. § 4332(C). There is no question that Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat. However, the Service's only analysis and evaluation was of the longer-term use of the site as a feedground and the no-action

alternative, without any evaluation of reduced impact or phase-out alternatives, or how these various alternatives affect *all* the considerations required to be evaluated under 42 U.S.C. § 4332(C).

Finally, there is no question that the Commission overseeing the WGFD decides whether or not to feed elk in the winter. However, this does not excuse the Service from taking a hard look at the consequences of *its* action to allow the long-term use of NFS lands at Alkali Creek as a feedground. Relevant to the Service (and not simply within WGFD jurisdiction) are the problems that artificial feeding increases the risk of disease transmission, increases the risk that the site will be contaminated with prions for a very long time, and also appears to blindly support WGFD's goal of managing elk movements to prevent commingling with livestock and danger to agricultural land, notwithstanding the BTNF Land and Resource Management Plan that includes a stated goal to "[h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients." AR119. Based on the record, feedgrounds seem to undermine this goal. For all these reasons, the 2015 FSEIS is inadequate in that it fails NEPA's hard look requirement.

C. Cumulative Impacts

Petitioners argue the Service failed to meaningfully analyze the cumulative impacts of the region's feedgrounds on wildlife resources, in violation of NEPA. Specifically, Petitioners complain that the Service refused to examine the impacts of Alkali Creek Feedground in conjunction with the other feedgrounds located in the BTNF, or the artificial feeding program conducted by the NFWS on the Refuge. Rather, the

Service restricted its evaluation of cumulative impacts to include effects only from Alkali Creek and the other feedgrounds in the Gros Ventre drainage (Fish Creek and Patrol Creek), thereby severing analysis of this action's impacts from the effects of other nearby feedground operations impacting the same elk herd, as well as the effect of the 2007 BEMP on the Refuge which anticipates a step-down approach to phase out artificial feeding. Petitioners argue these feedgrounds are all part of an integrated program which cumulatively impacts the Jackson elk herd, and the restricted analysis by the Service violates NEPA.

In response, the Service argues that it considered the threat of CWD to the Jackson elk herd and considered the additive contribution of the Alkali Creek Feedground to that threat. The Service also notes that its analysis supplements the 2008 FEIS, which analyzed the impacts of the other feedgrounds in one document and cannot now be challenged. According to the Service, it was not required to redo that analysis. As to the 2007 BEMP, the Service argues it incorporated that plan by reference, and discussed how use of the Alkali Creek Feedground will lower the numbers of overwintering elk at the Refuge. Further, no framework has yet emerged for transitioning from winter feeding on the Refuge to greater reliance on natural forage. Absent a framework, the Service argues it cannot consider specific impacts to Alkali Creek.

As to cumulative impacts, the Court again agrees with Petitioners. The finality of the 2008 FEIS does not eliminate the need for the Service to consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission and mitigation

since the 2008 analysis. Also, the Service need not await a specific framework for the implementation of the 2007 BEMP, but may reasonably rely on the good faith representation that the agencies aim to implement the transition sometime during the life of the Alkali Creek Feedground permit.¹⁸ This requires the Service to examine how granting the permit through 2028 or some shorter term would interrelate with, potentially support, or potentially undermine, the objectives of the combined agency work under the 2007 BEMP.

IV. APA

Petitioners argue the permit and record of decision violate the APA because they fail to analyze the factors set forth in federal laws governing national forests and instead impermissibly defer to WGFD's objectives. Given the conclusion that the Service failed to comply with NEPA procedural requirements, the Court concludes the agency action violated the Administrative Procedure Act.

CONCLUSION

The Service approved WGFC's special use permit for the Alkali Creek Feedground without complying with the procedural requirements of NEPA. Accordingly, the Court VACATES the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk

¹⁸ The goal in the 2007 BEMP is for a progressively managed phase-out of artificial feeding and transition to natural forage on the Refuge over a fifteen-year period (ending 2022), compared to the term of the amended 2008 special use permit which is twenty years (ending 2028). AR10393-4; 11104.

feedground activities at Alkali Creek Feedground, and REMANDS to the agency for further proceedings consistent with this decision.¹⁹

Dated this 14th day of September, 2018.



NANCY D. FREUDENTHAL
UNITED STATES DISTRICT JUDGE

¹⁹ Nothing in this decision adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) Special Use Permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim practice. *See, e.g.*, AR17733-71.

Appendix 5



What Happens When Elk Feeding Ends

Prepared for Wyoming Wildlife Advocates

*by Lloyd Dorsey
Policy Director*

January 2015

According to public comments to Environmental Impact Statements ^{1 2}, many wildlife enthusiasts see the wisdom of carefully phasing out winter elk feeding to help ensure healthier herds in the future. Some stakeholders, however, both individuals and groups, are uneasy or opposed to ending a century-long practice of artificially feeding thousands of elk hay or alfalfa pellets on 23 feedgrounds in three Western Wyoming counties (Sublette, Lincoln and Teton) during the winter months.

This report lists some of the oft-repeated concerns over the ramifications of ending feeding followed by responses to those concerns. End notes contain the sources of supporting information to the responses, or additional explanation, as needed.

###

1. Eliminating elk feedgrounds is "foolishly impractical"³.

There are several examples where ending or significantly reducing winter elk feedgrounds has already been successfully accomplished. Those successes were in Yellowstone National Park in 1937⁴; eastern Idaho, beginning in 1998⁵, North Piney in Western Wyoming⁶, and the Deseret Ranch in Utah⁷. In fact, *it is out of the ordinary* for Rocky Mountain elk to be artificially provisioned during winter months (or any months) throughout its range in North America. From New Mexico north through all the Rocky Mountain States and Canadian provinces to the Yukon Territory, elk range free year round. Indeed, only 3 percent of Rocky Mountain elk are artificially fed⁸. Therefore, the most common and "practical" method of managing wild elk is to allow them to range freely, not to concentrate them on small plots of ground and feed them hay or alfalfa pellets. *Practically speaking, Rocky Mountain elk do well without artificial feeding during Rocky Mountain winters and all other seasons.*

2. Most of the elk winter range in Jackson Hole and throughout Western Wyoming has been developed, no longer exists, and therefore could not sustain many elk.

The three counties where elk are fed during winter in Wyoming, (Sublette, Lincoln and Teton) are comprised of 83 percent federal land. Their combined acreage is almost 8.6 million acres with more than 7 million acres managed by the National Park Service, the US Forest Service, the US Fish and Wildlife Service or the Bureau of Land Management ⁹. There exists today approximately 1.74 million acres of big game winter range designated by the Wyoming Game and Fish Department and the federal agencies in these three counties alone^{10 11 12 13}. In adjacent counties there is even more winter range^{14 15}. Despite some development on these public lands for energy (oil and natural gas) and other uses, the majority of these winter ranges are undeveloped and available for winter elk, deer, moose and pronghorn. Indeed, these critical habitats have some better protections for wildlife than they did during settlement times in the late 19th and early 20th centuries. Federal agencies and the WGFD restrict or prohibit human activities on winter ranges to protect wildlife.

Teton County alone is comprised of 97 percent federal land. Of the remaining 3 percent, about 79,000 acres of private lands, 20,000 acres are under conservation easement for protection of wildlife habitats^{16 17}. Essentially, Teton County is about 98 percent protected wildlife habitat. There is ample room for wildlife to roam free.

The Gros Ventre Valley east of Jackson Hole contains 100,000 acres of designated winter range on US Forest Service lands ¹⁸. Hundreds of thousands of acres of wind-swept public, private and tribal land in the Upper Wind River Valley around Dubois, Crowheart, Pavillion and Riverton, provide winter range for all big game. In Eastern Idaho, around Montpelier, Idaho Falls, Ashton, and Island Park, the Idaho Fish and Game Department manages designated winter ranges for thousands of elk and other big game ¹⁹.

The 20 million-acre Greater Yellowstone Ecosystem is comprised of 80 percent federal lands with vast areas of winter ranges where big game and their habitats thrive far better than on feedgrounds.

Wyoming has the fewest residents of any state in the U.S. and its three feedground counties are no exception. Wyoming is approximately the same size as Colorado ²⁰, but Colorado contains a human population nine times that of Wyoming ²¹. Colorado also has nearly 3 times the amount of elk as Wyoming ²². Despite the large human population, three times the number of elk, and twice as many cattle in Colorado as Wyoming, Colorado doesn't feed any of their 280,000 elk during winter. Nor does Montana or almost any other jurisdiction in the Rocky Mountains.

Because of exceptionally successful conservation efforts during the past decades, bountiful herds of elk and other big game throughout the Greater Yellowstone Ecosystem use protected winter ranges including those in western Wyoming.

3. Balancing elk numbers with available habitat will require reductions of 60 percent of the elk numbers.

Believing that virtually all elk must be on feedgrounds or perish has been proven incorrect for generations. We know that during the past 100 years elk have recolonized or have been

reintroduced to their historic ranges by the hundreds of thousands. There are now more than 850,000 elk roaming private and public lands from New Mexico to the Yukon Territory, and nearly everywhere in between²³.

The purpose of ending artificial feeding is to spread elk out, and allow them to roam naturally and be healthy. Therefore wintering elk numbers in Jackson Hole and immediately around feedground locations in the three Western Wyoming counties will certainly decrease. Areas like the Gros Ventre Valley, however, are underutilized and can winter more elk than at present ²⁴. Wyoming's elk population is at 112,000, and the objective is only 81,275, so Wyoming is already 37 percent over objective²⁵. Most of the Montana and Idaho hunt areas within the Greater Yellowstone Ecosystem are also at or over their objectives for elk^{26 27}. It is generally accepted that there are more elk in the region than managers want.

The Jackson Hole area, consisting of the Buffalo Valley, Gros Ventre Valley and the Jackson Hole valley itself, can winter approximately 8,850 elk (median between low estimates of 7,600 to upper end estimates of 10,100), plus other big game, without artificial feeding ^{28 29 30 31 32}. Without artificial feeding, there will be abundant populations of healthier free-ranging elk in all seasons for the public to enjoy.

4. Biologists say that half of the elk will starve to death in a harsh winter if feedgrounds are phased out.

What killed off most of the elk herds a century ago were bullets, not starvation. Some winter loss of elk and deer is natural in the Rocky Mountains, and it always has been. If feedgrounds were necessary to maintain thousands of elk, every state would need them. They don't. If feedgrounds were phased out, particularly if elk numbers were reduced first through hunting and predation below the carrying capacity of regional winter ranges, the elk would spread out and thrive. Other regions of the Rocky Mountains have similar climates to Teton, Lincoln and Sublette counties, and their elk range freely and remain healthy during winter. Moose, bighorn sheep, pronghorn antelope and deer also range freely without supplemental feed and do well.

Some small percentage of winter loss is normal and helps the herds remain healthy. Once the herds are reduced close to the carrying capacity of the surrounding or migration-distance winter habitats, feeding can end. Elk, deer and other wildlife have proven that they can find protected winter ranges as long as we protect the migration corridors to get there. The elk will do well without feedgrounds, just as they do everywhere else in North America.

5. If elk aren't fed during winter, they will be in neighborhoods and destroy flowers, shrubbery, trees and lawns.

As with other wildlife in the Rocky Mountain states and Canadian provinces, some elk will roam into settled areas. Fortunately, by far the greatest amount of their habitat is peripheral or some distance away from towns and neighborhoods. Wildlife prefer to avoid people and neighborhoods, and will use habitat farther away for the most part. Additionally, the Rockies are sparsely settled; there's significantly more open, undeveloped land than developed land. But the occurrence of some wildlife is not uncommon in settled areas in the Rocky Mountains and all neighborhoods coexist well with wildlife. In fact most people value the wildlife in their areas. If people don't want their shrubs disturbed by moose, deer, or elk, they can fence around them. Many people and towns do

this already. If palatable plants are off limits, or aren't planted, in neighborhoods, the elk, moose and deer will move through onto large expanses of habitat that characterize the Rocky Mountain states and Canadian provinces. There are many resources, such as the 2011 Teton County Rural Living handbook, that counsel homeowners about coexisting with wildlife and how to protect their landscaping³³.

6. If elk aren't confined to feedgrounds, they will get in rancher's haystacks and mingle with cattle and other livestock.

Virtually all haystacks in the feedground counties, and surrounding counties in various states, are already fenced to prevent deer, elk and moose from getting the hay. That's the normal way to store hay outside in the Rocky Mountains and has been for generations. State wildlife agencies and conservation districts typically offer materials free to ranchers to fence their haystacks. Fencing around cattle and horse winter feedlines is also common throughout the Rocky Mountain states and Canadian provinces. Teton, Sublette and Lincoln county livestock owners can easily follow suit. Money is available from the above sources as well as the Wyoming Wildlife and Natural Resource Trust (WWNRT) account and other non-profits to help the livestock owners pay for the fences. One of the purposes of the WWNRT is to mitigate conflicts and reduce the potential for disease transmission between wildlife and livestock, so this is a perfect execution of this state fund that pays out hundreds of thousands of dollars annually³⁴.

Idaho legally requires livestock owners in the brucellosis endemic area of eastern Idaho to fence in their haystacks, as well as cattle and horse winter feedlines to prevent comingling with elk³⁵. This is a widely practiced and practical way to coexist with free ranging elk and other wildlife especially where disease transmission is of concern.

7. If elk aren't maintained on feedgrounds by the tens of thousands, predators may go hungry. If predators are hungry, they will threaten people.

There are hundreds of thousands of elk, deer, moose, bighorn sheep, antelope and buffalo in the Greater Yellowstone Ecosystem. Most of them are not on feedgrounds. As long as this is the case, apex predators will never suffer from lack of prey. The American people have done an exemplary job of protecting or restoring prey and predator wildlife species in this region, and this is undeniably the pattern for the future. Bears, wolves and mountain lions have never posed a significant threat to people, and people know how to behave if ever confronted by these wildlife species that they value (e.g., bear spray). Each year in the U.S., horses kill 20 people; cows kill 22; pet dogs kill 30 to 35 people every year in the U.S.³⁶. Yet, no one thinks that horses, cows, or dogs- as species- pose a threat to humans.

8. If elk aren't sustained by feedgrounds, and take sanctuary within neighborhoods, predators will follow.

This is quite true. Even when elk are mostly kept for the winter months on feedgrounds in Jackson Hole, some elk (and deer and moose) find sanctuary in neighborhoods, and a very few predators follow and scare some people. Unfortunately, the WGFD then either relocates or kills the "offending" cougar, wolf or bear. All that's needed are for neighborhoods not to plant palatable plants, or high-fence those shrubs in proximity to their houses. Elk and deer will then pass through

and not stay near homes and attract predators. It works. In April 2003 Teton County passed an ordinance prohibiting feeding of deer and elk precisely because of this concern ³⁷.

9. Reducing the Jackson (or any feedground) elk herd, or not having thousands of elk on feedgrounds consistently in view of tourists, will harm the local economy.

Wildlife populations naturally wax and wane in numbers according to natural influences. Over the span of decades, some elk herds and other wildlife species have decreased in Yellowstone National Park, some herds and species have increased. Tourism hasn't been harmed. Jackson's economic indicators are increasing and there are no indications that fewer elk in one location (e.g., on the Elk Refuge during winter), or more elk in other locations (e.g., on native winter ranges) will cause our local economy any harm. The Jackson Elk Herd exceeded 18,000 in the mid 1990's ³⁸, and has decreased to approximately 12,000 in 2013 ³⁹, and the local economy nevertheless has improved ⁴⁰.

What *may* someday affect the wildlife viewing and hunting segments of the tri-county area of Western Wyoming would be the loss of elk (and deer and moose) to the long-term persistence and high prevalence of chronic wasting disease engendered by the dense concentrations of elk on feedgrounds. The experts tell us to phase out feedgrounds, spread elk out, conserve abundant predators to help keep the herds spread out and healthy, so disease doesn't cause the loss- and prevent the recovery- of our wildlife ^{41 42 43}. To protect the wildlife-dependent sectors of our economy, phasing out feedgrounds will pay long-term dividends.

10. If thousands of excess elk aren't kept on feedgrounds, providing abundant hunting licenses, the Wyoming Game and Fish Department funding will suffer.

The WGFD is already experiencing a fiscal crisis despite managing 22 feedgrounds and providing support to the National Elk Refuge. ⁴⁴ The department could save more than \$2.13 million dollars each year by closing the feedgrounds, which are the most expensive elk management system in North America. The WGFD is desperately seeking alternative sources of funding, and would do well to invite the non-hunting wildlife enthusiasts into their tent.

Fewer elk do not mean fewer licenses or less revenue. Since Wyoming's elk hunter success rate is more than double that of surrounding states, more than 40 percent success vs. approximately 20 percent and less ^{45 46 47}; the WGFD could still sell the licenses and allow the success rate per license sold to decline a bit towards the success standards of other Rocky Mountain states. There will still be abundant hunter opportunity and success.

11. If elk aren't kept on feedgrounds, they will cause havoc on our roads.

Since most surrounding states have more elk than Wyoming does, and since the number of elk on feedgrounds during winter is a small segment of the region's elk numbers, the risk of elk on roads if feedgrounds are phased out isn't going to be affected one way or another. All Rocky Mountain communities deal with deer, elk and other wildlife crossing their roads and in their neighborhoods. That's the norm throughout the Rockies. We have long perfected the tools to mitigate risks to wildlife and people alike.

12. Elk can't learn to migrate, so they must be kept on feedgrounds.

Nonsense. Most of the elk in the Rocky Mountains are descendants from elk transplanted into areas they'd never seen in the early 20th century. The elk in Colorado and New Mexico, Utah, Idaho, etc., are descendant from elk transplanted from Wyoming. And yet most of them migrate twice a year, sometimes only a few miles, sometimes many miles. The behavior is innate to elk and they readily make these choices to move from harsh climes to less harsh, if we manage their habitats well. Throughout the Rocky Mountains, we obviously have managed herds, their habitats and migration routes well since elk populations grew from about 50,000 at the beginning of the 20th century to nearly one million today. Protected lands are not only vast, but also connected. That means elk and other migratory wildlife can disperse across seasonal ranges, if we allow it. In Western Wyoming, mule deer, pronghorn, and some elk migrate significant distances between summer and winter ranges ⁴⁸. Such healthy behaviors are readily learned by new generations of deer, elk and pronghorn if the choices are available to them. That is why the conservation of these species has been so successful over the past century in the Rocky Mountains and beyond.

13. What happens in the future if elk aren't fed?

Elk will be healthier and more spread out. The Jackson Elk Herd, and each currently fed elk herd, will likely have a larger migratory component than today. Some elk that summer in and around Jackson Hole, including elk in the Gros Ventre Mountains, the Tetons, and southern Yellowstone Park, will spend some winters outside the Buffalo Valley, the Gros Ventre Valley and Jackson Hole, and then migrate back into lush summer ranges each May. That's what many elk did for thousands of years. Some elk will also choose to spend winters roaming on the approximately 150,000 acres of winter range in the Buffalo, Gros Ventre and Jackson Hole valleys. ^{49 50} Since winter ranges and migration routes are functional and mostly protected, the elk will have choices that are healthy and sustainable.

We don't have far to go to restore the natural historic, healthy patterns that elk and other wildlife evolved with. The basic necessities are in place in the form of large protected landscapes. We developed the appropriate sciences in the past century. Science informs us about the best ways to manage for healthy wildlife, which includes having predators on the landscape. Predators help keep the herds dispersed and healthy.

14. Conclusion:

Given the impending arrival of CWD into the three Western Wyoming counties with elk feedgrounds, given the fact that most other jurisdictions manage elk as free ranging herds ⁵¹, given that elk do well in Rocky Mountain winters without being artificially fed, given that we have perfected the tools such as fences and over or under passes to mitigate consequences of free-ranging elk, and given the modern science and the experts supporting ending feedgrounds, it would be "foolishly impractical" not to carefully but quickly phase out elk feedgrounds, before it's too late.

Endnotes

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- ¹⁵ Bureau of Land Management, 2011. Draft Resource Management Plan and Environmental Impact for the Lander Field Office Planning Office, September 2011. Map 53 Biological Resources Mule Deer Crucial Winter Range All Alternatives. Lander, WY.
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Appendix 6
Chronic Wasting Disease Literature Review Technical Report

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Abstract

Chronic wasting disease is an invariably fatal prion disease of cervids. There has been a recent increase in studies regarding the transmission and impacts of CWD in free-ranging and artificially contained elk and deer. Research indicates that CWD is easily transmitted between and among cervid species, can contaminate the environment and subsequently infect new individuals, and can impact cervid populations. Population level impacts have been noted in free-ranging elk and deer after a time lag. Such population level impacts arise from alterations in reproduction rates, increases in individual mortality from CWD, and increased susceptibility to other agents of mortality. CWD is lethal across all age groups. Management options for controlling CWD arrival and spread are very limited, and a review of relevant literature indicates that congregating elk at very high densities at feedgrounds is likely to increase the spread of the disease because of an increased number and rate of potentially infectious contacts with infected individuals and an infected environment.

Introduction

Chronic wasting disease (hereafter CWD) is an incurable, invariably fatal neurological disease of cervids (deer, elk, and their relatives) caused by a misfolded version (PrP^{CWD}) of the normal prion protein (PrP). PrP^{CWD} are believed to propagate by inducing the formation of more PrP^{CWD} from PrP. The abnormal or misfolded form of the prion protein converts the normal prion protein into the infectious form. During the 19-40 month course of CWD the prions cause lesions in central nervous system (CNS) tissues thereby producing visible behavioral and physiological alterations in the last months before death from CWD.

CWD is highly transmissible via multiple direct and indirect pathways between and among cervid species. Infected animals can directly infect nearby animals by contaminated nasal or oral secretions. Additionally, prions that are shed into the environment from infected animals in bodily fluids and soft tissues before and after death can infect other animals well after the infected animal has moved or died. It is likely that an animal infected with CWD would have been exposed to the infectious agent through more than one pathway. CWD can persist in the environment well after the infected animal has died. In this way, CWD differs from most other wildlife diseases in that environmental transmission plays an important role in the dynamics of the disease, something that isn't common for bacterial or viral diseases, which tend not to persist in the environment.

The typical course of CWD from infection to death in elk involves 2 stages, incubation and clinical (Argue *et al.* 2007, Figure 1 below). During the incubation stage the animal appears to be behaviorally and physiologically normal, once the animal becomes visibly affected the clinical stage begins. The change in behavior is associated with physiological changes in the CNS of the animal, most notably the

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brain. The length of the incubation stage can vary from 20-36 months based on the genetics of the infected elk (Hamir *et al.* 2006) and the exposure dose. Published and unpublished data indicates that depending on the genetics of an infected elk the incubation period can last for years or be very short (Williams *et al.* 2014 and reference therein). The incubation period is broken into two parts. During the latent period the animal is acting normally and is not shedding prions. At some point, typically around 6 months prior to clinical onset, the animal begins to shed prions in saliva, nasal mucous, urine, feces, and milk (Argue *et al.* 2007, Saunders *et al.* 2012). Prions shed in this manner are able to infect both nearby animals and the environment. Some animals perish as soon as the clinical stage begins, while others last for 12 or more months before death (Miller *et al.* 1998). It is possible for an infected animal to die from CWD infection alone. However, CWD infections that have become clinical have been shown to increase an animal's susceptibility to other agents of mortality including those from predators (Miller *et al.* 2008, Krumm *et al.* 2009), vehicle collisions (Krumm *et al.* 2005), stochastic events (extreme weather and inability to find food) (Williams 2005), and other diseases. Animals that are in the clinical phase are still shedding prions. During the clinical phase prions also accumulate in muscle, CNS, and other soft tissues (including skin and antler velvet) (Saunders *et al.* 2012). After a clinical or preclinical CWD infected animal dies the carcass can be a significant source of prion infection to other animals and can contaminate the environment for many years (Miller *et al.* 2004) (see discussion of environmental transmission below).

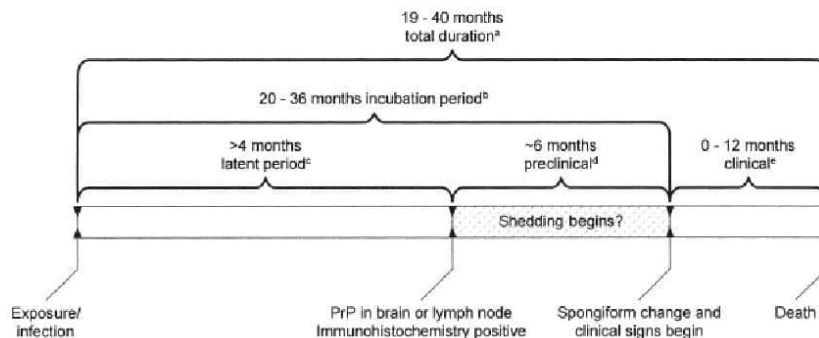


Figure 1 from Argue *et al.* 2007. Proposed progress of CWD in farmed elk

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CWD has been discovered in wild cervids in 19 U.S. States and 2 Canadian provinces, and exists in captive cervids in the US, Canada and South Korea (CWD-info.org). CWD is thought to have arisen in northern Colorado and spread to Wyoming, South Dakota, Nebraska, Kansas, and Utah. The movement of game farmed and hunter killed animals is thought to have introduced the disease to areas that are now satellite infection areas in New Mexico and Texas, Wisconsin and Illinois, Alberta and Saskatchewan, and the Northeast (Figure 2). The number of states and provinces where CWD is known has increased over time, even though funding for surveillance has decreased in recent years, indicating that the disease is spreading, albeit relatively slowly.



Figure 2 From CWD-info.org

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Horizontal Transmission

Horizontal transmission of CWD is a highly efficient means of disease transmission between and among elk and deer (Miller and Williams 2003, Sigurdson and Aguzzi 2007). Maternal transmission (from mother to offspring via a reproductive interchange (being in the womb, birthing fluid, milk etc.)) is possible, but appears to be much less important than horizontal transmission from mother to offspring (Miller *et al.* 2004). Studies indicate that elk of both sexes spend a considerable amount of time within one body length of each other in the wild and in artificial environments. Such proximity likely exposes animals to horizontal transmission of disease from oral and nasal secretions (Mathiason *et al.* 2006), particularly where animals are artificially congregated and their contact rates increase significantly (Cross *et al.* 2013, Creech *et al.* 2012).

Environmental Transmission

CWD can be transmitted solely by environmental contamination (Miller *et al.* 2004, Mathiason *et al.* 2009, Williams *et al.* 2014) and this likely helps explain the spread and maintenance of disease (Gough and Maddison 2010). Several studies have demonstrated actual environmental transmission from decomposed carcasses and fecal material (Miller *et al.* 2004), as well as saliva, blood, and inanimate objects like feed buckets, bedding, and water (Mathiason *et al.* 2006, 2009). Suspected sources of environmental contamination with subsequent transmission include bodily fluids at elk wallow sites and mineral licks (VerCauteren *et al.* 2007), and the presence of CWD in soft tissues, blood, skin, antler velvet (though not the antlers themselves), urine, milk, nasal secretions, saliva, and placenta (Gough and Maddison 2010, Saunders *et al.* 2012). Annual antler velvet shedding represents an instance where potentially infected soft tissue is shed while the animal is still alive. Most other instances of potentially infected soft tissue contaminating the environment arise from the death of the animal. It has been estimated that the amount of CWD prion shed during the progression of the disease and the amount contained in a carcass of an animal killed by CWD is roughly the same because CWD prions become systemic and are concentrated in the CNS and muscle tissues as the disease progresses (Saunders *et al.* 2012). As a result, carcasses represent a large source of prions to the surrounding environment. Decomposing carcasses often induce a flush of vegetative growth, which may attract susceptible cervids. Because CWD remains infectious for at least 2 years in the environment (Miller *et al.* 2004) and possibly quite a bit longer (Georgsson *et al.* 2006) the presence of carcasses and their attractiveness may result in environmental transmission of CWD.

Carcasses in the environment also attract scavengers (Jenelle *et al.* 2009a). Research has demonstrated that scrapie, a prion disease of sheep and goats similar to CWD, can remain infectious after

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passage through avian digestive systems (VerCauteren *et al.* 2012) and that CWD is likely infectious after avian passage and the dispersal of CWD prions in avian feces may in some way facilitate the spread of the disease (Fischer *et al.* 2013). Prions are likely to be denatured to a large degree in the digestive tract of mammalian scavengers (Jeffrey *et al.* 2006 - scrapie study) and CWD prions consumed by mammalian scavengers do not result in infection of the scavenger (Jenelle *et al.* 2009b). Plants may uptake the prions into their plant structure, but evidence for this is only circumstantial at this point (mid-2014) and has not yet been published, this is different than prions simply existing *on* plants (Gough and Maddison 2010) and may represent yet another source of environmental contamination.

The importance of environmental transmission in the spread, persistence, and impact of CWD infection in deer and elk has been suggested in numerous modelling studies (Miller *et al.* 2006, Almburg *et al.* 2011, O'Hara Ruiz *et al.* 2013, Storm *et al.* 2013, Jenelle *et al.* 2014). Specifically, work by Almburg *et al.* 2011 showed that the longer that CWD is infectious in the environment the more influential it becomes on disease prevalence and transmission, owing to an increased pool of environmental sources of infection over time. The fact that the infectious agents of CWD likely outlive their hosts in the environment indicates that the distribution, concentration, and infectivity of CWD in the environment will play an important role in the ultimate course that CWD takes in quasi-free ranging elk in western Wyoming.

Elk congregate naturally on winter range and wallows, and artificially at feedgrounds in Wyoming. Should CWD arrive, the areas where elk naturally and artificially congregate could become continuous sources of disease transmission from animal to environment and back to animal. The environmental pool of infectious prions would thus likely increase with time with repeated use at such locations because prions persist in the environment and are essentially impossible to remove from areas where infected animals have lived.

Disease Transmission

In the early stages of a disease outbreak, the density of infectious and susceptible individuals drives the course of the disease. Owing to highly efficient direct transmission of CWD among cervids the number, duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD. Several studies have examined how coarse and fine scale elk behaviors change with increasing population density. These studies have shown that in general, elk in higher density populations contact other elk more frequently and for longer durations, although there are some differences in how males and females respond to higher densities.

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As elk population density increases the average group size increases but the mechanism of those increases differs between females and males, where females aggregate into larger groups that are more dispersed from other groups, while males cease to be solitary and form small groups (VanderWal *et al.* 2013a). Additional research has shown that as population density increases the frequency and duration of contacts between individuals and gender groups increases, but does so differently for females vs. males. VanderWal *et al.* 2012 showed that as population density increases the interaction rate of males increases, but the duration of those interactions decreases. The same study found that both the rate and duration of female interactions increases with increasing density, but both saturate at moderate population density. This is because female elk tend to form small familiar groups of at least 5 individuals *within* the larger group and that most contacts occurred within that small group, a finding supported by VanderWal *et al.* 2013a, 2013b, 2014. At higher population density the overlap of individual female elk home range is greater than for lower population density. As the overlap of home ranges increase so does the rate of interactions, such that there are more interactions at higher density, this relationship does however, saturate at high range overlap. The frequency and duration of within- and among-sex interactions not only changes with population density but also with season. Female-female dyads interact 4 times more frequently than male-male dyads do, but male-male dyads interact for 1.5 times longer than female-female dyads (VanderWal 2013b). The frequency and duration of interactions was higher for all groups in winter and lowest in summer. Cross *et al.* 2013 demonstrated that in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed. The same study showed that supplemental feeding can increase contact rates beyond that which a larger group size will incur on its own.

The role that artificially congregating elk at feedgrounds will play in the arrival of CWD is unclear. On one hand, elk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area. On the other hand, most elk feedgrounds are strategically placed on the landscape to interrupt migration corridors (the purpose of feedgrounds is to spatially confine the elk so that private hay and cattle do not contact elk). And as such, serve to isolate herds from each other, thereby possibly limiting inter-herd transmission of CWD. There has been no research that has addressed this issue. As a result, it is unknown if the presence of one or many feedgrounds will alter the arrival of CWD.

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Prevalence and population level impacts

Studies on naturally occurring populations of elk have shown that mortality from chronic wasting disease *by itself* can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello *et al.* 2014). Raithel *et al.* 2007 showed that cow elk survival less than 85% induced herd declines in most elk populations in North America. In addition, CWD mortality has been associated with a reduction in survival rates, alteration of reproductive success (Dulberger *et al.* 2010), and a stagnation in population growth (Sargent *et al.* 2011, Monello *et al.* 2014). CWD can also compound other agents of mortality by increasing the susceptibility of infected elk and deer to vehicle collisions (Krumm *et al.* 2005), predation (Miller *et al.* 2008, Krumm *et al.* 2009, Sargeant *et al.* 2011), and stochastic mortality (severe weather and other random events Williams 2005). Studies conducted on free-ranging elk populations indicate a time-lag between introduction of CWD and population level impact of between 10 (Sargeant *et al.* 2011) and 25 years (Monello *et al.* 2014) is possible. This time lag is likely due to the extended incubation period where diseased elk are still able to reproduce, while the disease prevalence builds in the population. Modelling studies indicate that genetics may influence the length of the incubation period and play a role in the progress and ultimate outcome of the disease, but field based studies have yet to show such influence (discussed in Williams *et al.* 2014). Field based studies have indicated that population level impacts can happen at prevalence levels from 5-13% ((Miller *et al.* 2000 (deer), (Monello *et al.* 2014 (elk)), depending on reproductive success and the importance of other agents of mortality in the population.

Taken together, studies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National Forest and nearby areas. What is less clear is the role that artificial grouping of elk at feedgrounds, the influence of predators, and the difference in sex-specificity and genotypes (in terms of prevalence and mortality) will play in the spread and impact of the disease in elk in western Wyoming. Indeed a modelling study by Williams *et al.* 2014 showed that mortality from CWD and hunting could act in concert to impact elk populations in western Wyoming, but that the genetic makeup of that herd could moderate those effects.

The impact of wolves on CWD dynamics has only been explored in modelling exercises based on data from a National Park that is absent of wolves (Wild *et al.* 2011, Hobbs 2006), and as such the role that wolves will play is largely unexplored. What is known is that presence of wolves influences elk behavior, and some generalizations can be made about the impact that those changes in behavior might have on disease transmission. At the landscape scale, the presence of wolves can simultaneously decrease

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population densities (by removing individuals) and increase herd densities and group sizes (Hebblewhite and Plattscher 2002, White *et al.* 2012), since the presence of wolves tends to turn small groups of elk into large herds or move elk from one habitat to another (White *et al.* 2012). Other studies have shown that there is no change in group size (Creel and Winnie 2005) or that changes in elk behavior are habitat-specific (Proffitt *et al.* 2009). Research on free ranging elk without wolf pressure has shown that elk in larger groups tend to have higher rates of contact and that contact lasts longer.

It has been shown that deer killed by mountain lions have a higher CWD prevalence than non-killed deer, suggesting that lions select for CWD affected deer. It stands to reason that mountain lions would similarly select for affected elk and that an elk clinically affected by CWD would be targeted by wolves. Typically, wolves target young and old elk from herds. It remains to be seen if this pattern holds for CWD affected elk or if wolves will take prime aged elk that have CWD. This is important for population level impacts because CWD kills across age groups and prevalence tends to be highest in prime breeding age (3-8 year old) and the age selection of wolves could amplify this.

When a new agent of mortality is introduced into an ecosystem the resulting mortality for a wildlife population can be additive to other sources of death, or can compensate for them. Additive mortality occurs when the new agent increases the total number or rate of mortality. Compensatory mortality does not increase the total number or rate of mortality because it replaces an existing cause of mortality. New sources of mortality may be completely compensatory, or may also be partially compensatory to existing sources of death.

Herd densities

Because so much of the literature and discussion about the arrival, spread, and impact of wildlife disease focuses on the density of the herds in question it is worth noting how congregating elk at feedgrounds alters the herd density. As previously discussed, research has shown that in general as herd densities increase, the frequency and duration of potentially infectious contacts (with infected individuals and infected environment) also increases. Free-ranging elk herds in Wyoming (Cross *et al.* 2013, Williams *et al.* 2014) and Canada (Vander Wal *et al.* 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km² (Table 1). Elk at Wind Cave National Park have densities between 2.1 and 7.1 elk/km² and elk at Rocky Mountain National Park have densities between 15 and 100 elk/km². Elk at the National Elk Refuge in Jackson average 59.3 elk/km² (6000 elk on 25000 acres). Elk density at the average state feedground in Wyoming is 1976.6 elk/km², based on the reported average of 600 elk on 75 acres.

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These elk herds can of course have much higher densities when they are congregated on winter range, feeding lines, or at natural bottle-necks. For instance, elk in the western part of Wyoming average densities of .26 to .31 elk/km² when considered at the herd unit scale, which includes 3 feedgrounds (Williams *et al.* 2014). However, that same herd can reach densities of 25,300 to 238,000 elk/km² when the elk are feeding on the feedlines (derived from proximity logging collars in a herd of 550-650 elk at one feedground) (Creech *et al.* 2012). Population level impacts have been documented in both the Wind Cave and Rocky Mountain National Park elk herds which have lower densities than are present at the feedgrounds in Wyoming.

Summary

The role that CWD has played in population level impacts to free ranging elk populations has been demonstrated in the literature and it stands to reason that similar impacts will be expected when CWD arrives in the proximity of the Bridger-Teton National Forest. There are many unknowns with regard to how disease progress will translate to population impact in western Wyoming, especially with an active predator guild, the presence of feedgrounds, rate of human harvest, the genetic makeup of the herds, and reproductive rates of elk. The onset and potential rate of spread of CWD in western Wyoming is similarly unknown. What is certain is that political, economic, and ecological conditions will change continuously once the disease is detected.

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Table 1 Reported or derived density of study or feedground elk herds

Author / Year	Density (elk / km ²)	Study Type
Cross et al. 2013	.21 - .28	Wyoming Free Range
Vander Wal et al. 2014	.22 - .42	Canada Free Range
Williams et al. 2014	.26 - .31	Wyoming Free Range
Vander Wal et al. 2013	.67 - 1.2	Canada Free Range
Sargeant et al. 2011	2.1 - 7.1	Quasi-natural population Wind Cave NP (fenced)
Monello et al. 2014	15 - 100	Natural Population Rocky Mtn NP
National Elk Refuge	59.3	Very Large Feedground (6000 elk on 25000 ac)
Vander Wal et al. 2012	71 - 149	Experimental in Large Cages
WY State Feed Grounds	1976.8	Based on reported average of 600 elk on 75 acres
Creech et al. 2012	25,300 - 238,000	Wyoming at Soda Lake Feed Ground

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Appendix 7

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Fish and Wildlife Management on Federal Lands: Debunking State Supremacy

Sandra B. Zellmer

Alexander Blewett III School of Law at the University of Montana, sandi.zellmer@mso.umt.edu

Martin Nie

Christopher Barnes

Jonathan Haber

Julie Joly

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Authors

Sandra B. Zellmer, Martin Nie, Christopher Barnes, Jonathan Haber, Julie Joly, and Kenneth Pitt

ARTICLES

FISH AND WILDLIFE MANAGEMENT ON FEDERAL LANDS: DEBUNKING STATE SUPREMACY

BY

MARTIN NIE,* CHRISTOPHER BARNS,** JONATHAN HABER,*** JULIE JOLY,****
KENNETH PITT***** & SANDRA ZELLMER*****

This Article reviews the authority of federal and state governments to manage wildlife on federal lands. It first describes the most common assertions made by state governments regarding state powers over wildlife and then analyzes the relevant powers and limitations of the United States Constitution and federal land laws, regulations, and policies. Wildlife-specific provisions applicable within the National Park System, National Wildlife Refuge System, National Forest System, Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered, as is the Endangered Species Act. We reviewed an extensive collection of cases of conflict between federal and state agencies in wildlife management on federal lands. These cases show how federal land laws, regulations,

* Martin Nie is Director of the Bolle Center for People and Forests and Professor of Natural Resources Policy, W.A. Franke College of Forestry and Conservation, University of Montana.

** Christopher Barns is a wilderness consultant and former Wilderness Specialist, Bureau of Land Management National Landscape Conservation System, and BLM Representative at the Arthur Carhart National Wilderness Training Center.

*** Jonathan Haber is a wildlife planning and policy consultant and a former planning specialist for the United States Forest Service.

**** Julie Luman Joly is former Associate Professor of Resources Law and Policy at Alaska-Fairbanks.

***** Kenneth Pitt is Adjunct Instructor in the Natural Resource Department at Salish Kootenai College and formerly a General Attorney for the USDA-Office of the General Counsel.

***** Sandra B. Zellmer is Robert B. Daugherty Professor of Law, University of Nebraska-Lincoln.

and policies are frequently applied by federal agencies in an inconsistent and sometimes even unlawful fashion. They also demonstrate how commonalities found in state wildlife governance, such as sources of funding and adherence to the North American Model of Wildlife Conservation, often exacerbate conflict over wildlife management on federal lands.

Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. We debunk the myth that "the states manage wildlife and federal land agencies only manage wildlife habitat." The myth is not only wrong from a legal standpoint, but it leads to fragmented approaches to wildlife conservation, unproductive battles over agency turf, and an abdication of federal responsibility over wildlife. Another problem exposed is how the states assert wildlife ownership to challenge the constitutional powers, federal land laws, and supremacy of the United States. While the states do have a responsibility to manage wildlife as a sovereign trust for the benefit of their citizens, most states have not addressed the conservation obligations inherent in trust management; rather, states wish to use the notion of sovereign ownership as a one-way ratchet—a source of unilateral power but not of public responsibility. Furthermore, the states' trust responsibilities for wildlife are subordinate to the federal government's statutory and trust obligations over federal lands and their integral resources.

The Article finishes by reviewing the ample opportunities that already exist in federal land laws for constructive intergovernmental cooperation in wildlife management. Unfortunately, many of these processes are not used to their full potential, and states sometimes use them solely as a means of challenging federal authority rather than a means of solving common problems. Intergovernmental cooperation must be a mutual and reciprocal process, meaning that state agencies need to constructively participate in existing federal processes, and federal agencies should be provided meaningful opportunities to participate in, and influence, state decision making affecting federal lands and wildlife.

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I. INTRODUCTION

Some of the most significant cases in the development of federal lands and resources law revolve around questions pertaining to federalism and wildlife management. At stake are weighty issues related to constitutional law, sovereignty, and ownership. Complicating matters is the enduring tension between federal and state governments that is built into American politics, the opaque language sometimes found in federal lands law, and the interjurisdictional nature of wildlife conservation. And, of course, there is the politics of it all, as these cases force federal and state agencies to consider their sources of power and authority, their organizational values and biases, and other deeply polarizing and confrontational issues.

To begin, consider some of the following questions that were decided long ago by the courts: Does the United States Forest Service (USFS) have the authority to kill over-browsing deer deemed to be causing harm to the Kaibab National Forest and to do so in violation of state game laws? Similarly, does the National Park Service (NPS) have the authority to kill deer within Carlsbad Caverns National Park for research purposes without obtaining a state permit? Does Congress have the power to protect wild horses and burros on federal lands when those species compete with ranchers and their cattle for forage? And can the United States Fish and Wildlife Service (FWS) refuse to permit the State of Wyoming to vaccinate elk on the National Elk Refuge?

The courts answered these questions, all in the affirmative,¹ but standoffs between federal and state governments have nonetheless intensified in recent years. We examined several of these conflicts to help guide our research so that we could address the key arguments made by state and federal governments, and focus our analysis on the most relevant provisions related to wildlife as found in federal law, regulation, and policy. Included in our review were cases receiving national attention, such as the recent decision by NPS and FWS to preempt those hunting regulations of the State of Alaska that are in conflict with National Park and Refuge laws. These are rare cases where federal agencies pushed back against state interests. In other high profile cases, federal agencies acquiesced to the states, such as Grand Teton National Park's refusal to apply federal regulations to private inholdings within the boundaries of the Park, thus effectively ceding wildlife management authority to the State of Wyoming on roughly 2,300 acres of land within the Park. Other problematic cases include the management of wolves in federally designated wilderness areas, such as the decision made by USFS to permit the State of Idaho to land helicopters in the Frank Church River of No Return Wilderness in order to track and collar wolves, and to not take action to regulate the State of Idaho's plan to hire a professional trapper to kill two packs of wolves living within the Wilderness for the purpose of increasing the area's elk population. We also investigated cases receiving far less national attention, such as an annual predator killing contest on federal lands in Idaho managed by USFS and the Bureau of Land Management (BLM), and the State of Utah's introduction of non-native mountain goats to establish a population on national forest lands.

In cases like these, the states frequently claim that federal land agencies have limited authority over wildlife management, especially on multiple-use lands managed by USFS and BLM. In making this argument, states commonly assert that they own wildlife and manage it as a trust resource. As they see it, their power and authority over wildlife on federal lands reign supreme, and as the argument goes, neither federal land laws nor the courts have done much to change this historical arrangement. The states often justify their positions and actions by reference to the "North American Model of Wildlife Conservation" (the Model), which is a set of principles to guide state management of wildlife.

In comparison to the states, the federal government responds in a more varied and often inconsistent fashion. Rare is the situation where a federal agency challenges state interests, such as the case with NPS and FWS in Alaska. More common is a federal agency sending mixed messages about its authority over wildlife on federal lands, sometimes flexing its muscle, sometimes acquiescing to the states, and sometimes doing everything it can to watch from the sideline. This inconsistency may be why questions about wildlife management on federal lands have resurfaced with such force in recent years.

¹ See *infra* notes 136-153, 382 and accompanying text.

This Article sets the record straight by providing a comprehensive examination of the authority of federal agencies to manage wildlife on federal lands, with the goal of providing a more common understanding amongst federal and state agencies. To help ground the research and make it usable to decision makers and federal land and wildlife managers, the research team consists of three academics (Zellmer, Joly, and Nie) and three consultants (all retired federal employees) having decades of experience working for the United States Department of Agriculture's Office of the General Counsel (Pitt), USFS (Haber, a former planning specialist for the agency), and BLM (Barns, a former wilderness specialist at the Arthur Carhart National Wilderness Training Center).

The Article comes in three parts. Part II begins by providing the context of state wildlife governance. It highlights the core claims and arguments most often made by the states and their representative institutions in conflicts like those described above. It reviews the common assertion that states own wildlife and manage it as a trust resource. From there, the Part reviews common themes in state wildlife laws, decision-making processes, and sources of funding. The North American Model of Wildlife Conservation is then described insofar as it relates to federal lands and conflict over wildlife management. The Model was invoked frequently in the cases we examined, and we explain its relevance in Part II and what we view as its shortcomings in Part IV. Part II closes by summarizing some of the most common complaints and recommendations made by the states, through the Association of Fish and Wildlife Agencies (AFWA), regarding the management of wildlife on federal lands. We do so because of the role played by AFWA in negotiating agreements with federal land agencies.

Part III begins by providing the legal context of wildlife management on federal lands. The constitutional setting comes first, with a review of the United States Constitution's Property Clause, Treaty Clause, Commerce Clause, and the Tenth Amendment. The first Subpart closes by reviewing the doctrine of federal preemption and the use of savings clauses in federal land law. It shows that while states have well-established historical authority over wildlife within their borders, this authority is neither exclusive nor necessarily dominant. As found repeatedly by the courts, the Constitution grants the federal government the authority to manage its lands and resources, fulfill its treaty obligations, and control interstate commerce, even when the states object.

Part III then reviews the federal land laws, regulations, and policies of most significance to the management of wildlife on federal lands. Provisions governing the management of endangered and threatened species, the National Park System, National Wildlife Refuge System, National Forest System, public lands administered by BLM, the special case of Alaska, and the National Wilderness Preservation System are covered in this Subpart. Extra attention is provided to the latter because of the disproportionate amount of conflict and controversy generated by wildlife management in federally designated wilderness. The Subpart shows that federal land agencies have considerable powers and statutory duties to manage wildlife

on federal lands, even if they have chosen not to exercise those powers consistently in the past. Also reviewed in each are agency-specific savings clauses and provisions related to intergovernmental cooperation. Though each statute differs in important ways, all provide the states with meaningful and privileged opportunities to participate in decisions regarding the management of wildlife on federal lands. The savings clauses demonstrate Congress's desire to acknowledge some level of state responsibility over wildlife management, but in no way should these clauses be interpreted to diminish the federal government's vast constitutional and statutory authority to manage its own lands and resources, even when objected to by a state.

Our conclusions, analysis, and recommendations come in Part IV. We begin by explaining that federal land management agencies have an *obligation*, and not just the discretion, to manage and conserve fish and wildlife on federal lands, contrary to the myth that "the states manage wildlife, federal land agencies only manage wildlife habitat." We found this mantra repeated throughout our study, and it was commonly made by state and federal agencies in multiple cases and contexts. We explain the origins of this myth and explain why it is wrong from a legal standpoint and limited from a biological one. The myth must be debunked, not only because it is legally deficient, but also because federal lands are significant reservoirs of biodiversity and will become even more significant in the future due to the rapid pace of development on nonfederal lands.

We next address the common claim that states own wildlife and that such ownership necessarily limits the authority of federal land agencies to manage and make decisions concerning wildlife. We conclude that the states' assertion that they own wildlife—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. It is especially problematic when states assert ownership as a basis to challenge or undermine federal authority over wildlife on federal lands. The states are on solid footing when declaring a "sovereign ownership" of wildlife that must be managed as a public trust resource. But, invoking the public trust as a source of authority is simply not credible without its mirror-image, which is the conservation responsibility for trust resources.

We also explain in Part IV why it is important for the federal government to respond to state assertions of trust ownership by emphasizing that it too has statutory and trust obligations over federal lands, which often encompass the conservation of wildlife. This Subpart concludes by discussing how the all too often adversarial relationship between federal and state governments might be addressed in the future by embracing a more cooperative form of "co-trusteeship" between federal, state, and tribal governments. In moving forward, we also recommend a reexamination of how wildlife is managed and funded at the state level, such as finding a more secure and predictable source of funding for nongame management. We also suggest that advocates of the Model consider the significant role played by federal lands in the conservation of wildlife.

Addressed next are two issues of a more technical nature, both of which figured prominently in the cases reviewed for this research. The first is the United States Department of the Interior's policy statement on federal-state relations in wildlife policy. Some of the provisions found in the policy sow confusion amongst federal and state agencies. Most problematic is how the policy proclaims that states have "primary authority" for management of fish and wildlife on federal lands. We take issue with this misinterpretation of the law, the process used to write it, and explain how it can lead to unnecessary confusion and conflict between federal and state governments.

We then discuss the issue of what happens when federal agencies refuse to take action to protect wildlife on federal lands. This scenario played out in several of the cases reviewed as part of this project, with the distinction being between when the agency has a duty to act and when the agency has the authority to act but the action is discretionary. When a federal agency has a duty to act under a statute, regulation, or other legal requirement, the failure to do so through permit issuance or otherwise warrants an injunction of the non-permitted and non-federal activity.

The issue of wildlife management in the National Wilderness Preservation System is also addressed again in Part IV. We review the Wilderness Act² and its unambiguous affirmative obligation to preserve wilderness character, which includes fish and wildlife species within wilderness areas, and discuss problematic trends where federal agencies have skirted legal obligations in order to accommodate more political demands, often from state interests advancing a view of management that is antithetical to the Wilderness Act.

Part IV concludes by discussing the importance of intergovernmental cooperation in the management of wildlife on federal lands. Multiple opportunities for cooperation already exist in federal decision-making and planning processes, but they are not used to their full potential. We found that states too often view such opportunities not as a way to meaningfully inform federal decision making, but as a political platform to challenge federal authority. As we see it, intergovernmental cooperation is a two-way street, and while federal agencies must provide opportunities for state participation in federal planning processes, the states should reciprocate by providing opportunities for federal entities to participate meaningfully in state wildlife management decision making and, in appropriate cases, to influence the resolution of issues related to wildlife conservation.

To make the research accessible to those who need it most, the Article is accompanied by a set of frequently asked questions that will be available online.³ This resource enables users to find succinct answers to their questions with linkages to the most relevant parts of the Article for additional information.

² 16 U.S.C. §§ 1131–1136 (2012).

³ *Federal Lands & Wildlife*, U. MONT., <http://www.cfc.umt.edu/bolle/federal-lands-wildlife> (last visited Nov. 11, 2017) (FAQs currently under construction).

II. STATE MANAGEMENT CONTEXT AND STATE PERSPECTIVES ON MANAGING WILDLIFE ON FEDERAL LANDS

This Part provides some initial background on state wildlife law and governance. Common state perspectives on wildlife ownership, the wildlife trust, state wildlife commissions, funding, and the North American Model of Wildlife Conservation are reviewed insofar as they pertain to intergovernmental conflict. These issues emerged frequently in several of the disputes we examined. The Part reviews some of the most common claims and arguments made by state wildlife agencies and their representative institutions. Of course, there is no singular state wildlife agency perspective, and readers should appreciate the diversity found amongst the states. To simplify, we emphasize the views and position of AFWA. AFWA represents North America's state fish and wildlife agencies and is a principle actor in the debate over wildlife management on federal lands.⁴ Particular emphasis is placed on AFWA because of its role in negotiating agreements with federal land agencies. We take issue with some of the positions and arguments, as explained below in this Part, and we return to some of the more substantive issues in subsequent Parts of the Article.

A. State Ownership and the Wildlife Trust

Forty-eight states claim sovereign ownership of wildlife.⁵ Sovereign ownership differs from proprietary ownership in that it is constrained by the public interest with the requirement that wildlife be managed for the greater good and the benefit of the public.⁶ Most often referenced by the states in this context is *Geer v. Connecticut*,⁷ in which the Supreme Court of the United States recognized the common state ownership of wildlife and that this power is to be exercised "as a trust for the benefit of the people, and not as a prerogative for the advantage of the government, as distinct from the people, or for the benefit or private individuals as distinguished from the public good."⁸ As we discuss in Part III.A, the Supreme Court subsequently overruled *Geer* in *Hughes v. Oklahoma*, but did so in the context of federal laws preempting state laws (based on claims of state ownership).⁹ States, in

⁴ See *About: Overview*, ASS'N FISH & WILDLIFE AGENCIES, <https://perma.cc/A2ZW-GQSP> (last visited Nov. 11, 2017).

⁵ Michael C. Blum & Aurora Paulsen, *The Public Trust in Wildlife*, 6 UTAH L. REV. 1437, 1462, 1488-1504 (2013).

⁶ *Id.* at 1466-67.

⁷ 161 U.S. 519 (1896), overruled by *Hughes v. Oklahoma*, 441 U.S. 322 (1979).

⁸ *Id.* at 529. AFWA considers *Geer* as "provid[ing] the single strongest statement of state public trust ownership of fish and wildlife in the Court's jurisprudence." Brief for Ass'n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners at 11, *Wisconsin v. Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wis.*, 135 S. Ct. 1842 (2015) (No. 14-792), 2015 WL 527525, at *11. *Geer* traces the idea to *Martin v. Waddell's Lessee*, 41 U.S. (16 Pet.) 367 (1842). *Geer*, 161 U.S. at 529.

⁹ *Hughes*, 441 U.S. 325-26. The erosion of *Geer* began with *Missouri v. Holland*, 252 U.S. 416 (1920). There, the Court upheld the constitutionality of the Migratory Bird Treaty Act and

other words, cannot discriminate against interstate commerce based on claims of state ownership of wildlife.¹⁰ The general rule adopted in *Hughes* “makes ample allowance for preserving, in ways not inconsistent with the Commerce Clause, the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership.”¹¹

Assertions of sovereign ownership provide the basis for states claiming a “public trust” in wildlife. In their analysis, Blumm and Paulsen find that “courts and legislatures in at least twenty-two states have expressly employed the words ‘trust’ or ‘trustee’ when discussing state management of wildlife” and that “courts and legislatures of at least twenty-two other states use trust-like language . . . in proclaiming state ownership of wildlife.”¹² The public trust in wildlife is most often invoked by states when declaring broad power and authority to regulate fish and wildlife resources.¹³ Less clear is what affirmative conservation duties go along with this trust responsibility. In other words, what must states do, and not do, in order to meet the responsibilities of the wildlife trust?¹⁴ There is relatively little case law on this matter, and states have generally done little to fill in the details.¹⁵ As is the case with the public trust doctrine more broadly, there are many unanswered questions about the exact parameters and possible applications of a “wildlife trust,” if the term is to be taken literally.¹⁶ But for purposes

rejected state claims of “exclusive authority” to manage wildlife under the state ownership doctrine. *Id.* at 434. As eloquently stated by the Court: “the state may regulate the killing and sale of such birds, but it does not follow that its authority is exclusive of paramount powers. To put the claim of the State upon title is to lean upon a slender reed.” *Id.*; see *infra* notes 187–190 and accompanying text.

¹⁰ *Hughes*, 441 U.S. at 335.

¹¹ *Id.* at 335–36.

¹² Blumm & Paulsen, *supra* note 5, at 1471, 1473. “Of the fifty states, only Nevada and Utah have yet to make some acknowledgement of the public trust in wildlife.” *Id.* at 1477. Similarly, AFWA emphasizes that “[s]tates, as public trustees, hold wildlife in trust for their citizens.” Brief for Ass’n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners, *supra* note 8, at 10.

¹³ Blumm & Paulsen, *supra* note 5, at 1466, 1471–73.

¹⁴ See generally Susan Morath Horner, *Embryo, Not Fossil: Breathing Life Into the Public Trust in Wildlife*, 35 LAND & WATER L. REV. 23, 24 (2000) (“[P]ractitioners have not been left with any clear authority either as to the resources to which the doctrine should apply, or its necessary features.”); Gary D. Meyers, *Variation on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife*, 19 ENVTL. L. 723, 733 (1989) (“Professor Stone’s proposal focuses on the practical aspects of such a change, namely that natural objects would be recognized at law, could institute—through a guardian—legal action to prevent or redress harm to the natural objects, and receive direct injunctive or monetary relief.”); Patrick Redmond, *The Public Trust in Wildlife: Two Steps Forward, Two Steps Back*, 49 NAT. RESOURCES J. 249, 253 (2009) (“This distinction between proscriptive authority and affirmative duties has evoked numerous subtle philosophical and ethical discussions of the difference between a purely regulatory relationship between the state and its natural resources and a more trust-oriented relationship based on a stewardship ethic or ‘duty-based environmentalism.’”).

¹⁵ See Blumm & Paulsen, *supra* note 5, at 1471; Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past and Charting Its Future*, 45 U.C. DAVIS L. REV. 665, 678 (2012); see also discussion *infra* Part IV.B.1.

¹⁶ Horner, *supra* note 14, at 25.

here, it is enough to note how the open-ended nature and ambiguity of the wildlife trust doctrine is used by the states to assert jurisdictional powers and control over wildlife. We return to the important issues of wildlife ownership and trust management in Part IV.A.2.

B. State Wildlife Laws, Decision Making, and Funding

State wildlife agencies implement their wildlife trust duties through an array of state wildlife laws and regulations. Some of the most common categories found in state codes pertain to protected species, hunting, fishing and trapping, animal damage control, habitat protection, tribal provisions, law enforcement, and hunter-harassment interference.¹⁷ Twenty-one states also have "right to hunt" constitutional provisions.¹⁸ These vary in terms of substance and effect.¹⁹

Some simply recognize a hunting heritage in a state²⁰ and the opportunity to harvest wild fish and game subject to state law and regulation,²¹ while others create more explicit rights that are nonetheless subject to state management.²² All but one of these amendments (Vermont's) passed since the mid-1990s, and collectively, they reflect some fear that state hunting traditions are under threat.²³ As we discuss below, they also signify the importance of hunting to state wildlife management.

While state fish and wildlife agencies are structured in numerous ways, a commonality that most share is that the director or head of the agency is responsible to some sort of politically appointed fish and wildlife commission, board, or advisory council.²⁴ The powers granted to state wildlife commissions vary, from setting fish and game seasons and bag limits

¹⁷ See RUTH S. MUSGRAVE & MARY ANNE STEIN, CTR. FOR WILDLIFE LAW, STATE WILDLIFE LAWS HANDBOOK 14, 18 (1993); see also *Animal Legal and Historical Center Web Site*, MICH. ST. U., <https://perma.cc/4EUU-D9VX> (last visited Nov. 11, 2017) (providing searchable database of hunter harassment and interference laws).

¹⁸ See *State Constitutional Right to Hunt and Fish*, NAT'L CONF. ST. LEGISLATURES (Apr. 20, 2017), <https://perma.cc/W53P-J3QQ>.

¹⁹ See generally Stacey L. Gordon, *A Solution in Search of a Problem: The Difficulty with State Constitutional "Right to Hunt" Amendments*, 35 PUB. LAND & RESOURCES L. REV. 3 (2014) (discussing the different state constitutions that guarantee a right to hunt.).

²⁰ See, e.g., MONT. CONST. art. IX, § 7 ("The opportunity to harvest wild fish and wild game animals is a heritage that shall forever be preserved to the individual citizens of the state and does not create a right to trespass on private property or diminution of other private rights.").

²¹ See, e.g., WYO. CONST. art. I, § 39 ("The opportunity to fish, hunt and trap wildlife is a heritage that shall forever be preserved to the individual citizens of the state, subject to regulation as prescribed by law, and does not create a right to trespass on private property, diminish other private rights or alter the duty of the state to manage wildlife.").

²² See, e.g., VA. CONST. art. XI, § 4 ("The people have a right to hunt, fish, and harvest game, subject to such regulations and restrictions as the General Assembly may prescribe by general law").

²³ *State Constitutional Right to Hunt and Fish*, *supra* note 18.

²⁴ See Martin Nie, *State Wildlife Policy and Management: The Scope and Bias of Political Conflict*, 64 PUB. ADMIN. REV. 221, 222 (2004).

to charting broader management goals and objectives for the states.²⁵ Members are typically appointed by the governor and subject to state legislative approval.²⁶ Most states also have requirements for commission membership, such as a general knowledge of wildlife issues, political and geographic balance, or requiring that they hold a sporting license.²⁷ The commission framework stems from sport hunters and conservationists wanting to secure their hard-fought protections for fish and game; thus, commissions were created so that sport hunters had a voice in preventing a return of widespread market hunting.²⁸ More recently, however, state wildlife commissions have been criticized, mostly because some interests believe that their memberships do not adequately represent the diverse values and interests of those people who do not hunt, fish, or trap.²⁹

Funding for state wildlife management generally comes from the sale of hunting, fishing, and trapping licenses at the state level and from federal funds generated through targeted excise taxes.³⁰ The result is that hunting, fishing, and trapping-derived revenue "comprise between 60 and 90 percent of the typical state fish and wildlife agency budget."³¹ This arrangement is often referred to as a "user-pay, user-benefit" funding model because states apply most of these funds to the management of sport fish and game species.³² This funding mechanism serves to reinforce the complaint of non-hunters that their values and interests are not adequately considered in management decisions.³³ As we discuss below, this funding model helps us better understand the position of states in some intergovernmental disputes, as decisions made by federal land agencies can have implications for state wildlife agency budgets that are so dependent on fish and game-generated revenue.³⁴

Another initial observation is that the "user-pay, user-benefit" moniker is more complicated than generally stated. A case can be made, for example, that taxpayers, including the non-hunting and non-fishing public, do indeed pay for wildlife *conservation* through the acquisition and management of wildlife *habitat*, both public and private.³⁵ This takes the form of funding for federal lands, state lands, and contributions to private land conservation.³⁶

²⁵ See, e.g., ERIN SEILER, OR. LEGISLATIVE COMM. SERVS., EXECUTIVE APPOINTMENTS LEGISLATIVE REVIEW (2016), <https://perma.cc/FKC9-VUJJ>.

²⁶ See, e.g., *id.*

²⁷ See, e.g., *id.*

²⁸ See JOHN F. REIGER, AMERICAN SPORTSMEN AND THE ORIGINS OF CONSERVATION 80 (3d ed. 2001).

²⁹ Nie, *supra* note 24, at 223.

³⁰ *Id.*

³¹ J.F. ORGAN ET AL., THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION: TECHNICAL REVIEW 12-04, at 9 (Theodore A. Bookhout ed., 2012), <https://perma.cc/68VB-FJ7F>.

³² See *id.*

³³ See Nie, *supra* note 24, at 223-24.

³⁴ See ORGAN ET AL., *supra* note 31, at 10 (providing examples of federal agency influence on funding).

³⁵ See *id.* at 27 (explaining contributions of public and private land management to habitat conservation).

³⁶ See *id.*

But in more precise terms of funding wildlife *management* and state wildlife agencies, the user-pay, user-benefit model is less disputed.

The history of the user-pay, user-benefit funding model illustrates the cooperative relationship between federal and state governments in the management of wildlife. Prior to 1937, many states regularly diverted game license revenue to general governmental purposes, other than fish and wildlife management.³⁷ The Pittman-Robertson Wildlife Restoration Act,³⁸ more commonly known as the Federal Aid in Wildlife Restoration Act, put an end to this practice.³⁹ The program put in place by the Act provides federal assistance to states for wildlife restoration projects and plans and hunter education.⁴⁰ In order to secure a more certain and predictable stream of funding for wildlife, the Act (and subsequent amendments to it) created a fund from taxes imposed on firearms, ammunition, and archery equipment.⁴¹ However, in order to receive federal funding, the law requires states to prohibit "the diversion of license fees paid by hunters for any other purpose than the administration of [the] State fish and game department."⁴² In other words, the law conditions federal funding on states using state game license revenue for wildlife management and conservation.

A similar program focused on fisheries emerged from Congress in 1950. The Dingell-Johnson Sport Fish Restoration Act,⁴³ also referred to as the Federal Aid in Fish Restoration Act, funds sport fish restoration through excise taxes on fishing equipment, motorboat/small engine fuel, and baits.⁴⁴ It similarly includes a predicate for federal funding: states receiving Dingell-Johnson money must apply it to the administration of state fish and game departments.⁴⁵ Funding is used for fish restoration and management projects, defined in the law as "the restoration and management of all species of fish which have material value in connection with sport or recreation in the marine and/or fresh waters of the United States."⁴⁶

The Pittman-Robertson and Dingell-Johnson Acts primarily focus on sport fish and game species. State funding for nongame species has not fared as well. Congress addressed this issue in passing the Fish and Wildlife Conservation Act of 1980.⁴⁷ Frequently referred to as the "Non-Game Act," this law recognizes that the traditional focus on "recreationally and

³⁷ See Hal Herring, *In Current Rush to Buy Guns and Ammo, Pittman-Robertson Funds Break All Records*, FIELD & STREAM (May 9, 2013), <https://perma.cc/DV5X-889Y>.

³⁸ 16 U.S.C. §§ 669–669i (2012).

³⁹ See *id.* § 669.

⁴⁰ *Id.* §§ 669b, 669c, 669h–1.

⁴¹ See M. LYNNE CORN & JANE G. GRAVELLE, CONG. RESEARCH SERV., R42992, GUNS, EXCISE TAXES, AND WILDLIFE RESTORATION 2 fig.1 (2013) (providing yearly data of Pittman-Robertson receipts and distributions).

⁴² 16 U.S.C. § 669.

⁴³ *Id.* §§ 777–777m.

⁴⁴ *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service: Federal Aid in Sport Fish Restoration Act*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/UG7W-QUMS> (last visited Nov. 11, 2017).

⁴⁵ 16 U.S.C. § 777(a).

⁴⁶ *Id.* § 777a(1).

⁴⁷ *Id.* §§ 2901–2912.

commercially important species” and “traditional financing mechanisms are neither adequate nor fully appropriate to meet the conservation needs of nongame fish and wildlife.”⁴⁸ The purpose of the Act is to fix this problem by providing “financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife.”⁴⁹ Promise notwithstanding, this law never achieved its stated purpose because unlike the Pittman-Robertson and Dingell-Johnson Acts, it does not include an independent and more secure funding mechanism.⁵⁰ Instead, the law relied on funding from general congressional appropriations, which to date, Congress never provided to the program.⁵¹

Several initiatives have been waged in the past, at both national⁵² and state⁵³ levels, to deal with the lack of funding for nongame species management, and a related campaign is currently underway.⁵⁴ AFWA is part of a broad coalition seeking a solution to the problem of nongame funding.⁵⁵ We return to this issue in Part IV, as we believe it is imperative that states have the capacity and incentives to manage nongame species. Providing these resources will build trust and capacity at the state level, and help harmonize federal-state responsibilities over wildlife on federal lands.

C. The North American Model of Wildlife Conservation

The North American Model of Wildlife Conservation figures prominently in state claims and positions regarding wildlife management on federal lands. The Model was formally adopted by AFWA in 2002, and it views the Model (along with the public trust doctrine) as “the basis for state wildlife law.”⁵⁶ While the Model has no independent legal authority, it is referenced extensively in AFWA’s legal and educational materials, and is

⁴⁸ *Id.* § 2901(a)(4).

⁴⁹ *Id.* § 2901(b)(1).

⁵⁰ Removing Regulations Implementing the Fish and Wildlife Conservation Act, 75 Fed. Reg. 51,420, 51,420–21 (Aug. 20, 2010) (to be codified at 50 C.F.R. pt. 83).

⁵¹ See *id.* at 51,420 (removing regulations that implement the Fish and Wildlife Conservation Act because “funds never became available to carry out the Act”).

⁵² One of the more memorable campaigns was the unsuccessful effort in passing the Conservation and Reinvestment Act (CARA) of 2000. H.R. 701, 106th Cong. (2000).

⁵³ See Cindy McKinney et al., Investing in Wildlife: State Wildlife Funding Campaigns 20 fig.1 (Apr. 2005) (unpublished M.S. thesis, University of Michigan), <https://perma.cc/NSG4-TPD2>.

⁵⁴ See generally ASS’N OF FISH & WILDLIFE AGENCIES, SUSTAINING AND CONNECTING PEOPLE TO FISH AND WILDLIFE: A LOOMING CRISIS CAN BE AVOIDED, <https://perma.cc/BH9H-Z4NN> (last visited Nov. 11, 2017) (discussing incomplete fish and wildlife funding).

⁵⁵ *Id.*

⁵⁶ ASS’N OF FISH & WILDLIFE AGENCIES, WILDLIFE MANAGEMENT AUTHORITY: THE STATE AGENCIES’ PERSPECTIVE 13 (2014), <https://perma.cc/CR2T-U8A2> [hereinafter AFWA TASK FORCE REPORT]; *About: North American Model of Wildlife Conservation*, ASS’N FISH & WILDLIFE AGENCIES, <https://perma.cc/NE8Q-38ZM> (last visited Nov. 11, 2017).

also invoked frequently by state wildlife agencies and other institutions.⁵⁷ While it is beyond the scope of this Article to provide a thorough accounting and analysis of the Model, it plays a significant role in how states frequently frame issues and view their political and legal authority over wildlife.⁵⁸ We discuss the Model again in Part IV.B.2 by explaining how it can exacerbate conflict between federal and state governments.

First articulated by University of Calgary biologist Valerius Geist in the mid-1990s, the Model is a set of seven broadly stated principles, which include the following: 1) wildlife resources are a public trust; 2) markets for game are eliminated; 3) allocation of wildlife is by law; 4) wildlife can be killed only for a legitimate purpose; 5) wildlife is considered an international resource; 6) science is the proper tool to discharge wildlife policy; and 7) democracy of hunting is standard.⁵⁹

Embedded within each principle is a descriptive-historical accounting of wildlife conservation and a more normative-prescriptive component. The Model places extraordinary emphasis on the role played by hunters in American wildlife conservation, while paying relatively little regard to the preservation movement or the role played by federal lands and federal environmental law more generally.⁶⁰ Conspicuously missing from the Model, for example, is a principle focused on wildlife habitat, of which federal lands would be of obvious significance.

The normative and prescriptive part of the Model is more difficult to assess because of how differently actors interpret and use it. Some proponents of the Model, for example, claim that it "has often been interpreted to be more than its original articulators' intention to describe key components of the philosophy and approach to wildlife conservation that developed in North America."⁶¹ Critics of the Model, by contrast, see it as more than just a description of the past but rather as a narrow set of guiding principles for future wildlife conservation.⁶² This is because most references

⁵⁷ See, e.g., ARIZ. GAME & FISH DEPT., NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/Z2XW-X2X3> (last visited Nov. 11, 2017) ("The North American Model of Wildlife Conservation is the world's most successful."); WILDLIFE SOC'Y, STANDING POSITION: THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/R4U9-6LBV> (last visited Nov. 11, 2017) (explaining that the policy of The Wildlife Society is to "[p]romote and support adherence to the seven core components [of the Model], identified by the Society, as the bedrock of the Model, by state, provincial, and federal governments").

⁵⁸ See generally David Wilms & Anne Alexander, *The North American Model of Wildlife Conservation in Wyoming: Understanding It, Preserving It, and Funding Its Future*, 14 WYO. L. REV. 659 (2014).

⁵⁹ Valerius Geist et al., *Why Hunting Has Defined the North American Model of Wildlife Conservation*, in TRANSACTIONS OF THE 66TH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 175, 176-80 (2001), <https://perma.cc/C63S-CTCS> (citing earlier references and antecedents to the Model).

⁶⁰ See *id.*

⁶¹ John F. Organ et al., *Public Trust Principles and Trust Administration Functions in the North American Model of Wildlife Conservation: Contributions of Human Dimensions Research*, 19 HUM. DIMENSIONS WILDLIFE 407, 408 (2014).

⁶² See Susan G. Clark & Christina Milloy, *The North American Model of Wildlife Conservation: An Analysis of Challenges and Adaptive Options*, in LARGE CARNIVORE CONSERVATION: INTEGRATING SCIENCE AND POLICY IN THE NORTH AMERICAN WEST 289, 301 (Susan

to the Model, as discussed further below, go beyond description and use it to justify various positions or decisions made by state wildlife agencies.⁶³ Clark and Milloy summarize: “Functionally, the model’s doctrine (principles) and formula (rules to implement the doctrine) guide current decision making about wildlife; they dictate how decisions are made, by whom, and for what purposes.”⁶⁴ What is striking to us about the Model is how little academic and professional scrutiny has been applied to it, as it is clearly but one possible accounting of wildlife conservation—past, present, and future.

Whatever might be its strengths and limitations, the Model clearly has political and policy influence, and helps us understand state positions on wildlife management, though often indirectly. Of most relevance here is the Model’s emphasis on the public trust doctrine, state primacy, and the importance of hunting to wildlife conservation. The public trust doctrine, as applied to wildlife, is regarded as the Model’s cornerstone.⁶⁵ Asserting that public trust principles relating to wildlife are most clearly found in state law, AFWA references the Model to “[a]dvocate for the primacy of state management authority for resident wildlife.”⁶⁶ Again, AFWA’s emphasis is that states have authority to manage fish and wildlife resources through a public trust and that it “assigns trustee ownership of fish and wildlife to the states.”⁶⁷ Access to public resources is commonly asserted in public trust cases (e.g., to oysters, tidelands, or streams), and state wildlife agencies and AFWA make similar linkages between states owning wildlife in trust, which necessitates providing public access to fish and wildlife.⁶⁸ We return to the public trust in wildlife issue in Part IV.A.2.

Also of relevance is the Model’s emphasis on hunting. As explained by the Model’s originators, though other interest groups such as bird enthusiasts played roles in the conservation movement, “[i]t is hunters, however, or, more accurately, *hunting*, that led to development of the [Model’s principles and] form[s] the foundation for North American wildlife

G. Clark & Murray B. Rutherford eds., 2014) (questioning “whether the model is capable of conserving wildlife and ecosystems into the future without major adaptations”); see also Michael P. Nelson et al., *An Inadequate Construct? North American Model: What’s Flawed, What’s Missing, What’s Needed*, WILDLIFE PROF., Summer 2011, at 58, 58 (arguing that “the rise in the Model’s popularity is worrisome in both its descriptive and prescriptive modes: One rests upon an inadequate account of history and the other on an inadequate ethic”).

⁶³ See, e.g., *infra* note 66 and accompanying text; see also discussion *infra* Part II.D.

⁶⁴ Clark & Milloy, *supra* note 62, at 312.

⁶⁵ See Organ et al., *supra* note 61, at 408; see also WILDLIFE SOC’Y, THE PUBLIC TRUST DOCTRINE: IMPLICATIONS FOR WILDLIFE MANAGEMENT AND CONSERVATION IN THE UNITED STATES AND CANADA 9 (2010), <https://perma.cc/5N5W-KG2S>.

⁶⁶ M. CAROL BAMBERY & MARTIN BUSHMAN, ASS’N OF FISH & WILDLIFE AGENCIES, THE STATES: TRUSTEES OF AMERICA’S WILDLIFE 13 (on file with authors).

⁶⁷ *Federal Interactions with State Management of Fish and Wildlife: Hearing Before the Subcomm. on Fisheries, Water, and Wildlife of the S. Comm. on Environment and Public Works*, 114th Cong. 9 (2016) [hereinafter *Hearing*] (statement of Ronald J. Regan, Executive Director, Association of Fish and Wildlife Agencies).

⁶⁸ See WILDLIFE SOC’Y, *supra* note 65, at 9 (emphasizing the importance of access to the public trust doctrine, including fishing, hunting, trapping, and travel routes).

conservation.”⁶⁹ AFWA similarly states that “[h]unting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation.”⁷⁰ In this vein, proponents of the Model often speak to the importance of sportsmen and women-derived funds to state fish and wildlife agency budgets.⁷¹ This is not to suggest, however, that all proponents of the Model are necessarily endorsing an exclusive “user-pay, user-benefit” model of funding for the future. In fact, some proponents are actively searching for ways to increase funding for nongame species and want the Model applied to the conservation of biodiversity more broadly.⁷² However malleable the Model may prove itself to be in the future, at this point, it is very much hunting-centric, and this helps explain a common position of the states in various disputes, such as when federal agencies make decisions to restrict types of hunter access or when states advocate for more “active management” of wildlife on federal lands.⁷³

D. The 2014 AFWA Task Force Report

In 2014, AFWA commissioned a task force to investigate how state wildlife agency directors “perceive the relationship between state and federal agencies, by determining the relationship’s implications on states’ authority to manage wildlife, and by making recommendations to strengthen the relationship between state and federal conservation agencies.”⁷⁴ The Task Force Report illuminates how several state directors view the relationship between federal and state governments and the perceived legal sources of tension. Furthermore, many of the recommendations made by the Task Force are made by AFWA in other contexts, and the document was approved by state membership.⁷⁵

The report begins by invoking the North American Model of Wildlife Conservation, the wildlife trust doctrine, and the Tenth Amendment of the

⁶⁹ Geist et al., *supra* note 59, at 179; see also James R. Heffelfinger et al., *The Role of Hunting in North American Wildlife Conservation*, 70 INT’L J. ENVTL. STUD. 399, 399 (2013) (“Regulated hunting is the foundation of the North American Model of Wildlife Conservation.”).

⁷⁰ *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷¹ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 30; *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷² See, e.g., Organ et al., *supra* note 61, at 408 (recommending that all wildlife be managed under the principles of the Model and that it is not synonymous with the user-pay, user-benefit funding model); Willms & Alexander, *supra* note 58, at 659–61 (recommending alternative funding sources for wildlife management).

⁷³ For example, AFWA states that the Model “is the world’s most successful system of policies and laws to restore and safeguard fish and wildlife and their habitats through sound science and active management.” *About: North American Model of Wildlife Conservation*, *supra* note 56 (emphasis added); see also Joanna Prukop & Ronald J. Regan, *In My Opinion: The Value of the North American Model of Wildlife Conservation—An International Association of Fish and Wildlife Agencies Position*, 33 WILDLIFE SOC’Y BULL. 374, 376 (2005) (linking the Model to the importance of state primacy and the issue of access to wildlife resources).

⁷⁴ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁷⁵ See *Hearing*, *supra* note 67, at 60–61 (statement of Executive Director Regan).

U.S. Constitution, which it asserts, "relegates to the states the responsibility of managing wildlife."⁷⁶ To make the Model work, says the report, "[a] productive relationship between federal and state agencies" is necessary.⁷⁷ Unfortunately, the report finds that "[s]tate wildlife agency leadership harbors growing concern about the increasingly strained relationship between state wildlife agencies and their federal partners" and that there is "considerable and widespread frustration with the interface between federal and state efforts to conserve wildlife."⁷⁸

Survey respondents were asked to identify specific laws, regulations, or policies that they believed were successful or challenging.⁷⁹ Most frequently identified as a challenge to the states was the Endangered Species Act⁸⁰ (ESA), which is perceived by some state agency directors "as a vehicle for federal overreach, or of inappropriate reallocation of states' wildlife management duties into federal hands."⁸¹ Also standing out in the survey were respondents citing the National Environmental Policy Act⁸² (NEPA) as a "hindrance to states' efforts to manage wildlife"⁸³ due to threats of NEPA-based litigation and the "continued exclusion of states from meaningful partnerships in planning, decision-making, and management, except in the most cursory of consultative efforts."⁸⁴

Of relevance to Part III.B of this Article are some state views on federal land laws in general. Emphasized in the report are the perceived problems associated with the open-ended nature of federal land laws that are believed to be interpreted in a preservationist "hands-off" fashion that makes active management of wildlife more difficult.⁸⁵ The task force report summarizes:

These laws leave room for loose interpretations of land management agency authority. The ambiguity allows local land managers latitude in their decision-making, and they often implement preservationist interpretations that encroach on state authorities. These interpretations, often based on unwritten values, drive agency decisions that are typically contrary to principles of wildlife, fisheries, and habitat management critical for state management.⁸⁶

The Federal Land Policy Management Act⁸⁷ (FLPMA) and the National Forest Management Act⁸⁸ (NFMA) are discussed in this context, with both

⁷⁶ AFWA TASK FORCE REPORT, *supra* note 56, at 5.

⁷⁷ *Id.* at 2, 4.

⁷⁸ *Id.* at 2.

⁷⁹ *Id.* at 6.

⁸⁰ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2012).

⁸¹ AFWA TASK FORCE REPORT, *supra* note 56, at 2, 8.

⁸² National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4370h (2012).

⁸³ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁸⁴ *Id.* at 11.

⁸⁵ *Id.* at 9.

⁸⁶ *Id.*

⁸⁷ Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701–1787 (2012).

⁸⁸ National Forest Management Act of 1976, 16 U.S.C. §§ 472a, 521b, 1600, 1611–1614 (2012) (amending Forest and Rangeland Renewable Resources Planning Act of 1974, Pub. L. No. 93-378, 88 Stat. 476).

laws often viewed as presenting obstacles to the management of "state trust species."⁸⁹ These laws were not identified as inherently problematic, rather respondents focused on the "subjective and inconsistent application of their precepts."⁹⁰

The AFWA Task Force makes a number of recommendations for improving relations between federal and state governments, most of which revolve around strengthening the position of state agencies in managing wildlife on federal lands.⁹¹ It also initiated a "legal strategy" in 2013 to enable state agencies "to act in concert to address challenges to their statutory authority to manage wildlife."⁹² In short, AFWA aims to clarify—in law, regulation, policy, and public perception—what it sees as the rightful role of the states in managing wildlife on federal lands. Some of these recommendations are offered by AFWA and the Western Association of Fish and Wildlife Agencies (WAFWA) in other contexts,⁹³ such as recent congressional testimony.⁹⁴ For now, we simply summarize the core recommendations of the Task Force and provide the requisite background in other parts of the Article. We return and respond to AFWA's recommendations in Part IV.

The AFWA Task Force begins by recommending training state and federal line managers "on the historic, principled underpinnings of state-federal authority and jurisdiction for managing fish and wildlife in the United States."⁹⁵ The proposed training initiative is to be implemented through a Memorandum of Understanding (MOU).⁹⁶ A public affairs strategy "to market and defend state wildlife authority interests" is also envisioned as part of this educational effort.⁹⁷ Establishing a mediation team to more constructively resolve conflict between federal and state agencies is also recommended.⁹⁸

Driving some of the Task Force's recommendations is a concern that federal land agencies are evolving in a way that is inconsistent with their organic legislation.⁹⁹ According to the Task Force, "[a]s conservation becomes more focused on landscape scale efforts, it is important that federal agencies integrate their conservation programs with the state agency

⁸⁹ AFWA TASK REPORT, *supra* note 56, at 9, 12.

⁹⁰ *Id.* at 2.

⁹¹ See *infra* notes 95–107 and accompanying text.

⁹² ASS'N OF FISH & WILDLIFE AGENCIES, PROTECTING STATE AUTHORITY FOR FISH AND WILDLIFE MANAGEMENT, <https://perma.cc/M3RG-8QEM> (last visited Nov. 11, 2017).

⁹³ See, e.g., W. ASS'N OF FISH & WILDLIFE AGENCIES COMM'RS' STATE AUTH. SUBCOMM., WHITE PAPER: WILDLIFE MANAGEMENT SUBSIDIARITY 4 (2011) ("WAFWA recommends that Congress adopt new provisions that clearly establish state fish and wildlife management authority and direct that all federal regulations and policies be consistent with congressional intent.").

⁹⁴ See *Hearing*, *supra* note 67, at 5–7 (statement of Executive Director Regan).

⁹⁵ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

⁹⁶ *Id.*

⁹⁷ *Id.* at 29.

⁹⁸ *Id.* at 28–29.

⁹⁹ See, e.g., *id.* at 21 ("The [FWS's] shift in focus has changed from direct fish and wildlife management with the protection and restoration of either single species or population to the maintenance of ecosystems and biodiversity.").

programs and not get out ahead of the states and the public we serve.”¹⁰⁰ The Task Force elaborates:

[W]e must remember that the foundation for our fish and wildlife programs continues to be the people who enjoy our sports and continue to pay the lion's share of the costs that provide these services. Many state fish and wildlife programs across our nation do not receive either state or federal general appropriations and as such must answer to a narrow constituency of supporters.¹⁰¹

This concern leads to the Task Force recommending more substantive legislative changes. The first is to modify the Sikes Act¹⁰² so that management by the Departments of the Interior and Agriculture comport with the law's section pertaining to fish and wildlife management on lands administered by the Department of Defense.¹⁰³ This law, often referred to as the “Sikes Act Extension,” requires the Secretaries of Interior and Agriculture to “plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game.”¹⁰⁴ The military section of the Sikes Act requires the cooperative preparation of natural resource management plans and that these plans “shall reflect the mutual agreement of the [federal and state] parties concerning conservation, protection, and management of fish and wildlife resources.”¹⁰⁵ There is no such language in the law pertaining to “mutual agreement” in the sections pertaining to the Departments of the Interior and Agriculture.¹⁰⁶ The Task Force would like the statute changed to include the following language: “The conservation plans and resulting programs shall reflect the mutual

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² 16 U.S.C. §§ 670–670m (2012).

¹⁰³ *Id.* §§ 670f–670h; AFWA TASK FORCE REPORT, *supra* note 56, at 22.

¹⁰⁴ 16 U.S.C. § 670g(a).

¹⁰⁵ *Id.* § 670a(a)(2).

¹⁰⁶ Instead, the Sikes Act makes clear:

Conservation and rehabilitation programs developed and implemented pursuant to this subchapter shall be deemed as *supplemental* to wildlife, fish, and game-related programs conducted by the Secretary of the Interior and the Secretary of Agriculture pursuant to other provisions of law. Nothing in this subchapter shall be construed as limiting the authority of the Secretary of the Interior or the Secretary of Agriculture, as the case may be, to manage the national forests or other public lands for wildlife and fish and other purposes in accordance with the Multiple-Use Sustained-Yield Act of 1960 or other applicable authority.

Id. § 670h(c)(1)(C) (emphasis added) (citation omitted). Furthermore, any wildlife conservation and rehabilitation plans prepared pursuant to the Sikes Act must be consistent with applicable USFS or BLM land management plans. *See id.* § 670h(b); *see also* Michael J. Bean, *The Developing Law of Wildlife Conservation on the National Forest and National Resource Lands*, 4 J. CONTEMP. L. 58, 65 (1977) (finding the Sikes Act Extension to offer “no resolution, indeed no guidance for the resolution, of conflicts involving wildlife conservation and other uses of the public lands” and that “it does nothing to narrow the broad discretion which the federal land management agencies have traditionally exercised in fulfilling their multiple use mandates”).

agreement of the parties concerning conservation, protection, and management of fish and wildlife resources."¹⁰⁷

As we explain later, federal land laws often include a "savings" clause addressing the relationship between federal and state powers.¹⁰⁸ AFWA emphasizes the importance of these provisions and makes a recommendation to "[s]trengthen existing Savings Clauses, expand new Savings Clauses to new congressional legislation as opportunities arise, and vigorously defend savings clauses to establish legal precedent."¹⁰⁹

The Task Force expresses frustration in how the courts have viewed wildlife savings clauses in the past, most notably in the case of managing wildlife in the National Elk Refuge in Wyoming.¹¹⁰ As AFWA sees it, these savings clauses should be viewed as unambiguous and represent the clear intention of Congress to "reserve" state power and authority over wildlife on federal lands as "a necessary incident of state sovereignty."¹¹¹ To fix this problem, the Task Force recommends replacing existing savings provisions with the following language:

Nothing in the Act shall be construed as affecting or intending to interfere with the laws of the several states to regulate hunting and fishing or to supersede, abrogate or otherwise impair the state's primary jurisdiction to manage or control fish and resident wildlife in a manner not inconsistent with the purpose of this Act. The Secretary, in carrying out this Act, shall proceed in conformity with such applicable state laws, policies and management plans and shall cooperate with the states and develop jointly agreed upon wildlife management plans.¹¹²

This proposal is a fundamental reinterpretation of existing wildlife law, and we explain why it should be rejected in Part IV. We discuss savings clauses again in the context of federal preemption and in each section reviewing federal land laws.

¹⁰⁷ AFWA TASK FORCE REPORT, *supra* note 56, at 23.

¹⁰⁸ See Robert L. Fischman & Angela M. King, *Savings Clauses and Trends in Natural Resources Federalism*, 32 WM. & MARY ENVTL. L. & POL'Y REV. 129, 145 (2007) (describing how these provisions "delimit the degree to which a federal agency should pursue national objectives at the expense of a state's different view" and can provide "a statement, and sometimes a mechanism, for incorporating state interests notwithstanding a statute that seeks to implement a uniform federal program").

¹⁰⁹ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

¹¹⁰ *Id.* at 17-18 (citing *Wyoming v. United States*, 279 F.3d 1214 (2002)).

¹¹¹ Brief of Amicus Curiae International Ass'n of Fish & Wildlife Agencies in Support of Plaintiff-Appellants & Reversal of the Decision Below at 8, *Wyoming*, 279 F.3d 1214 (10th Cir. 2002) (No. 99-8089) (citing *Ward v. Race Horse*, 163 U.S. 504, 510 (1896)).

¹¹² AFWA TASK FORCE REPORT, *supra* note 56, at 27.

III. THE LEGAL CONTEXT OF WILDLIFE MANAGEMENT ON FEDERAL LANDS

A. Constitutional Context

The U.S. Constitution provides the framework for federal-state relations and power-sharing arrangements, as well as individual obligations and limitations on authority for each level of government. Key provisions include the Property Clause,¹¹³ Treaty Clause,¹¹⁴ Commerce Clause,¹¹⁵ Supremacy Clause,¹¹⁶ and the Tenth Amendment.¹¹⁷ This Subpart explains the relevant constitutional clauses and legal precedents regarding federal powers and duties for wildlife management, and consequent implications for state authority.

1. The Property Clause

The United States' vast landholdings are concentrated in the American West and Alaska, but federal land can be found in all fifty states.¹¹⁸ As a landowner, the United States has proprietary interests over its lands and resources; as a government, it also has sovereign powers over its lands and resources.¹¹⁹ This Section focuses on the proprietary nature of the federal interest in public lands and wildlife.

a. The Nature and Scope of the Property Clause

The Property Clause gives Congress the "Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States."¹²⁰ Although the Supreme Court has found that the "full scope of this paragraph has never been definitely settled," it has held that "[p]rimarily, at least, it is a grant of power to the United States of control over its property."¹²¹ In theory, this plenary power is tempered by special duties regarding the administration of public lands and resources. "Executive branch officials, while having wide latitude to make all needful rules regarding the public lands, may have a countervailing trust-like responsibility to protect those resources on behalf of the public."¹²² While the

¹¹³ U.S. CONST. art. IV, § 3, cl. 2.

¹¹⁴ *Id.* art. II, § 2, cl. 2.

¹¹⁵ *Id.* art. I, § 8, cl. 3.

¹¹⁶ *Id.* art. VI, cl. 2.

¹¹⁷ *Id.* amend. X.

¹¹⁸ CAROL HARDY VINCENT ET AL., CONG. RESEARCH SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 7-9 tbl.1 (2017), <https://perma.cc/FH94-GG8R>.

¹¹⁹ See *Concessions Co. v. Morris*, 186 P. 655, 658, 660 (Wash. 1919) (discussing the holding of *Fort Leavenworth R.R. Co. v. Lowe*, 114 U.S. 525 (1885)).

¹²⁰ U.S. CONST. art. IV, § 3, cl. 2.

¹²¹ *Kansas v. Colorado*, 206 U.S. 46, 89 (1907).

¹²² Sandra B. Zellmer, *The Devil, the Details, and the Dawn of the 21st Century Administrative State: Beyond the New Deal*, 32 ARIZ. ST. L.J. 941, 1032 (2000); accord *In re Stewart Transp. Co.*, 495 F. Supp. 38, 40 (E.D. Va. 1980) ("Under the public trust doctrine, the State of Virginia and

Supreme Court and several other federal courts have alluded to a federal trust responsibility for public lands and resources, the contours of such a responsibility are ill-defined.¹²³ The contours of the Property Clause power, however, are relatively clear.¹²⁴

*United States v. Grimaud*¹²⁵ was one of the first tests of the Property Clause power to protect federal public lands.¹²⁶ The Forest Reserve Act of 1897¹²⁷ authorized the Secretary of the Interior to

the *United States* have the right and the duty to protect and preserve the public's interest in natural wildlife resources. Such right does not derive from ownership of the resources but from a duty owing to the people." (emphasis added)).

¹²³ See, e.g., *Light v. United States*, 220 U.S. 523, 536 (1911) (identifying a duty "to protect the public domain from trespass and unlawful appropriation" (quoting *United States v. Beebe*, 127 U.S. 338, 342 (1888))); *W. Va. Div. of the Izaak Walton League of Am., Inc. v. Butz*, 522 F.2d 945, 950-55 (4th Cir. 1975) (noting the historic role of USFS as "custodian and protector" of forest reserves); *High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1246 (D. Colo. 2006) (finding a duty to assert federal reserved water rights for the Black Canyon of the Gunnison). In a series of cases involving Redwood National Park, the trust doctrine was invoked to require affirmative action to protect park resources from external threats posed by logging. See *Sierra Club v. Dep't of the Interior (Redwoods II)*, 398 F. Supp. 284, 293-94 (N.D. Cal. 1975), modified, *Sierra Club v. Dep't of the Interior (Redwoods III)*, 424 F. Supp. 172 (N.D. Cal. 1976); *Sierra Club v. Dep't of the Interior (Redwoods I)*, 376 F. Supp. 90, 95-96 (N.D. Cal. 1974).

¹²⁴ It is important to note that federal enclaves are distinct from federal public lands. Under the Enclave Clause, "Congress may acquire derivative legislative power from a State . . . by consensual acquisition of land, or by nonconsensual acquisition followed by the state's cession of authority over the land." *Kleppe v. New Mexico*, 426 U.S. 529, 542 (1976) (citation omitted). Specifically, the Clause gives Congress power "[t]o exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful buildings." U.S. CONST. art. I, § 8, cl. 17. In addition to giving Congress exclusive authority over the seat of federal government (Washington, D.C.), the Enclave Clause provides authority to purchase state land for a variety of federal purposes. See GEORGE CAMERON COGGINS & ROBERT L. GLICKSMAN, PUBLIC NATURAL RESOURCES LAW § 3:7 (2d ed. 2017) (noting that "Needful Buildings" . . . include[s] most federal purposes, including locks and dams, national parks, and national forests" (footnotes omitted)). Congress's power over federal enclaves is highly nuanced. See Spencer Driscoll, *Utah's Enabling Act and Congress's Enclave Clause Authority: Federalism Implications of a Renewed State Sovereignty Movement*, 2012 BYU L. REV. 999, 1000. If the state legislature expressly cedes jurisdiction over an enclave purchased by the United States, the United States exercises all legislative powers over the parcel to the exclusion of state authority. *Kleppe*, 426 U.S. at 542; *Fort Leavenworth R.R. Co.*, 114 U.S. at 532, 537-38. Otherwise, the federal and state governments are free to make whatever jurisdictional arrangements they choose regarding wildlife, transportation, and other civil and criminal laws. See *Fort Leavenworth R.R. Co.*, 114 U.S. at 533-42; see also *Kleppe*, 426 U.S. at 542 ("[T]he legislative jurisdiction acquired may range from exclusive federal jurisdiction with no residual state police power, to concurrent, or partial, federal legislative jurisdiction, which may allow the State to exercise certain authority." (citation omitted)); *United States v. Parker*, 36 F. Supp. 3d 550, 575-76, 584-85 (W.D.N.C. 2014) (holding that, where both the United States and North Carolina had concurrent jurisdiction within a forest enclave, the federal court had authority over a prosecution for the illegal taking of wildlife). Once agreed upon, states cannot unilaterally amend or cancel cession agreements. *United States v. Armstrong*, 186 F.3d 1055, 1061 (8th Cir. 1999).

¹²⁵ 220 U.S. 506 (1911).

make provisions for the protection against destruction by fire and depredations upon the public forests and forest reservations... and... such rules and regulations... as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.¹²⁶

With this authority, the Secretary of Agriculture¹²⁷ issued rules requiring ranchers to secure permits to graze livestock in forest reserves.¹²⁸

The defendants were charged with grazing sheep in a forest reserve without a permit.¹²⁹ They argued that the Act was unconstitutional insofar as it delegated power to make regulations to the Secretary.¹³⁰ The Supreme Court was unsympathetic. It held: "Each reservation had its peculiar and special features," and Congress properly wielded the Property Clause to give the Secretary power to consider local conditions and "to fill up the details" of regulating "occupancy and use... to preserve the forests from destruction."¹³¹

The United States Court of Appeals for the Ninth Circuit reached a similar conclusion in a recent case involving rancher Wayne Hage, who gained a good deal of notoriety for his repeated trespasses on federal public lands in Nevada.¹³² The court rejected Hage's argument that state-sanctioned water rights entitled him to any additional easements or appurtenances to graze livestock on federal lands.¹³³

The Property Clause power to protect the public lands may also be used to protect natural resources that are intimately associated with the public lands, such as wildlife, water, and air.¹³⁴ In *Hunt v. United States*,¹³⁵ the Supreme Court held that the Property Clause included the power to thin overpopulated herds of deer on federal lands in order to protect forest

¹²⁶ *Id.* at 521-22; see Peter A. Appel, *The Power of Congress "Without Limitation": The Property Clause and Federal Regulation of Private Property*, 86 MINN. L. REV. 1, 58-62 (2001) (discussing the Supreme Court's broad interpretations of congressional authority under the Property Clause).

¹²⁷ Act of June 4, 1897, ch. 2, 30 Stat. 11 (1899).

¹²⁸ *Id.*, ch. 2, 30 Stat. at 35 (codified as amended at 16 U.S.C. § 551).

¹²⁹ In 1905, the authority changed from the Secretary of the Interior to the Secretary of Agriculture. See Act of Feb. 1, 1905, ch. 288, 33 Stat. 628 (1905).

¹³⁰ See *Grimaud*, 220 U.S. at 509-10 (discussing, for example, Regulation 45).

¹³¹ *Id.* at 509.

¹³² *Id.* at 510, 513-14.

¹³³ *Id.* at 515-17, 522 (citing *Wayman v. Southard*, 23 U.S. (10 Wheat.) 1, 42 (1825)); accord *Light*, 220 U.S. 523, 536 (1911) (enjoining grazing on a national forest without a permit and stating that "[t]he United States can prohibit absolutely or fix the terms on which its property may be used").

¹³⁴ *United States v. Estate of Hage*, 810 F.3d 712, 716-18 (9th Cir. 2016) (citing, inter alia, *Light*, 220 U.S. at 536); see Jason Dearen, *Central 'Sagebrush Rebellion' Case Suffers Defeat*, SAN DIEGO UNION-TRIB. (Sept. 1, 2012), <https://perma.cc/PNK5-UX85>.

¹³⁵ See *Hage*, 810 F.3d at 715, 717-18.

¹³⁶ See *Kleppe*, 426 U.S. 529, 530 (1976) ("Congress' complete authority over the public lands includes the power to regulate and protect the wildlife living there.").

¹³⁷ 278 U.S. 96 (1928).

resources, even if the federal action was contrary to state law.¹³⁸ The Court subsequently construed *Hunt* quite broadly in *Kleppe v. New Mexico*, stating that, while *Hunt* found that "damage to the land is a sufficient basis for regulation; it contains no suggestion that it is a necessary one."¹³⁹

Kleppe upheld the Wild Free-Roaming Horses and Burros Act,¹⁴⁰ which prohibited the capture and destruction of unclaimed horses and burros on public lands.¹⁴¹ When BLM invoked the Act to prevent New Mexico from capturing and selling burros, the state asserted that BLM lacked authority because the burros were neither moving in interstate commerce nor damaging public land.¹⁴² The issue was whether, under the Property Clause, BLM's jurisdiction over burros was a "needful" regulation "respecting" public lands.¹⁴³

The district court below had found that the Act was unconstitutional and opined that the Property Clause authorized the regulation of wild animals only if necessary to protect the public lands from damage.¹⁴⁴ The Supreme Court disagreed, stating that the Property Clause power "necessarily" includes protection of wildlife "integral" to the public lands.¹⁴⁵ The Court noted that in passing the Wild Free-Roaming Horses and Burros Act, "Congress deemed [these] animals 'an integral part of the natural system of the public lands,' and found that federal management was necessary 'for achievement of an ecological balance on the public lands.'"¹⁴⁶ According to Congress, these animals, if preserved in their native habitats, "contribute to the diversity of life forms within the Nation and enrich the lives of the American people."¹⁴⁷

In reaching its conclusion, the Court explicitly rejected the district court's rationale that federal power over wild horses and burros "conflicts with . . . the traditional doctrines concerning wild animals."¹⁴⁸ It explained that, while "the States have broad trustee and police powers over wild animals within their jurisdictions . . . , those powers exist only 'in so far as [their] exercise may be not incompatible with, or restrained by, the rights conveyed to the Federal government by the Constitution.'"¹⁴⁹ The Court clarified the balance of power between the federal and state governments:

¹³⁸ *Id.* at 100.

¹³⁹ *Kleppe*, 426 U.S. at 537.

¹⁴⁰ 16 U.S.C. §§ 1331-1340 (2012).

¹⁴¹ *Id.* § 1338(a). See generally Robert L. Fischman & Jeremiah I. Williamson, *The Story of Kleppe v. New Mexico: The Sagebrush Rebellion as Un-Cooperative Federalism*, 83 U. COLO. L. REV. 123 (2011) (providing the legal history and political implications of this decision).

¹⁴² *Kleppe*, 426 U.S. at 533.

¹⁴³ *Id.* at 536.

¹⁴⁴ See *id.* at 534 (citing *New Mexico v. Morton*, 406 F. Supp. 1237, 1239 (D.N.M. 1975)).

¹⁴⁵ *Id.* at 535, 540-41, 546.

¹⁴⁶ *Id.* at 535 (quoting 16 U.S.C. § 1331; H.R. REP. NO. 92-681, at 5 (1971) (Conf. Rep.)).

¹⁴⁷ 16 U.S.C. § 1331.

¹⁴⁸ *Kleppe*, 426 U.S. at 534-35 (omission in original) (quoting *Morton*, 406 F. Supp. at 1238).

¹⁴⁹ *Id.* at 545 (alteration in original) (quoting *Geer*, 161 U.S. 519, 528 (1896), overruled by *Hughes*, 441 U.S. 322 (1979)).

"No doubt it is true that as between a State and its inhabitants the State may regulate the killing and sale of [wildlife], but it does not follow that its authority is exclusive of paramount powers." . . . *We hold today that the Property Clause also gives Congress the power to protect wildlife on the public lands, state law notwithstanding.*¹⁵⁰

In *Wyoming v. United States*,¹⁵¹ Wyoming challenged the refusal of FWS to permit the state to vaccinate elk on the National Elk Refuge (NER).¹⁵² The United States Court of Appeals for the Tenth Circuit stated that the Property Clause gives Congress the power to choose: "(1) to assume all management authority over the [National Wildlife Refuge System], including the NER, (2) to share management authority over those federal lands with the States, or (3) to preserve to its fullest extent the States' historical role in the management of wildlife within their respective borders."¹⁵³ The court held that federal law would preempt state management in the event of an actual conflict "or where state management . . . stand[s] as an obstacle to the accomplishment" of federal objectives.¹⁵⁴

States often assert their police powers to regulate the public health and welfare through measures that protect natural resources within the state, such as game species, trees, and water.¹⁵⁵ Although there is no explicit "Property Clause" authority in the U.S. Constitution extending to state interests in wildlife, water, or other natural resources, states occasionally assert an ownership interest as an additional source of their authority.¹⁵⁶ The Supreme Court has repeatedly rejected this theory, at least as it relates to wildlife and migratory birds: "To put the claim of . . . State [authority] upon

¹⁵⁰ *Id.* at 545–46 (alteration in original) (emphasis added) (quoting *Missouri*, 262 U.S. 416, 434 (1920)).

¹⁵¹ 279 F.3d 1214 (10th Cir. 2002).

¹⁵² *Id.* at 1218.

¹⁵³ *Id.* at 1230.

¹⁵⁴ See *id.* at 1234. According to the court, Congress "rejected complete preemption of state wildlife regulation" in the National Wildlife Refuge System, but rather "intended ordinary principles of conflict preemption to apply." *Id.* The United States District Court for the District of California followed *Wyoming* in holding that a state ballot proposition that banned the use of certain kinds of traps and poisons on federal lands was preempted by the Property Clause. *Nat'l Audubon Soc'y, Inc. v. Davis*, 144 F. Supp. 2d 1160, 1180–81 (N.D. Cal. 2000), *aff'd in part and rev'd in part*, 307 F.3d 835, 837 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002). The Ninth Circuit did not reach the Property Clause issue, instead holding that the proposition was preempted by the National Wildlife Refuge System Administration Act. *Nat'l Audubon Soc'y, Inc. v. Davis*, 307 F.3d at 854; accord *Defs. of Wildlife v. Salazar*, 651 F.3d 112, 118 (D.C. Cir. 2011) ("tak[ing] the Secretary at his word that Wyoming has no veto over the Secretary's duty to end a practice that is concededly at odds with the long-term health of the elk and bison in the Refuge," while pointing out Wyoming's brief "agreeing that Wyoming does not have a veto").

¹⁵⁵ See, e.g., *Maine v. Taylor*, 477 U.S. 131, 151 (1986) ("[Each state] retains broad regulatory authority to protect . . . the integrity of its natural resources" such as fisheries.); *Miller v. Schoene*, 276 U.S. 272, 280–81 (1928) (upholding Virginia's decree to cut down infected cedars that were fatal to nearby apple orchards).

¹⁵⁶ See, e.g., *Geer*, 161 U.S. 519, 635 (1896) (claiming that ownership of all wild game taken within the state allowed the state to prohibit its removal from the state), *overruled by Hughes*, 441 U.S. 322 (1979)).

title is to lean upon a slender reed."¹⁵⁷ Even absent title, states have "ample allowance for preserving . . . the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership,"¹⁵⁸ but as noted in *Kleppe, Wyoming*, and numerous other cases, state law may not contravene federal law.¹⁵⁹

b. Property Clause Power to Protect Federal Lands and Resources from External Threats

Not only does the Property Clause supply authority to regulate activities that occur on federal lands, but in certain cases, it also authorizes federal regulation of activities outside of the federal boundaries where necessary to protect the public lands and resources. In *Camfield v. United States*,¹⁶⁰ the owner of several sections of private land acquired from the Union Pacific Railroad fenced his land in a way that also enclosed about 20,000 acres of public lands.¹⁶¹ When the United States sought to remove the fence under the Unlawful Enclosures Act of 1885,¹⁶² Camfield argued that the United States had no power to control private land use.¹⁶³ The Supreme Court upheld the application of the Act to Camfield's property, explaining that under the Property Clause, the federal government "doubtless has a power over its own property analogous to the police power of the several States, and the extent to which it may go in the exercise of such power is measured by the exigencies of the particular case."¹⁶⁴

The courts have consistently upheld "broad [federal] power to control extraterritorial private activities that might adversely affect federal property."¹⁶⁵ For instance, federal restrictions on businesses situated outside of a national park have been upheld when those business enterprises

¹⁵⁷ *Missouri*, 252 U.S. 416, 434 (1920); see also *Hughes*, 441 U.S. at 332.

¹⁵⁸ *Hughes*, 441 U.S. at 335.

¹⁵⁹ *Kleppe*, 426 U.S. 529, 545 (1976); *Wyoming*, 279 F.3d 1214, 1227; see also, e.g., *Hughes*, 441 U.S. at 338-39.

¹⁶⁰ 167 U.S. 518 (1897).

¹⁶¹ *Id.* at 519.

¹⁶² 43 U.S.C. §§ 1061-1066 (2012).

¹⁶³ *Camfield*, 167 U.S. at 522.

¹⁶⁴ *Id.* at 525; see *Utah Div. of State Lands v. United States*, 482 U.S. 193, 201 (1987) ("The Property Clause grants Congress plenary power to regulate and dispose of land within the Territories . . ."); *United States v. Midwest Oil Co.*, 236 U.S. 459, 483 (1915) (upholding president's decision to withdraw land to preserve oil reserves); *Light*, 220 U.S. 523, 536 (1911) ("The United States can prohibit absolutely or fix the terms on which its property may be used."); see also *Organized Fisherman of Fla. v. Hodel*, 775 F.2d 1544, 1549 (11th Cir. 1985) (finding that Florida law provided no vested property right for commercial fishing in a national park); *Organized Fisherman of Fla. v. Andrus*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (refusing to enjoin enforcement of federal regulations restricting fishing in a national park given Congress's "complete power" over public lands which "necessarily includes the power to regulate and protect the wildlife living there" (citing *Kleppe*, 426 U.S. at 540-41)).

¹⁶⁵ Appel, *supra* note 126, at 77-78.

affected neighboring parklands.¹⁶⁶ Moreover, federal regulation of activities on state-owned waters was upheld as a valid exercise of Property Clause power to manage the Boundary Waters Canoe Area Wilderness.¹⁶⁷

Beyond the land itself, it is fair to ask how far federal authority over wildlife and other migratory resources “integral” to the public lands goes when those resources are found outside of the boundaries of the public lands. In *Kleppe*, the contested issue involved the federal regulation of nonfederal activity on federal land (i.e., the State of New Mexico captured wild burros on a grazing allotment), and while the Act in question reached nonfederal land as well, the Supreme Court was not required to address the regulation of state or private activities on nonfederal land.¹⁶⁸

Other than *Kleppe*, few cases touch upon the Property Clause power to regulate “integral” wildlife outside of the boundaries of the federal lands, perhaps because federal agencies and their employees tend to be reluctant to exercise their power aggressively.¹⁶⁹

2. The Treaty Clause

The Treaty Clause provides that: “[The President] shall have the Power . . . to make Treaties, provided two thirds of the Senators present

¹⁶⁶ See, e.g., *Armstrong*, 186 F.3d 1055, 1061–62 (8th Cir. 1999) (“[R]egulation requiring that commercial tour boat operators obtain a permit before operating . . . within [Voyageurs National Park] is well within the authority of the NPS.”); *United States v. Richard*, 636 F.2d 236, 240 (8th Cir. 1980) (“[F]ederal regulation may exceed federal boundaries when necessary for the protection of human life or wildlife or government forest land or objectives.”).

¹⁶⁷ See, e.g., *Minnesota v. Block*, 660 F.2d 1240, 1249 (8th Cir. 1981) (“Congress’ power must extend to regulation of conduct on or off the public land that would threaten the designated purpose of federal lands.”); *United States v. Brown*, 552 F.2d 817, 822 (8th Cir. 1977) (stating that “congressional power over federal lands . . . include[s] the authority to regulate activities on non-federal public waters in order to protect wildlife and visitors on the lands”); see also *Stupak-Thrall v. United States*, 89 F.3d 1269, 1269, 1272 (6th Cir. 1996) (en banc) (an equally divided court affirmed district court in that the federal government could regulate private activities that occurred on the surface of a lake even if the surface was private property); *Organized Fisherman of Fla.*, 775 F.2d 1544, 1549 (11th Cir. 1985) (upholding federal restrictions on fishing on waters within Everglades National Park, some of which were presumably under state jurisdiction); *United States v. Lindsey*, 595 F.2d 5, 6 (9th Cir. 1979) (stating that the Property Clause “grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters”); *Grand Lake Estates Homeowners Ass’n v. Veneman*, 340 F. Supp. 2d 1162, 1167–69 (D. Colo. 2004) (holding USFS could require special use permits on docks and marinas on Association’s land if reasonably necessary to protect the environment and water quality of Arapaho National Recreation Area).

¹⁶⁸ *Kleppe*, 426 U.S. at 546 (“We need not, and do not, decide whether the Property Clause would sustain the Act in all of its conceivable applications.”).

¹⁶⁹ See generally Joseph L. Sax & Robert B. Keiter, *Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations*, 14 *ECOLOGY L.Q.* 207, 226, 260 (1987) (describing how NPS’s “distaste for confrontation makes it timid,” and how “constrained by bureaucratic prudence and timidity . . . [NPS] is reluctant to use the law; highly deferential to the traditional turf prerogatives of its neighbors; and hesitant to subject itself to criticism by speaking out forcefully on transboundary issues”).

concur."¹⁷⁰ In recognition of the international nature of wildlife conservation, the United States has entered into several landmark wildlife treaties within the past century, which Congress has implemented through domestic legislation.¹⁷¹ With respect to the management of wildlife on federal lands, the most notable of these include the Migratory Bird Treaty of 1916¹⁷² and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹⁷³ Other international provisions include the Agreement on the Conservation of Polar Bears,¹⁷⁴ the Pacific Salmon Treaty,¹⁷⁵ the Northwest Atlantic Fisheries Treaty,¹⁷⁶ the Migratory Bird and Game Mammal Treaty with Mexico,¹⁷⁷ and the International Convention for the Regulation of Whaling.¹⁷⁸ These treaties are implemented through the Marine Mammal Protection Act,¹⁷⁹ the Magnuson-Stevens Fishery Conservation and Management Act,¹⁸⁰ the Whaling Convention Act,¹⁸¹ and other pieces of domestic legislation.¹⁸² The next Section of the Article focuses on the Migratory Bird Treaty's implementing legislation.

¹⁷⁰ U.S. CONST. art. II, § 2, cl. 2.

¹⁷¹ See, e.g., Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087 ("Recognizing . . . that international cooperation is essential for the protection of . . . wild fauna and flora.").

¹⁷² Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, Gr. Brit.-U.S., Aug. 16, 1916, 39 Stat. 1702 (codified as amended at 16 U.S.C. §§ 703-712 (2012)).

¹⁷³ Convention on International Trade in Endangered Species of Wild Fauna and Flora, *supra* note 171. CITES is implemented in the United States through the ESA, which, like CITES, controls imports and exports of protected species. 16 U.S.C. § 1531(a)(4)(F); *id.* § 1538(a)(1)(A), (a)(2)(A), (c)-(d); see *Safari Club Int'l v. Jewell*, 960 F. Supp. 2d 17, 67-68 (D.D.C. 2013) (noting that conserving species within their ecosystems is one purpose of the ESA, "but other purposes are 'to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a)[,]' including the CITES" (alteration in original)). As such, the ESA finds its constitutional basis in part in the Treaty Clause, though other provisions of the ESA are more firmly founded on the Commerce Clause. See *infra* discussion Part III.A.3.c.

¹⁷⁴ Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918.

¹⁷⁵ Treaty Between the United States of America and the Canada Concerning Pacific Salmon, Can.-U.S., Jan. 28, 1985, T.I.A.S. No. 11,091.

¹⁷⁶ International Convention for the Northwest Atlantic Fisheries, Jul. 3, 1950, 64 Stat. 1067, 1 U.S.T. 477 (codified at 16 U.S.C. §§ 981-991)).

¹⁷⁷ Convention Between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, Mex.-U.S., Mar. 10, 1972, 23 U.S.T. 260.

¹⁷⁸ International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, T.I.A.S. No. 1849. For an assessment of wildlife and biodiversity related treaties that have not yet been ratified by the United States, including the Convention on Biological Diversity, see MARY JANE ANGELO ET AL., CTR. FOR PROGRESSIVE REFORM, WHITE PAPER NO. 1201, RECLAIMING GLOBAL ENVIRONMENTAL LEADERSHIP: WHY THE UNITED STATES SHOULD RATIFY TEN PENDING ENVIRONMENTAL TREATIES (2012), <https://perma.cc/5NB3-6ZEE>.

¹⁷⁹ Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361-1421h.

¹⁸⁰ *Id.* §§ 1801-1891d.

¹⁸¹ Whaling Convention Act of 1949, *id.* §§ 916-916f.

¹⁸² See ANGELO ET AL., *supra* note 178, at 2; David M. Golove, *Treaty-Making and the Nation: The Historical Foundations of the Nationalist Conception of the Treaty Power*, 98 MICH. L. REV. 1075, 1313-15 (2000) (advocating a federalist approach to implementing domestic treaties).

a. Migratory Bird Treaty of 1916

In 1916, the United States entered into a treaty with Great Britain (on behalf of Canada) to ensure the preservation of “such migratory birds as are either useful to man or harmless.”¹⁸³ The Migratory Bird Treaty Act of 1918¹⁸⁴ (MBTA) ratified the treaty and imposed stringent prohibitions on the taking, capturing, hunting, and killing of protected birds.¹⁸⁵ According to George Cameron Coggins, “[t]he origins of modern federal wildlife law may be traced back to the MBTA.”¹⁸⁶

Almost immediately after ratification and enactment, the states challenged the constitutionality of the treaty and the MBTA.¹⁸⁷ Today, the Supreme Court’s opinion in *Missouri v. Holland* remains a significant benchmark for federal Treaty Clause authority.¹⁸⁸ The case involved a suit brought by the State of Missouri to enjoin a federal game warden from enforcing the MBTA, which implements the 1916 treaty by prohibiting any person from pursuing or killing migratory birds except as authorized by regulations issued by the Secretary of Agriculture.¹⁸⁹ More specifically, the MBTA states that it is:

unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship,

¹⁸³ Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, *supra* note 172, at 1702.

¹⁸⁴ 16 U.S.C. §§ 710–711.

¹⁸⁵ *Id.* § 703(a).

¹⁸⁶ George Cameron Coggins, *Federal Wildlife Law Achieves Adolescence: Developments in the 1970s*, 1978 DUKE L.J. 753, 764; see also Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the Migratory Bird Treaty Act: A Way Forward*, 38 ENVTL. L. 1167, 1179 (2008).

¹⁸⁷ See, e.g., *Missouri*, 252 U.S. 416, 432–35 (1920) (holding that the MBTA is constitutional under Congress’s express and exclusive Constitutional authority to make and ratify treaties). Prior to ratification and passage of the MBTA, an earlier version of a statute to protect migratory birds had been invalidated as beyond constitutional authority. See *United States v. Shauver*, 214 F. 154, 157–60 (E.D. Ark. 1914) (holding that the statute was unconstitutional for, inter alia, its usurpation of the states’ sovereign right to own all animals *ferae naturae*, which are denominated as game, for the benefit of its citizens).

¹⁸⁸ *Missouri*, 252 U.S. at 432.

¹⁸⁹ The MBTA’s prohibitions apply broadly to state actors and others. 16 U.S.C. § 703(a); *Missouri*, 252 U.S. at 430–31. Courts, however, have since reached conflicting results on the MBTA’s ability to restrict federal actors. See *Humane Soc’y of the U.S. v. Glickman*, 217 F.3d 882, 885–87 (D.C. Cir. 2000) (finding that the MBTA applies to federal agencies and federal actors, because the Act enforces a treaty binding upon the United States and, therefore, is binding on the federal agencies); *Audubon Soc’y of Portland v. U.S. Fish & Wildlife Serv.*, No. 04-670-KI, 2005 WL 1713086, at *4 (D. Or. July 21, 2005) (applying the MBTA to federal agencies, but finding that they were not liable for habitat destruction); *Ctr. for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161, 177–78 (D.D.C. 2002) (applying the MBTA to the Department of Defense and holding it in violation), *vacated as moot sub nom.*, *Ctr. for Biological Diversity v. England*, Nos. 02-5163, 02-5180, 2003 WL 179848 (D.C. Cir. Jan. 23, 2003). But see *Sierra Club v. Martin*, 110 F.3d 1551, 1556 (11th Cir. 1997) (finding that because federal agencies must conserve birds under other statutes, the MBTA does not apply to federal agencies).

export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.¹⁹⁰

In *Missouri v. Holland*, the Supreme Court held that the Treaty Clause provided a viable avenue for federal regulation of wildlife, despite the state's claim of a predominant interest in the wildlife in question.¹⁹¹ Under *Missouri v. Holland*, the test to determine a treaty's validity is two-fold: 1) Is the matter involved of national interest? 2) Does the treaty contravene any specific constitutional prohibition?¹⁹² If the first is answered in the affirmative, and the second in the negative, the treaty is valid.¹⁹³

With respect to the Migratory Bird Treaty, the answer to the first question was a resounding "yes," according to the Supreme Court:

Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter [i.e., migratory birds] is only transitorily within the State and has no permanent habitat therein. But for the treaty and the statute there soon might be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops are destroyed. It is not sufficient to rely upon the States. The reliance is vain.¹⁹⁴

As to the second question, the Court explicitly rejected the state's argument that the Treaty contravened the Tenth Amendment, which reserves power to the states if not delegated to the United States by the Constitution.¹⁹⁵ According to the Court, "[t]he treaty in question does not contravene any prohibitory words to be found in the Constitution," nor is the treaty "forbidden by some invisible radiation from the general terms of the Tenth Amendment."¹⁹⁶ Thus, the state's interest in managing migratory birds covered by the MBTA, whether that interest rested upon some claim of ownership (which the Court disregarded) or on traditional state police

¹⁹⁰ 16 U.S.C. § 703(a).

¹⁹¹ *Missouri*, 252 U.S. at 432-35.

¹⁹² *Id.* at 433.

¹⁹³ See Oona A. Hathaway et al., *The Treaty Power: Its History, Scope, and Limits*, 98 CORNELL L. REV. 239, 266, 279 (2013) (explaining that Treaty Powers are limited by "affirmative guarantees [that] are set forth explicitly in the Bill of Rights' recognition and guarantee of individual rights and in the Constitution's provisions prescribing the structure of the national government . . . [including] the preservation of a continuing role for the states and maintenance of certain areas of state authority and control," but concluding that invalidation is exceedingly rare, so "the real protections against abuse of the treaty power derive from the structural, political, and diplomatic checks on the exercise of the power").

¹⁹⁴ *Missouri*, 252 U.S. at 435.

¹⁹⁵ *Id.* at 433-34.

¹⁹⁶ *Id.*

powers, must give way.¹⁹⁷ It explained, “[v]alid treaties of course ‘are as binding within the territorial limits of the States as they are elsewhere throughout the dominion of the United States.’”¹⁹⁸ In the end, the Court held that the Treaty was lawful, and thus, the MBTA was lawful as well pursuant to the Treaty Clause, the Supremacy Clause, and the Necessary and Proper Clause.

3. *The Tenth Amendment and the Commerce Clause*

The Tenth Amendment often forms the basis of state claims of exclusive jurisdiction over wildlife. The Tenth Amendment states: “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”¹⁹⁹ The Tenth Amendment and the Commerce Clause seem to be inextricably entwined in federal wildlife management discussions, so it is necessary to discuss the interplay of both provisions together.

a. *The Evolution of the Anti-Commandeering Doctrine*

The Tenth Amendment was ratified on December 15, 1791,²⁰⁰ and is similar to an earlier provision of the Articles of Confederation which read: “Each State retains its sovereignty, freedom, and independence, and every power, jurisdiction, and right, which is not by this confederation *expressly* delegated to the United States, in Congress assembled.”²⁰¹ Ultimately, the word “expressly” did not appear in the Tenth Amendment as ratified.

Early in American history, the Supreme Court seemed to assume the Tenth Amendment was a strong and limiting power of the Constitution.²⁰² However, by the early 20th century the Court’s view of the Tenth Amendment shifted significantly. In *United States v. Darby*,²⁰³ the Court stated:

¹⁹⁷ *Id.* at 434.

¹⁹⁸ *Id.* (quoting *Baldwin v. Franks*, 120 U.S. 678, 683 (1887)).

¹⁹⁹ U.S. CONST. amend. X.

²⁰⁰ *The Bill of Rights: A Transcription*, NAT’L ARCHIVES, <https://perma.cc/6WWG-KH2L> (last reviewed Nov. 11, 2017).

²⁰¹ ARTICLES OF CONFEDERATION of 1781, art. II (emphasis added); see *Amendment X: House of Representatives, Amendments to the Constitution*, FOUNDERS’ CONST., <https://perma.cc/7U44-AZQ3> (last visited Nov. 11, 2017) (discussing James Madison objecting to a proposed version of the Tenth Amendment).

²⁰² See *Hammer v. Dagenhart*, 247 U.S. 251, 275–76 (1918) (invalidating federal child labor laws, and remarking upon the “inherent” power of the states to regulate “purely internal affairs”), *overruled in part by* *United States v. Darby*, 312 U.S. 100 (1941); see also *Carter v. Carter Coal Co.*, 298 U.S. 238, 294–95 (1936) (invalidating federal regulation of coal production and stating that the Framers “meant to carve from the general mass of legislative powers, then possessed by the states, only such portions as it was thought wise to confer upon the federal government . . . with the result that what was not embraced by the enumeration remained vested in the states without change or impairment”).

²⁰³ 312 U.S. 100 (1941).

The [Tenth A]mendment states but a truism that all is retained which has not been surrendered. There is nothing in the history of its adoption to suggest that it was more than declaratory of the relationship between the national and state governments as it had been established by the Constitution before the amendment or that its purpose was other than to allay fears that the new national government might seek to exercise powers not granted, and that the states might not be able to exercise fully their reserved powers.²⁰⁴

Since *Darby*, it has become exceedingly uncommon for the Supreme Court to invalidate federal laws under the Tenth Amendment.²⁰⁵ The Anti-Commandeering Doctrine arising from *New York v. United States*²⁰⁶ is the exception. There, the Court invalidated a portion of the Low-Level Radioactive Waste Policy Amendments Act of 1985²⁰⁷ (RWPA).²⁰⁸ The RWPA required states to take title to any undisposed low-level radioactive waste within their borders and made each state liable for all damages directly related to that waste.²⁰⁹ The Court ruled that the imposition of taking title violated the Tenth Amendment, as the federal government could not directly compel states to enforce federal regulations.²¹⁰

In *Printz v. United States*,²¹¹ the Court, again utilizing the Anti-Commandeering Doctrine, found that provisions of the Brady Bill²¹² requiring state and local law enforcement officials to conduct background checks on persons attempting to purchase handguns was a violation of the Tenth Amendment, as the Bill forced participation of the state officials in the administration of a federal program.²¹³ Similarly, in *National Federation of Independent Business v. Sebelius*,²¹⁴ the Court held that the Affordable Care Act²¹⁵ (also known as Obamacare) coerced the states to expand Medicaid.²¹⁶ Although other provisions of the Act were upheld, the Court found that the Medicaid provision effectively forced states to participate by conditioning the continued provision of funds on their agreement to materially alter their Medicaid eligibility criteria.²¹⁷

In the modern era, the Tenth Amendment's primary role in regulating the balance of powers between the federal and state governments is

²⁰⁴ *Id.* at 124.

²⁰⁵ U.S. CONST. amend. X.

²⁰⁶ 505 U.S. 144 (1992).

²⁰⁷ 42 U.S.C. §§ 2021b–2021j (2012).

²⁰⁸ *New York*, 505 U.S. at 149.

²⁰⁹ 42 U.S.C. § 2021e(d)(2)(C).

²¹⁰ *New York*, 505 U.S. at 176–77, 184.

²¹¹ 521 U.S. 898 (1997).

²¹² Brady Handgun Violence Prevention Act, 18 U.S.C. § 922 (2012).

²¹³ *Printz*, 521 U.S. at 933–34 (citing *New York*, 505 U.S. at 188).

²¹⁴ 567 U.S. 519 (2012).

²¹⁵ Patient Protection and Affordable Care Act, Pub. L. No. 111-148, 124 Stat. 119 (2010) (codified in scattered sections of 25, 26, and 42 U.S.C.). The Medicaid expansion is codified at 42 U.S.C. § 1396a(a)(10)(A)(i)(VIII) (2012).

²¹⁶ *Sebelius*, 567 U.S. at 588.

²¹⁷ *Id.*

expressed through the Anti-Commandeering Doctrine.²¹⁸ Commandeering occurs when Congress “require[s] the States in their sovereign capacity to regulate their own citizens,” *not* when federal legislation with an administrative and financial impact on state bureaucracy regulates public and private conduct alike.²¹⁹

b. The Tenth Amendment's Application to Wildlife Management

Prior to 1920, very little judicial activity occurred regarding the interplay of the Tenth Amendment and federal wildlife control.²²⁰ One of the first decisions on the scope of the Tenth Amendment regarding federal wildlife control was *Missouri v. Holland*, which upheld the MBTA.²²¹ As noted above, the Supreme Court flatly rejected Missouri's argument that the MBTA violated the Tenth Amendment, finding that there were no reserved state powers that would stand in the way of federal enforcement of an act arising under the Treaty power.²²²

It was not until *Palila v. Hawaii Department of Land and Natural Resources*²²³ that the courts again took up the issue of the Tenth Amendment's implications for federal wildlife management.²²⁴ There, the Hawaii Department of Land and Natural Resources maintained herds of feral sheep and goats for sport-hunting purposes on state-owned lands.²²⁵ These herds were causing significant habitat modification and destruction within the critical habitat of the Palila bird (*Psittirostra bairdii*), a listed species under the ESA.²²⁶ Conservation groups sought declaratory and injunctive relief requiring Hawaii to adopt a plan to eradicate the feral sheep and goat

²¹⁸ See *Massachusetts v. U.S. Dep't of Health & Human Servs.*, 682 F.3d 1, 12 (1st Cir. 2012) (“Supreme Court interpretations of the Tenth Amendment have varied over the years but those in force today have struck down statutes only where Congress sought to commandeer state governments or otherwise directly dictate the *internal operations* of state government.”).

²¹⁹ *Reno v. Condon*, 528 U.S. 141, 151 (2000); see *Nuclear Energy Inst., Inc. v. Envtl. Prot. Agency*, 373 F.3d 1251, 1305 (D.C. Cir. 2004) (holding that Congress's designation of a federally owned site for a nuclear repository did not commandeer the state legislative process or officials, but rather merely prescribed the use of federal property); *United States v. Washington*, 887 F. Supp. 2d 1077, 1101 (D. Mont. 2012) (rejecting Tenth Amendment challenge to federal prosecution of participants in state-authorized medical marijuana program).

²²⁰ Although it did not address the Tenth Amendment, in *Geer v. Connecticut*, the Court held that “the ownership of wild animals, so far as they are capable of ownership, is in the state, not as a proprietor, but in its sovereign capacity, as a representative and for the benefit of all its people in common.” 161 U.S. 519, 529 (1896) (quoting *State v. Rodman*, 59 N.W. 1098, 1099 (Minn. 1894)), *overruled by Hughes*, 441 U.S. 322 (1979).

²²¹ *Missouri*, 252 U.S. 416, 435 (1920).

²²² *Id.* at 432–33.

²²³ 471 F. Supp. 985 (D. Haw. 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff'd*, 852 F.2d 1106 (9th Cir. 1988).

²²⁴ *Id.* at 995.

²²⁵ *Id.* at 989.

²²⁶ *Id.* at 988–90; see *Native Fish and Wildlife Endangered Species*, 32 Fed. Reg. 4001, 4001 (Mar. 11, 1967).

herds from the Palila's critical habit.²²⁷ Because Palila are only found in Hawaii and because no federal lands or funds were involved, Hawaii argued that the state retained exclusive sovereignty over the Palila's fate under the Tenth Amendment.²²⁸ The United States District Court for the District of Hawaii held that the Tenth Amendment does not constrain enforcement of the ESA given Congress's power "to enact legislation implementing valid treaties and . . . to regulate commerce."²²⁹ It explained:

[A] national program to protect and improve the natural habitats of endangered species preserves the possibilities of interstate commerce in these species and of interstate movement of persons . . . who come to a state to observe and study these species, that would otherwise be lost by state inaction.²³⁰

In *Gibbs v. Babbitt*,²³¹ individuals and several North Carolina counties challenged a FWS regulation prohibiting the taking of red wolves on private property as an infringement on traditional state power over wildlife.²³² The United States Court of Appeals for the Fourth Circuit found that the regulated activity did "not involve an 'area of traditional state concern,' one to which 'States lay claim by right of history and expertise.'"²³³ It reasoned that, while "States have important interests in regulating wildlife and natural resources within their borders," state power over wildlife has long been circumscribed by federal regulatory power.²³⁴ The *Gibbs* court explained that the regulated activity—the taking of wolves—"is not an area in which the states may assert an exclusive and traditional prerogative in derogation of an enumerated federal power," i.e., the Commerce Clause.²³⁵ The court also took note of "the historic power of the federal government to preserve scarce resources in one locality for the future benefit of all Americans."²³⁶

The Tenth Circuit had the opportunity to consider similar Tenth Amendment arguments in *Wyoming v. United States*, where the State of Wyoming tried to compel FWS to allow it to vaccinate elk against brucellosis at the Jackson Hole National Elk Refuge (NER).²³⁷ In response to Wyoming's

²²⁷ *Palila*, 471 F. Supp. at 987.

²²⁸ *Id.* at 992.

²²⁹ *See id.* at 995.

²³⁰ *Id.* For a detailed discussion of the Commerce Clause and the ESA, see *infra* Part III.A.3.c.

²³¹ 214 F.3d 483 (4th Cir. 2000).

²³² *Id.* at 499; see 50 C.F.R. § 17.84(c)(2) (2016).

²³³ *Gibbs*, 214 F.3d at 486 (citing *United States v. Lopez*, 514 U.S. 549, 580, 583 (1995) (Kennedy, J., concurring)); see also *id.* at 501 ("[T]he federal government possesses a historic interest in such regulation—an interest that has repeatedly been recognized by the federal courts.").

²³⁴ *Id.* at 499 (quoting *Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172, 204 (1999)); see also *id.* at 501 ("[I]t is clear from our laws and precedent that federal regulation of endangered wildlife does not trench impermissibly upon state powers.").

²³⁵ *Id.* at 499.

²³⁶ *Id.* at 492. The portion of the court's opinion rejecting the Commerce Clause challenge is discussed below. See *infra* note 264 and accompanying text.

²³⁷ *Wyoming*, 279 F.3d 1214, 1218, 1222 (10th Cir. 2002).

argument that the Tenth Amendment reserved the sovereign authority to manage wildlife to the states, the court explained that, while states have historically had broad authority to regulate the wildlife within their borders, that authority is not constitutionally derived.²³⁸ Moreover, given the strength and breadth of the federal Property Clause power, the court found it “painfully apparent that the Tenth Amendment does not reserve to the State of Wyoming the right to manage wildlife, or more specifically vaccinate elk, on the NER, regardless of the circumstances.”²³⁹

Subsequently, in *Wyoming v. U.S. Department of the Interior*,²⁴⁰ the State of Wyoming argued that federal regulation of wolves violated the Anti-Commandeering Doctrine.²⁴¹ Wyoming objected to having only two choices: 1) to change state law to eliminate its predator classification for wolves and commit to maintaining at least fifteen packs of wolves, or 2) to endure the restrictions imposed by the continued protection of wolves under the ESA.²⁴² The court held that Wyoming had failed to show a violation of the Tenth Amendment through commandeering or otherwise.²⁴³ It explained: “Wyoming is under no mandate to regulate gray wolves. . . . If Wyoming chooses to ignore the [federal requirement], the State simply will find itself perpetually pre-empted from regulating the gray wolf.”²⁴⁴

In sum, except for those rare instances when the Anti-Commandeering Doctrine is successfully invoked, attempts to use the Tenth Amendment as a basis for state sovereignty over federally protected wildlife have generally failed, from *Missouri v. Holland* to present.

c. The Commerce Clause and Federal Wildlife Management

The federal courts did not immediately support federal wildlife control based on the Commerce Clause. In an early case, *Geer v. Connecticut*, the Supreme Court held that game killed within the state concerned internal state commerce rather than interstate commerce.²⁴⁵ In subsequent years, several district court opinions followed suit.²⁴⁶

²³⁸ *Id.* at 1226–27 (citing 43 C.F.R. § 24.3 (2016)).

²³⁹ *Id.* at 1227.

²⁴⁰ 360 F. Supp. 2d 1214 (D. Wyo. 2005), *aff’d*, 442 F.3d 1262 (10th Cir. 2006).

²⁴¹ *Id.* at 1238.

²⁴² *Id.* at 1240.

²⁴³ *Id.* at 1240, 1244.

²⁴⁴ *Id.* at 1240–41. *But see* N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, No. CV 16-00462 WJ/KBM, 2016 WL 4536465, at *9 (D.N.M. June 10, 2016) (distinguishing *Wyoming* and noting that FWS’s own regulation required FWS to release wolves in compliance with state permit requirements), *rev’d*, 854 F.3d 1236 (10th Cir. 2017).

²⁴⁵ *Geer*, 161 U.S. 519, 534–35 (1896), *overruled by Hughes*, 441 U.S. 322 (1979).

²⁴⁶ *See, e.g.*, *United States v. McCullagh*, 221 F. 288, 292 (D. Kan. 1915) (“The power of the states, by their laws in the protection of their trust title for the common good of all the inhabitants of the state, to exclude wild bird and animal life lawfully reduced to the exclusive possession of the individual from the operation of the commerce clause of the national Constitution, as was held in *Geer* . . . , has been uniformly maintained by the courts of this country.”); *Shauver*, 214 F. 154, 160 (E.D. Ark. 1914) (following *Geer* and setting aside an

With the New Deal, however, the federal government's use of the Commerce Clause power began to expand.²⁴⁷ By the 1970s, it was clear that *Geer* had lost favor. In *Douglas v. Seacoast Products, Inc.*,²⁴⁸ the Supreme Court struck down a Virginia statute prohibiting federally licensed vessels owned by nonresidents of Virginia from fishing in Chesapeake Bay, and also prohibiting ships owned by noncitizens to catch fish anywhere in Virginia.²⁴⁹ The Court stated:

While [Virginia] may be correct in arguing that at earlier times in our history there was some doubt whether Congress had power under the Commerce Clause to regulate the taking of fish in state waters, there can be no question today that such power exists where there is some effect on interstate commerce.²⁵⁰

It concluded that the movement of fishing boats within and between states and to processing plants "certainly" affects interstate commerce.²⁵¹

The following year, in *Baldwin v. Fish & Game Commission of Montana*,²⁵² a Montana hunting guide sued the State of Montana for discriminating against out of state hunters in the price it charged for elk tags. The Supreme Court observed that, in recent years,

[t]he Court has recognized that the States' interest in regulating and controlling those things they claim to "own," including wildlife, is by no means absolute. States may not compel the confinement of the benefits of their resources, even their wildlife, to their own people whenever such hoarding and confinement impedes interstate commerce.²⁵³

With this backdrop, it was not surprising when the Supreme Court expressly overruled *Geer* in 1979 in *Hughes v. Oklahoma*.²⁵⁴ In that case, Hughes challenged his conviction for unlawfully transporting minnows that had been procured within Oklahoma waters for sale outside the state.²⁵⁵ The Court held that the state law, which forbade the out-of-state sale of

indictment for violation of a federal migratory bird protection act). Note, however, that the courts upheld Congress's use of the Commerce Clause to regulate interstate trafficking of state-protected wildlife under the Lacey Act, 16 U.S.C. § 701 (2012). See, e.g., *Rupert v. United States*, 181 F. 87, 91 (8th Cir. 1910) (upholding the Lacey Act as a valid exercise of the commerce power).

²⁴⁷ See, e.g., *Wickard v. Filburn*, 317 U.S. 111, 128-29 (1942) (upholding federal Commerce Clause power over wheat grown for home consumption because of its aggregated effects on wheat sold in interstate commerce). For a more recent case with similar reasoning, see *Gonzales v. Raich*, 545 U.S. 1, 19 (2005) (holding that growing marijuana for personal use affects interstate commerce).

²⁴⁸ 431 U.S. 265 (1977).

²⁴⁹ *Id.* at 268-69, 284-85.

²⁵⁰ *Id.* at 281-82 (footnote omitted).

²⁵¹ *Id.* at 282.

²⁵² 436 U.S. 371 (1978).

²⁵³ *Id.* at 385-86.

²⁵⁴ *Hughes*, 441 U.S. 322, 326 (1979), *overruling Geer*, 161 U.S. 519 (1896).

²⁵⁵ See *id.* at 324-25.

commercially significant numbers of minnows, was "repugnant to the Commerce Clause."²⁵⁶

The cases defining the scope of permissible state regulation in areas of congressional silence reflect an often controversial evolution of rules to accommodate federal and state interests. *Geer v. Connecticut* was decided relatively early in that evolutionary process. We hold that time has revealed the error of the early resolution reached in that case, and accordingly *Geer* is today overruled. . . . "The 'ownership' language of cases such as those cited by appellant must be understood as no more than a 19th-century legal fiction expressing 'the importance to its people that a State have power to preserve and regulate the exploitation of an important resource.'"²⁵⁷

Although the Supreme Court began to establish limits on Congress's use of the Commerce Clause in the 1990s, none of its opinions dilute the strength of *Hughes* or related wildlife precedents. In *United States v. Lopez*,²⁵⁸ the federal Gun-Free School Zones Act²⁵⁹ was struck down as "a criminal statute that by its terms has nothing to do with 'commerce' or any sort of economic enterprise, however broadly one might define those terms."²⁶⁰ Similarly, in *United States v. Morrison*,²⁶¹ a provision of the Violence Against Women Act²⁶² was struck down because it attempted to regulate activities that did not substantially affect interstate commerce.²⁶³

The federal courts that have addressed wildlife-related issues since *Lopez* and *Morrison* have had no trouble finding federal Commerce Clause power. In the *Gibbs* case discussed above, the court emphasized the direct relationship between the removal of red wolves and negative effects to interstate commerce, finding no need to "pile inference upon inference" to reach that conclusion:

The taking of red wolves implicates a variety of commercial activities and is closely connected to several interstate markets. The regulation in question is also an integral part of the overall federal scheme to protect, preserve, and rehabilitate endangered species, thereby conserving valuable wildlife resources important to the welfare of our country.²⁶⁴

²⁵⁶ *Id.* at 338.

²⁵⁷ *Id.* at 326, 335 (footnote omitted) (quoting *Seacoast Products, Inc.*, 431 U.S. 265, 284 (1977)).

²⁵⁸ 514 U.S. 549 (1995).

²⁵⁹ Gun-Free School Zones Act of 1990, Pub. L. No. 101-647, 104 Stat. 4944.

²⁶⁰ *Lopez*, 514 U.S. at 561.

²⁶¹ 529 U.S. 598 (2000).

²⁶² Violence Against Women Act of 1994, Pub. L. No. 103-322, 108 Stat. 1902 (codified in scattered sections of 18 and 42 U.S.C.).

²⁶³ *Morrison*, 529 U.S. at 617. Summarizing, the Court noted that the Commerce Clause provides federal power over: 1) the channels of interstate commerce; 2) the instrumentalities of interstate commerce, or persons or things in interstate commerce; and 3) activities that, in the aggregate, have a substantial effect on interstate commerce. *Id.* at 609.

²⁶⁴ *Gibbs*, 214 F.3d 483, 492 (4th Cir. 2000).

Similarly, the United States Court of Appeals for the District of Columbia Circuit rejected a real estate developer's challenge to the application of the ESA to the arroyo toad, stating that the focus of the Commerce Clause inquiry must be on the regulated activity, not just the toad.²⁶⁵ When the regulated activity is commercial development, "both the 'actor,' a real estate company, and its 'conduct,' the construction of a housing development, have a plainly commercial character . . . '[with] a plain and substantial effect on interstate commerce.'"²⁶⁶

It is now well settled that if the Commerce or Property Clauses are successfully invoked by the federal government as the authority to regulate wildlife, then by definition, inconsistent state law is preempted notwithstanding the Tenth Amendment.

4. Federal Preemption and Savings Clauses

The doctrine of federal preemption, derived from the Supremacy Clause of the U.S. Constitution, holds that state law must yield to federal law where the two conflict.²⁶⁷ This can happen expressly, for instance, under the Marine Mammal Protection Act where Congress stated: "No State may enforce . . . any State law or regulation related to the taking of any species . . . of marine mammal."²⁶⁸ Preemption can also be implied. The Supreme Court, in *California Coastal Commission v. Granite Rock Co.*,²⁶⁹ defined the concept of implied preemption:

If Congress evidences intent to occupy a given field, any state law falling within that field is pre-empted. If Congress has not entirely displaced state regulation over the matter in question, state law is still pre-empted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law, or where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress.²⁷⁰

Therefore, preemption can occur where Congress expressly preempts state law, where Congress occupies a field of law, or where state law interferes

²⁶⁵ *Rancho Viejo, LLC v. Norton*, 323 F.3d 1062, 1064, 1072 (D.C. Cir. 2003).

²⁶⁶ *Id.* at 1072-73 (quoting *Nat'l Ass'n of Home Builders v. Babbitt*, 130 F.3d 1041, 1059 (D.C. Cir. 1997)).

²⁶⁷ See U.S. CONST. art. VI, cl. 2 ("This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land."); *Kleppe*, 426 U.S. 529, 543 (1976) (stating that "federal legislation necessarily overrides conflicting state laws under the Supremacy Clause"); *Wyoming*, 279 F.3d 1214, 1227 (10th Cir. 2002) ("If Congress so chooses, federal legislation, together with the policies and objectives encompassed therein, necessarily override and preempt conflicting state laws, policies, and objectives . . .").

²⁶⁸ 16 U.S.C. § 1379(a) (2012).

²⁶⁹ 480 U.S. 572 (1987).

²⁷⁰ *Id.* at 581 (citations omitted). The Court found that a state mining permit requirement was not preempted because the federal land use and state environmental regulations in question could be interpreted to avoid conflict. *Id.* at 594.

with the implementation of federal law.²⁷¹ Federal regulations have the same preemptive effect.²⁷²

Federal law occupies a field of law (also known as field preemption) where a federal statutory scheme is interpreted to be "so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it."²⁷³ Because federal land management and wildlife laws often contain savings clauses acknowledging some level of state authority, field preemption rarely applies in these areas.²⁷⁴ Conflict preemption, on the other hand, arises whenever "compliance with both federal and state regulations is a physical impossibility."²⁷⁵ Conflict preemption is also invoked where state law "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."²⁷⁶ The conflict between federal and state laws may be subtle and yet still trigger preemption, as where state law discourages conduct that federal law attempts to encourage, or vice versa.²⁷⁷ For example, in *National Audubon Society, Inc. v. Davis*,²⁷⁸ California law banned the use of all leg-hold traps, even by federal officials in the course of their duties.²⁷⁹ The Ninth Circuit found that, by eliminating a method of predator control, the ban conflicted with the purposes of the ESA by preventing agencies from protecting listed species.²⁸⁰ Therefore, the state's action prevented the federal law from receiving full effect and was preempted.²⁸¹

Congress may negate or otherwise temper preemption by including a "savings clause" in its legislation. Many federal public health, environmental,

²⁷¹ *Id.* at 581; *Nat'l Audubon Soc'y*, 307 F.3d 835, 851 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷² *Granite Rock Co.*, 480 U.S. at 579–81, 591; see *Hillsborough County v. Automated Med. Labs., Inc.*, 471 U.S. 707, 713 (1985) ("We have held repeatedly that state laws can be pre-empted by federal regulations as well as by federal statutes.").

²⁷³ *Gade v. Nat'l Solid Wastes Mgmt. Ass'n*, 505 U.S. 88, 98, 108–09 (1992) (quoting *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)) (holding that state occupational health and safety regulations were preempted by Occupations Safety and Health Administration, which occupied that field of law).

²⁷⁴ See generally *Fischman & King*, *supra* note 108 (analyzing savings clauses, their uses and trends, and how they incorporate state cooperation).

²⁷⁵ *Fla. Lime & Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 142–43 (1963). For a full treatment of this issue, see Julie Lurman & Sanford P. Rabinowitch, *Preemption of State Wildlife Law in Alaska: Where, When, and Why*, 24 ALASKA L. REV. 145 (2007), and Julie Lurman Joly, *National Wildlife Refuges and Intensive Management in Alaska: Another Case for Preemption*, 27 ALASKA L. REV. 27 (2010).

²⁷⁶ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

²⁷⁷ Lurman & Rabinowitch, *supra* note 275, at 161.

²⁷⁸ 307 F.3d 835 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷⁹ *Id.* at 852.

²⁸⁰ *Id.* The court also found that the state's action was preempted by the National Wildlife Refuge Systems Improvement Act because it conflicted with FWS's management authority within national refuges. *Id.* at 854.

²⁸¹ *Id.* at 852; see also *North Dakota v. United States*, 460 U.S. 300, 318 (1983) (stating state statutes that are "plainly hostile to the interests of the United States" will not be applied); *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 211 (1824) ("[T]he act of Congress . . . is supreme; and the law of the State, though enacted in the exercise of powers not controverted, must yield to it.").

and natural resources statutes include savings clauses intended to leave room for state law to provide increased protection consistent with congressional purposes and objectives.²⁸² In public lands and natural resources statutes, Congress has embraced the principle of cooperative federalism through a variety of savings clauses that disclaim an intention to displace state law related to wildlife, water, and other resources, so long as state law does not conflict with or undermine federal prerogatives.²⁸³ These statutory disclaimers are often quite vague, having been included as compromise measures to ensure passage of a piece of legislation.²⁸⁴ As Robert Fischman notes:

Judicial interpretation of a savings clause may elevate or undermine the importance of state interests in federal natural resources programs. Largely, it is the interpretive approach used by a court that determines whether an ambiguous savings clause will compel special consideration not otherwise required under federal law.²⁸⁵

Fischman adds that, "[a]lthough the judiciary places the interpretive fulcrum establishing how much leverage states can expect in federal decision-making, administrative policies have and will play the dominant role in shaping cooperative federalism."²⁸⁶ Other sections of this Article analyze the specific language, agency implementation, and judicial review of savings clauses related to wildlife management on federal lands.

In conclusion, states undoubtedly have well-established historical responsibility over the wildlife within their borders. However, as this Subpart demonstrates, that responsibility is not exclusive, nor dominant, nor constitutionally derived. The U.S. Constitution grants the federal government the authority to manage its own lands and resources, fulfill its treaty obligations, and control interstate commerce, even in the face of objections from the states. And while the Tenth Amendment prevents the federal government from forcing state governments to carry out federal regulatory schemes, it cannot prevent the federal government from implementing those schemes itself.

B. Federal Land Laws and Regulations

This Subpart reviews the laws and regulations of most relevance to wildlife management on federal lands. It begins by explaining how the ESA fundamentally alters the management of all federal land systems. Next, it

²⁸² Fischman & King, *supra* note 108, at 145.

²⁸³ *Id.* at 129–30. Congress has also peppered the organic acts of the federal land management agencies with various directives to cooperate with states in planning and other processes. *Id.* See generally Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179 (2005) (discussing cooperation between state and the federal government in the application of natural resource management).

²⁸⁴ Fischman & King, *supra* note 108, at 159–60.

²⁸⁵ *Id.* at 168.

²⁸⁶ *Id.*

reviews the laws and regulations governing wildlife management in the National Park and National Wildlife Refuge Systems. This is followed by a review of the more contentious management and planning frameworks of USFS and BLM. A concise overview of the special case of Alaska is then provided. The Subpart closes by reviewing wildlife management and the National Wilderness Preservation System.

In Part IV, we return to many of the laws, regulations, and policies introduced here to dispel some of the common myths surrounding wildlife management on federal lands and to explain why federal land agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. The background provided here also shows that multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but Part IV.F explains that they are not generally used to their full potential.

1. The Endangered Species Act

Congress passed the ESA in 1973 “to provide a program for the conservation of . . . endangered species and threatened species” and “to provide a means whereby the ecosystems upon which endangered . . . and threatened species depend may be conserved.”²⁸⁷ The ESA establishes an affirmative obligation for the federal government to use “all methods and procedures which are necessary to bring any [listed] species to the point at which the measures provided in this [Act] are no longer necessary,”²⁸⁸ and states that “all federal departments and agencies shall seek to conserve endangered . . . and threatened species.”²⁸⁹ In defining “conserve” and “conservation,” the ESA establishes an affirmative obligation to use “all methods and procedures which are necessary to bring any endangered . . . or threatened species to the point at which the measures provided” by the statute are no longer necessary.²⁹⁰

A secondary indicator as to the goals of the statute can be found in Congress’s explicit recognition of the “esthetic, ecological, educational, historical, recreational, and scientific value” of rare species.²⁹¹ As Freyfogle and Goble have argued, this list of recognized values suggests that the statute is intended to do more than preserve a remnant population in a zoo or at easily visited locations, though this might meet the needs for the esthetic and recreational values.²⁹² Instead, in order to preserve their ecological and scientific values, species and their habitats must be preserved in many natural locations, potentially including areas where they have been extirpated.²⁹³

²⁸⁷ ESA, 16 U.S.C. § 1531(b) (2012).

²⁸⁸ *Id.* § 1532(3). The goal of the statute is not to “list” species but to recover their populations so that they can be “delisted.”

²⁸⁹ *Id.* § 1531(c).

²⁹⁰ *Id.* § 1532(3).

²⁹¹ *Id.* § 1531(a)(3).

²⁹² ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 233–34 (1st ed. 2009).

²⁹³ *Id.*

To understand the role of the ESA in federal land and wildlife management, three central pieces of the statute are most relevant: 1) the listing determination,²⁹⁴ 2) the obligation for federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat,²⁹⁵ and 3) the take prohibition.²⁹⁶ These sections of the statute detail the government's responsibilities and sources of authority. In addition, several provisions of the ESA address federal-state relations with respect to the conservation and management of listed species.²⁹⁷ Each of the relevant sections is addressed below.

a. Listing Determinations (Section 4)

Only those species listed as threatened or endangered are protected by the ESA.²⁹⁸ Listing a species as threatened or endangered is often the result of a citizen petition requesting the listing, though listings may also stem from direct agency initiative (either FWS or, for anadromous and ocean species, the National Marine Fisheries Service (NMFS)).²⁹⁹ In either case, the species must meet the definition of either "threatened" or "endangered" in order to secure the protections provided under the statute.³⁰⁰ An "endangered" species is one that is "in danger of extinction throughout all or a significant portion of its range," and "threatened" species are "likely to become an endangered species within the foreseeable future."³⁰¹

The decision to list a species as either threatened or endangered must be made "solely on the basis of the best scientific and commercial data available."³⁰² The data hurdles that must be surmounted are formidable, and even if met, the agency may decide that the listing is "warranted but precluded" by other more urgent species' needs given the agency's historically tight funding.³⁰³ However, once species are listed they are entitled to the full protections of the statute regardless of the economic consequences.³⁰⁴

Section 4 includes a number of factors to be considered in the listing decision. One inquiry is to assess "the inadequacy of existing regulatory

²⁹⁴ 16 U.S.C. § 1533.

²⁹⁵ *Id.* § 1536(a).

²⁹⁶ *Id.* § 1538.

²⁹⁷ See, e.g., *id.* § 1535 (cooperation with states); *id.* § 1533(b)(1) (listing criteria); *id.* § 1539(a)(2)(B) (incidental take permits).

²⁹⁸ See *id.* § 1533(d).

²⁹⁹ *Id.* § 1533(b)(3)(A); see FREYFOGLE & GOBLE, *supra* note 292, at 236; *Endangered Species Act: Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/CTB5-GTZ5> (last updated Nov. 1, 2017).

³⁰⁰ 16 U.S.C. § 1533(d).

³⁰¹ *Id.* § 1532(6), (20).

³⁰² *Id.* § 1533(b)(1)(A).

³⁰³ FREYFOGLE & GOBLE, *supra* note 292, at 248–49. These "candidate species" receive no protection under the ESA, but the candidate status may provide an opportunity and an incentive for state and private action to prevent listing. *Id.*

³⁰⁴ See *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174 (1978).

mechanisms.³⁰⁵ This means that state laws and regulations pertaining to wildlife, or the lack thereof, are assessed when making listing determinations. Another factor is particularly relevant when it comes to state involvement in ESA implementation: “[conservation] efforts, if any, being made by any State.”³⁰⁶ Accordingly, state efforts to conserve a species may be deemed to offset other threats, such as habitat destruction, and effectively bring the species below the threshold necessary to warrant a federal listing.³⁰⁷ FWS’s Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) allows FWS to consider conservation efforts that have not yet been implemented so long as FWS evaluates the certainty with which the efforts will be implemented and effective.³⁰⁸ However, courts have found that speculative future plans and voluntary conservation efforts will not suffice to avoid listing.³⁰⁹

³⁰⁵ 16 U.S.C. § 1533(a)(1)(D).

³⁰⁶ *Id.* § 1533(b)(1)(A).

³⁰⁷ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. 15,100, 15,113 (Mar. 28, 2003) (to be codified at 50 C.F.R. ch. 4); *see also* Kevin Cassidy, *Endangered Species’ Slippery Slope Back to the States: Existing Regulatory Mechanisms and Ongoing Conservation Efforts Under the Endangered Species Act*, 32 ENVTL. L. 175, 178–79 (2002) (discussing instances where state and local conservation efforts were invoked to avoid listing).

³⁰⁸ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. at 15,114 (requiring a “high level of certainty that the effort will be implemented and/or effective”); *see also* Permian Basin Petroleum Ass’n v. Dep’t of the Interior, 127 F. Supp. 3d 700, 712 (W.D. Tex. 2015) (invalidating FWS’s decision to list the lesser prairie chicken as inconsistent with PECE), *appeal dismissed*, No. 16-50453 (5th Cir. 2016).

³⁰⁹ *See, e.g.,* Alaska v. Lubchenco, 825 F. Supp. 2d 209, 219–20 (D.D.C. 2011) (rejecting Alaska’s claim that NMFS failed to consider the state’s conservation efforts before listing the beluga whale and concluding that “it is not enough for the State to identify conservation efforts that may be beneficial to a species’ preservation”; instead, “the efforts must actually be in place and have achieved some measure of success in order to count”); *Defs. of Wildlife v. Norton*, 258 F.3d 1136, 1146 (9th Cir. 2001) (rejecting FWS’s reliance on a Conservation Agreement (CA) to justify withdrawing a proposed listing because, in several areas designated as management areas for the species, “the designation process was either incomplete or wholly unstarted” and “[n]owhere d[id] the Secretary account for the effects of failure to implement the CA immediately in those areas where delay was expected”); *see also* Or. Nat. Res. Council v. Daley, 6 F. Supp. 2d 1139, 1154–55 (D. Or. 1998) (“NMFS may only consider conservation efforts that are currently operational”; NMFS cannot rely on voluntary measures to preclude listing because “like those planned in the future, [they] are necessarily speculative.”); *Sw. Ctr. for Biological Diversity v. Babbitt*, 939 F. Supp. 49, 51 (D.D.C. 1996) (“[FWS] cannot use promises of proposed future actions as an excuse for not making a determination based on the existing record.”). *But see* *Defs. of Wildlife v. Zinke*, 849 F.3d 1077, 1084 (D.C. Cir. 2017) (holding that FWS properly relied on future implementation of a wolf management plan by the State of Wyoming because the plan was not speculative but rather was “sufficiently certain to be implemented based on the strength of the State’s incentives”); *Defs. of Wildlife v. Jewell*, 70 F. Supp. 3d 183, 197–98 (D.D.C. 2014) (holding that FWS may consider state programs that are not yet fully implemented, as “implementation and effectiveness are often assessed in relative rather than absolute terms; when faced with regulatory uncertainty and risk to certain species, the Service can still chart a course of action, provided it assesses and controls for that uncertainty and risk”), *aff’d*, 815 F.3d 1 (D.C. Cir. 2016).

b. Federal Obligations (Section 7)

i. Affirmative Duty to Conserve (Section 7(a)(1))

The ESA states that the Departments of Interior and Commerce must utilize all of their programs to promote the statute's goals.³¹⁰ The ESA also mandates that *all* federal agencies utilize their authority in the furtherance of the purposes of the ESA.³¹¹ There are few reported cases directly on point, but at least a handful of courts have found that section 7(a)(1) has substantive "teeth."³¹² In *Defenders of Wildlife v. Andrus*, the advocacy group argued that regulations for bird hunting at twilight failed to protect listed species against misidentification by hunters.³¹³ The United States District Court for the District of Columbia, interpreting this section of the statute, found that the ESA requires that the agency "do far more than merely avoid the elimination of protected species," rather there is "an affirmative duty to increase the population of protected species."³¹⁴

The court came to a similar decision in *Carson-Truckee Water Conservancy District v. Watt*.³¹⁵ The cities of Reno and Sparks, Nevada challenged the Department of the Interior's refusal to release greater quantities of water from the Stampede Dam and Reservoir.³¹⁶ The Department of the Interior cited section 7(a)(1) to support its position that the water levels in the reservoir must be maintained at higher levels in order to preserve the spawning ability of two endangered fish (the cui-ui and the Lahontan cutthroat trout).³¹⁷ Ultimately, the court agreed with the federal government's argument that it had a duty "to replenish the species so that they are no longer endangered or threatened with extinction," rather than merely avoiding jeopardy.³¹⁸

By contrast, several courts have refused to mandate the implementation of specific conservation measures, instead finding that the federal agencies

³¹⁰ 16 U.S.C. § 1536(a)(1). For convenience, we reference FWS throughout this Article, but similar duties are imposed upon NMFS, an agency within the Department of Commerce.

³¹¹ *Id.*

³¹² See *Def. of Wildlife v. Andrus*, 428 F. Supp. 167, 169-70 (D.D.C. 1977) (holding that the ESA clearly implied that FWS must "use all methods necessary" to boost species populations for their removal from the protective class); see also *Tenn. Valley Auth.*, 437 U.S. 153, 173 (1978) ("One would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the [ESA]. Its very words affirmatively command all federal agencies 'to insure that actions authorized, funded, or carried about by them do not jeopardize the continued existence' of an endangered species or 'result in the destruction or modification of habitat of such species.'" (quoting 16 U.S.C. § 1536)).

³¹³ *Andrus*, 428 F. Supp. at 169.

³¹⁴ *Id.* at 170.

³¹⁵ 549 F. Supp. 704, 710 (D. Nev. 1982), *aff'd sub nom.*, *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 262 (9th Cir. 1984).

³¹⁶ *Clark*, 741 F.2d at 259; *Watt*, 537 F. Supp. at 107-08.

³¹⁷ *Clark*, 741 F.2d at 259, 261-62.

³¹⁸ *Watt*, 549 F. Supp. at 708-10; see also *Sierra Club v. Glickman*, 156 F.3d 606, 618 (5th Cir. 1998) (finding that section 7(a)(1) required the United States Department of Agriculture to develop its own conservation program for listed species dependent on the Edwards aquifer).

have a great deal of discretion in the steps that they take to satisfy section 7(a)(1).³¹⁹ For example, in *Defenders of Wildlife v. U.S. Fish & Wildlife*,³²⁰ the court rejected arguments that USFS should develop and implement its own conservation program for the endangered Mexican wolf and deferred to the agency's decision to act in cooperation with FWS's recommendations in furtherance of previously established wolf reintroduction and recovery goals.³²¹ Similarly, in *Defenders of Wildlife v. Babbitt*,³²² the court held that the federal agencies had not violated section 7(a)(1), even though they had not implemented all possible measures for conservation of the endangered Sonoran pronghorn, absent a showing that the agencies had failed entirely to carry out conservation programs.³²³

To summarize, FWS and other federal agencies are obligated to prevent jeopardy and authorized to proactively improve the circumstances of listed species. Additionally, while the ESA creates a duty to increase populations of protected species, it appears that courts are often unwilling to require the implementation of specific conservation measures.

ii. Prohibition Against Jeopardy (Section 7(a)(2))

Federal agencies must also ensure that their actions are "not likely to jeopardize the continued existence" of listed species.³²⁴ In *Tennessee Valley Authority v. Hill*,³²⁵ the Supreme Court established that, instead of balancing interests between wildlife conservation and economic development, the ESA demands that species conservation be elevated above other concerns, which could include state interests in wildlife.³²⁶

In order to ensure that federal actions do not jeopardize listed species, federal agencies undertaking actions that could harm species must formally consult with FWS.³²⁷ For purposes of section 7, "federal actions" include projects that are funded, authorized, or constructed directly by any federal agency, and projects with discretionary involvement or control by any

³¹⁹ See, e.g., *Leatherback Sea Turtle v. Nat'l Marine Fisheries Serv.*, No. 99-00152 DAE, 1999 WL 33594329, at *13-14 (D. Haw. Oct. 18, 1999) (finding that NMFS satisfied its section 7(a)(1) duty by issuing conservation recommendations and biological opinions); *Coal. for Sustainable Res., Inc. v. U.S. Forest Serv.*, 48 F. Supp. 2d 1303, 1306, 1315-16 (D. Wyo. 1999) (rejecting plaintiff's argument that USFS should implement certain timber harvest and snow management programs for the benefit of listed species), *vacated for lack of ripeness*, 259 F.3d 1244 (10th Cir. 2001).

³²⁰ 797 F. Supp. 2d 949 (D. Ariz. 2011).

³²¹ *Id.* at 958-59.

³²² 130 F. Supp. 2d 121 (D.D.C. 2001).

³²³ *Id.* at 135; see also *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of the Navy*, 898 F.2d 1410, 1417-19 (9th Cir. 1990) (holding that section 7(a)(1) did not require the Navy to adopt the "least burdensome alternative" to ensure the conservation of listed species; rather, the Navy retained discretion in meeting the ESA's conservation mandate).

³²⁴ ESA, 16 U.S.C. § 1536(a)(2) (2012).

³²⁵ 437 U.S. 153 (1978).

³²⁶ See *id.* at 184 (noting "[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost").

³²⁷ 16 U.S.C. § 1536(a)(4).

federal agency.³²⁸ If a listed species may be present within the project area, the federal "action agency" must conduct a biological assessment (BA) to identify any such species likely to be affected by the federal action and evaluate the effects.³²⁹ In turn, through its biological opinion (BiOp), FWS must determine whether the potential harm to the species violates section 7(a)(2) and, if so, devise less harmful alternatives or mitigation measures.³³⁰

FWS has interpreted the phrase "jeopardize the continued existence of a species" as any action "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild."³³¹ According to the Ninth Circuit in *National Wildlife Federation v. National Marine Fisheries Service*,³³² an action that may jeopardize a species can be of any magnitude, slight or severe, since the important factor is the degree of risk to the particular species.³³³ Furthermore, the court stated that jeopardy determinations must consider the action's effect on species recovery, not simply species survival.³³⁴ Therefore, even actions that pose only slight dangers may "jeopardize" the species if the effect of that action poses a high degree of risk to the species.

*iii. Prohibition Against Adversely Modifying Critical Habitat
(Section 7(a)(2))*

At the time a species is listed as endangered or threatened, FWS must also designate its critical habitat.³³⁵ Critical habitat is an area where there are "physical or biological features . . . essential to the conservation of the species and . . . which may require special management considerations."³³⁶ Critical habitat designation is based on "the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact."³³⁷ By directing FWS to consider economic impacts, the designation decision involves a much broader inquiry than is required for the listing determinations.

Section 7 prohibits federal agencies from taking actions that may "result in the destruction or adverse modification of [critical] habitat."³³⁸ FWS regulations specify that:

³²⁸ *Id.* § 1536(a); 50 C.F.R. § 402.02 (2016); see *Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1224–25 (9th Cir. 2015).

³²⁹ 16 U.S.C. § 1536(c).

³³⁰ *Id.* § 1536(b)(3).

³³¹ 50 C.F.R. § 402.02.

³³² 524 F.3d 917 (9th Cir. 2008).

³³³ See *id.* at 930.

³³⁴ *Id.* at 931.

³³⁵ 16 U.S.C. § 1533(a)(3)(A), (b)(6)(C).

³³⁶ *Id.* § 1532(6)(A)(i).

³³⁷ *Id.* § 1533(b)(2).

³³⁸ *Id.* § 1536(a)(2).

Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for [both the survival and recovery] of a listed species . . . includ[ing] . . . those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.³³⁹

In *Center for Native Ecosystems v. Cables*,³⁴⁰ the Tenth Circuit held that critical habitat is adversely modified by any actions “that adversely affect a species’ recovery and the ultimate goal of delisting.”³⁴¹ This interpretation makes the critical habitat protection a significant prohibition.

c. Take Prohibition (Section 9)

The ESA prohibits the “take” of listed species.³⁴² “Take” is defined by Congress as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.”³⁴³ This broad protection has been further enlarged by the Supreme Court’s determination that “harm” in this definition includes habitat modification or degradation,³⁴⁴ though a showing that animals have actually been killed or injured may be required to prove that harm has occurred.³⁴⁵ A prohibited take can be either intentional (e.g., hunting and trapping) or unintentional (e.g., poisoning and other contamination).³⁴⁶ Unlike the requirements of section 7, section 9 applies to all persons, not just federal agencies.³⁴⁷

While the take prohibition is unqualified for endangered species, it is up to the agency to determine the breadth of its applicability for threatened species.³⁴⁸ FWS can make the prohibitions of section 9 applicable, either in whole or in part, to threatened species.³⁴⁹ However, FWS’s discretion in this area is not without limits. In *Sierra Club v. Clark*,³⁵⁰ the United States Court of Appeals for the Eighth Circuit struck down FWS regulations that permitted the hunting of threatened wolves because the ESA only empowers FWS to issue regulations for the “conservation” of species, and regulated taking is only permissible under “extraordinary” circumstances which were not present in that case.³⁵¹

³³⁹ 50 C.F.R. § 402.02 (2016) (emphasis omitted).

³⁴⁰ 509 F.3d 1310 (10th Cir. 2007).

³⁴¹ *Id.* at 1322.

³⁴² 16 U.S.C. § 1538(a)(1)(B)–(C).

³⁴³ *Id.* § 1532(19).

³⁴⁴ *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 708 (1995) (citing 50 C.F.R. § 17.3).

³⁴⁵ *See id.* at 696 n.7; FREYFOGLE & GOBLE, *supra* note 292, at 266.

³⁴⁶ FREYFOGLE & GOBLE, *supra* note 292, at 236–37.

³⁴⁷ 16 U.S.C. § 1538(a)(1).

³⁴⁸ *Id.* § 1533(d).

³⁴⁹ *Id.*

³⁵⁰ 755 F.2d 608 (8th Cir. 1985).

³⁵¹ *Id.* at 610, 612–13; *see* 16 U.S.C. § 1532(3).

i. Incidental Take Statements and Incidental Take Permits (Section 7(a)(2) and Section 10)

Federal activities covered by a "no jeopardy" BO may be shielded from section 9 "take" liability if FWS has also issued an incidental take statement (ITS) that excuses the actor from liability when a covered species is incidentally taken during the course of an otherwise lawful activity.³⁵² While an ITS provides protection against federal prosecution, it also constitutes a binding agreement with FWS that may include limitations and other prohibitions for the shielded activity.³⁵³ In addition, section 10(a) allows "take" by nonfederal actors under prescribed conditions in exchange for a habitat conservation plan (HCP).³⁵⁴ To issue an incidental take permit (ITP) under section 10(a), FWS must find that:

- (i) the taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii) the applicant will ensure that adequate funding for the plan will be provided;
- (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v) the measures, if any, [that the Secretary may require as being necessary or appropriate for purposes of the plan] will be met.³⁵⁵

In recent years, FWS has utilized its ability to issue ITPs more frequently, in part to alleviate the perceived harshness of the ESA's prohibitions and in part to foster "creative partnerships between the private sector and all levels of government in the interests of protected species and habitat conservation."³⁵⁶ For example, a court upheld an ITP that authorized the State of Utah, Cedar City, and the Paiute Tribe to trap prairie dogs that

³⁵² 16 U.S.C. § 1536(a)(2), (b)(4); *see Ramsey v. Kantor*, 96 F.3d 434, 446 (9th Cir. 1996) (holding that states did not violate the ESA when they issued fishing regulations allowing taking of listed salmon without obtaining a section 10 permit where NMFS issued a section 7 incidental take statement that clearly anticipated the states would promulgate fishing regulations in accordance with its terms).

³⁵³ *See, e.g.*, 50 C.F.R. § 17.32(b)(2) (2016); *see also Endangered Species Permits: HCPs - Frequently Asked Questions*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/Z3PV-WQFC> (last updated Apr. 14, 2015) (describing the binding legal obligations included in Habitat Conservation Plans that are usually required when a party obtains an incidental take permit).

³⁵⁴ 16 U.S.C. § 1539(a)(2)(A).

³⁵⁵ *Id.* § 1539(a)(2)(B).

³⁵⁶ Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 COLUM. J. ENVTL. L. 45, 69, 75-76 (2002).

were damaging private and tribal land, and relocate them to a parcel of land covered by a conservation easement surrounded by BLM lands.³⁵⁷

States have avoided liability for a “take” under both ITSs and ITPs, and both tools have the potential to be used to foster cooperation with states in the interest of species conservation. If either an ITS or an ITP is issued without adequate safeguards for the species, however, the ESA’s conservation objectives may be undermined.

d. Cooperation with States (Section 6)

The ESA carves out a role for the states to assist in achieving the ESA’s protective purposes by providing that, in carrying out the statute, FWS “shall cooperate to the maximum extent practicable with the States.”³⁵⁸ Through this provision, Congress recognized the expertise of state agencies and required FWS to solicit and consider relevant information from them, such as preparing proposed and final rules to designate critical habitat.³⁵⁹ In addition, the ESA empowers FWS to “enter into agreements with [states] for the administration and management of any area established for the conservation of [listed] species.”³⁶⁰ FWS may also enter into cooperative agreements with any state that establishes and maintains an “adequate and active” program for the conservation of listed species.³⁶¹ These programs are enacted statutorily and are referred to as “state endangered species acts.”³⁶²

In addition, the statutory savings clause states that the ESA should not be construed “to void any State law or regulation which is intended to conserve migratory, resident, or introduced fish or wildlife, or to permit or prohibit sale of such fish or wildlife.”³⁶³ However, states may not take measures to protect or enhance non-endangered resident wildlife if such measures would take or otherwise endanger listed species.³⁶⁴

FWS and NFMS also adopted an interagency policy to guide their work with the states in ESA implementation. The policy begins by recognizing that

³⁵⁷ *WildEarth Guardians v. U.S. Fish & Wildlife Serv.*, 622 F. Supp. 2d 1155, 1159, 1168 (D. Utah 2009).

³⁵⁸ 16 U.S.C. § 1535(a).

³⁵⁹ See, e.g., *Alaska Oil & Gas Ass’n v. Salazar*, 916 F. Supp. 2d 974, 997 (D. Alaska 2013) (discussing FWS and state’s various joint efforts and ultimately finding that FWS complied with § 1535(a) in designating polar bear critical habitat).

³⁶⁰ 16 U.S.C. § 1535(b).

³⁶¹ *Id.* § 1535(c)(1). For details, see COGGINS & GLICKSMAN, *supra* note 124, § 29:19.

³⁶² Deborah F. Buckman, Annotation, *Construction and Application of State Endangered Species Acts*, 44 A.L.R. 6th 325 (2009); see 16 U.S.C. § 1535.

³⁶³ 16 U.S.C. § 1535(f).

³⁶⁴ See *Nat’l Audubon Soc’y*, 307 F.3d 835, 853 (9th Cir.) (invalidating California’s prohibition on leghold traps), *amended on denial of reh’g*, 312 F.3d 416, 418 (9th Cir. 2002). Cf. *Animal Prot. Inst. v. Holsten*, 541 F. Supp. 2d 1073, 1080–81 (D. Minn. 2008) (finding that the savings clause did not shield a state hunting program from judicial invalidation or protect the state game agency from liability for violating the ESA’s taking clause); *United States v. Glenn-Colusa Irrigation Dist.*, 788 F. Supp. 1126, 1134 (E.D. Cal. 1992) (“[T]o the extent that [a state’s] law on taking is less protective than the [ESA], it is preempted.”).

"States possess broad trustee and police powers over fish, wildlife and plants and their habitats within their borders [and u]nless preempted by Federal authority, States possess primary authority and responsibility for protection and management of fish, wildlife and plants and their habitats."³⁶⁵ The policy specifies ways in which the states can help carry out the purposes of the ESA, such as by taking prelisting conservation actions and utilizing state expertise and information in the ESA recovery process.³⁶⁶

Section 6 and the interagency policy provisions encourage cooperative federalism to effectuate the purposes of the ESA. Like many other federal environmental statutes, the ESA provides a floor, not a ceiling, for species protection.³⁶⁷ The ESA clearly preempts inconsistent or less restrictive state laws.³⁶⁸ And most state-level endangered species acts are relatively limited in comparison to the federal law, with most states having no mechanism for recovery, consultation, critical habitat, or citizen enforcement.³⁶⁹

2. The National Park System

a. The 1916 Organic Act

The National Park Service Organic Act³⁷⁰ makes conservation of park resources, including wildlife, a primary management goal:

[To] promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose . . . to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations.³⁷¹

Courts have construed this provision as a directive that, between the competing goals of conservation of park resources and facilitating public

³⁶⁵ Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities, 59 Fed. Reg. 34,274, 34,725 (July 1, 1994).

³⁶⁶ *Id.*

³⁶⁷ 16 U.S.C. § 1535(c), (f); see Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 ENVTL. L. 451, 462 (2004).

³⁶⁸ 16 U.S.C. § 1535(f) ("Any State law or regulation respecting the taking of an endangered species or threatened species may be more restrictive than the exemptions or permits provided for in this chapter or in any regulation which implements this chapter but not less restrictive than the prohibitions so defined."); see, e.g., *Nat'l Audubon Soc'y*, 307 F.3d at 851-53 (holding that California's rule prohibiting use of leg-hold traps by federal employees was preempted by the ESA); *Swan View Coal., Inc. v. Turner*, 824 F. Supp. 923, 938 (D. Mont. 1992); *Glenn-Colusa Irrigation Dist.*, 788 F. Supp. at 1134.

³⁶⁹ Susan George & William J. Snape III, *State Endangered Species Acts*, in ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES 345, 346 (Donald C. Baur & W.M. Robert Irvin eds., 2d ed. 2010) (concluding that "most acts lack all but the most basic elements of a legislative scheme to protect a state's imperiled species").

³⁷⁰ Ch. 408, 39 Stat. 535 (1916) (codified in scattered sections of 54 U.S.C.).

³⁷¹ 54 U.S.C. § 100101 (Supp. II 2015) (emphasis added).

enjoyment of park resources, conservation generally takes precedence.³⁷² Notably, the Organic Act's phrase authorizing management for the enjoyment of scenery, natural and historic objects, and wildlife is cabined by the admonition that enjoyment may only occur "in such manner and by such means as will leave them [i.e., park resources] unimpaired for the enjoyment of future generations."³⁷³ Absent an explicit contrary mandate in the relevant individual park establishment act, in the event of a conflict, NPS must prioritize conservation over public enjoyment.³⁷⁴

b. National Park Service Management Policy

NPS's own Management Policies recognize that conservation of park resources is "predominant."³⁷⁵ More specifically:

Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.³⁷⁶

Issues related to wildlife management come squarely within the purview of the conservation mandate. "Impairment" includes disruption of

³⁷² See, e.g., *Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183, 192–93 (D.D.C. 2008) (invalidating NPS's Winter Use Plan because it violated the conservation mandate by impairing Yellowstone's soundscape, wildlife, and air quality); *Fund for Animals v. Norton*, 512 F. Supp. 2d 49, 54–55 (D.D.C. 2007) (finding that NPS had articulated a satisfactory explanation regarding limited use of snowmobiles in Yellowstone); *Fund for Animals v. Norton*, 294 F. Supp. 2d 92, 108 (D.D.C. 2003) (overturning decision to allow snowmobiles in Yellowstone because NPS had not explained reversal of earlier conclusion that snowmobiles caused impairment); see also *Bicycle Trails of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir. 1996) (noting the "overarching concern" of the Organic Act is "resource protection"); *Defs. of Wildlife v. Salazar*, 877 F. Supp. 2d 1271, 1306–07 (M.D. Fla. 2012) (remanding decision to increase off-road vehicle (ORV) use because of failure to explain change in position as to ORV's adverse impacts to wildlife, soil, and hydrology); *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7, 24–38 (D.D.C. 2010) (remanding NPS's decision to allow jet skis in two national parks given the impacts to wildlife, water and air quality, soundscapes, aquatic vegetation, and visitor experience); *Edmonds Inst. v. Babbitt*, 42 F. Supp. 2d 1, 16 (D.D.C. 1999) (noting that the primary purpose of the Organic Act is "conservation of wildlife resources"); *Nat'l Rifle Ass'n of Am. v. Potter*, 628 F. Supp. 903, 909 (D.D.C. 1986) ("In the Organic Act, Congress speaks of but a single purpose, namely conservation.").

³⁷³ 54 U.S.C. § 100101(a).

³⁷⁴ Eric Biber & Elisabeth Long Esposito, *The National Park Service Organic Act and Climate Change*, 56 NAT. RESOURCES J. 193, 223–24 (2016). But see *Nat'l Parks Conservation Ass'n v. U.S. Dep't of Interior*, 46 F. Supp. 3d 1254, 1278, 1337 (M.D. Fla. 2014) (applying an establishment act that shuffles these priorities and finding that the establishment acts for Big Cypress Preserve and Addition Lands mandate multiple uses, including ORV use on designated trails), *aff'd*, 835 F.3d 1377 (11th Cir. 2016).

³⁷⁵ NAT'L PARK SERV., MANAGEMENT POLICIES 2006 § 1.4.3 (2006), <https://perma.cc/3R3K-EUP8> [hereinafter NPS MANAGEMENT POLICIES].

³⁷⁶ *Id.*

natural abundance, diversity, and ecological integrity, and is not limited to those impacts that "are so intense or sustained that they result in 'the elimination of a native species or significant population declines in a native species.'"³⁷⁷

NPS's Management Policies direct NPS to "maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems."³⁷⁸ Native species are "all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system."³⁷⁹ NPS commits itself to preserving, maintaining, and restoring both populations of species and their habitats, and to "minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them."³⁸⁰ In addition, the Management Policies state that NPS will cooperate and work with state and tribal governments, federal agencies, and other land managers to encourage the conservation of species populations and habitats "whenever possible."³⁸¹ Although the Policies are not judicially enforceable, courts have not hesitated to find that deviations from the Policies are arbitrary and capricious.³⁸²

c. Hunting and Fishing

Courts have occasionally upheld NPS decisions that adversely impact wildlife, including decisions to cull deer and other wildlife from parks where the wildlife is undermining conservation goals by destroying vegetation or harming other species.³⁸³ As a general rule, however, hunting and other types of consumptive resource utilization within units of the National Park System are prohibited as contrary to the conservation ethic articulated in the

³⁷⁷ *Bluewater Network*, 721 F. Supp. 2d at 36 (rejecting NPS's interpretation of impairment to allow mortality and other "regular" adverse effects to wildlife as a "draconian" definition that was inconsistent with the Organic Act).

³⁷⁸ NPS MANAGEMENT POLICIES, *supra* note 375, § 4.4.1.

³⁷⁹ *Id.* § 4.4.1.3.

³⁸⁰ *Id.* § 4.4.1.

³⁸¹ *Id.* § 4.4.1.1.

³⁸² *See, e.g., Bluewater Network*, 721 F. Supp. 2d at 20 n.13 ("While these Policies are not judicially enforceable, they are 'relevant insofar as NPS puts forth the Policies as justification for the decision under review.'" (citations omitted)).

³⁸³ *See, e.g., Davis v. Latschar*, 202 F.3d 359, 359-60 (D.C. Cir. 2000) (upholding NPS plan to cull deer); *N.M. State Game Comm'n v. Udall*, 410 F.2d 1197, 1200-01 (10th Cir. 1969) (similar); *Grunewald v. Jarvis*, 930 F. Supp. 2d 73, 84-86 (D.D.C. 2013) (similar), *aff'd*, 776 F.3d 893 (D.C. Cir. 2015); *Friends of Animals v. Caldwell*, No. 2:09-cv-5349, 2010 WL 4259753, at *1, *7 (E.D. Pa. Oct. 27, 2010), *aff'd*, 434 F. App'x 72 (3d Cir. 2011) (similar); *see also WildEarth Guardians v. Nat'l Park Serv.*, 703 F.3d 1178, 1191-93 (10th Cir. 2013) (upholding NPS plan to cull elk); *Wilkins v. Sec'y of Interior*, 995 F.2d 850, 851 (8th Cir. 1993) (reversing district court and upholding NPS plan to remove wild horses); *Intertribal Bison Coop. v. Babbitt*, 25 F. Supp. 2d 1135, 1140-41 (D. Mont. 1998) (upholding NPS plan to manage Yellowstone bison), *aff'd*, 175 F.3d 1149 (9th Cir. 1999); *Greater Yellowstone Coal. v. Babbitt*, 952 F. Supp. 1435, 1445-46 (D. Mont. 1996) (upholding NPS plan to authorize capture or killing of bison by state officials), *aff'd*, 108 F.3d 1385 (9th Cir. 1997).

Organic Act.³⁸⁴ Specific establishment legislation for individual parks authorizes limited subsistence or recreational hunting, trapping, or fishing within approximately thirty-one NPS units.³⁸⁵ Those areas permitting hunting, trapping, or fishing typically do so in conformance with applicable federal and state laws.³⁸⁶ NPS regulations prohibit commercial fishing in the parks.³⁸⁷ However, in *Alaska Wildlife Alliance v. Jensen*,³⁸⁸ the Ninth Circuit held that NPS has the discretion to permit commercial fishing in non-wilderness areas of certain Alaska parks.³⁸⁹

3. The National Wildlife Refuge System

a. The National Wildlife Refuge System Improvement Act (1997)

The National Wildlife Refuge System is unique among federal land conservation units in its explicit focus on wildlife and ecosystem conservation as its dominant use.³⁹⁰ FWS manages the Refuge System under the auspices of the National Wildlife Refuge System Administration Act,³⁹¹ which was amended in 1997 by the National Wildlife Refuge System Improvement Act.³⁹² The agency also provides detailed explanations of its statutory obligations in its regulations³⁹³ and the FWS Manual.³⁹⁴

³⁸⁴ COGGINS & GLICKSMAN, *supra* note 124, § 32.14; see *United States v. Jarrell*, 143 F. Supp. 2d 605, 605–06, 609 (W.D. Va. 2001) (upholding conviction for hunting in Shenandoah National Park); *Organized Fisherman of Fla.*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (denying a preliminary injunction to enjoin enforcement of NPS regulations that restricted fishing practices in a national park).

³⁸⁵ Jessica Almy, Student Article, *Taking Aim at Hunting on National Park Service Lands*, 18 N.Y.U. ENVTL. L.J. 184, 185 (2010); see *Nat'l Rifle Ass'n*, 628 F. Supp. 903, 907 n.4 (D.D.C. 1986) (finding express authorization for hunting in the enabling acts of thirty-one NPS properties).

³⁸⁶ 36 C.F.R. § 2.2(b)(4) (2016); 43 C.F.R. § 24.4(f) (2016); *Organized Fishermen of Fla.*, 776 F.2d 1544, 1549 (11th Cir. 1985) (finding that, despite Florida law, there was no right to engage in commercial fishing in Everglades National Park); *United States v. Knauer*, 635 F. Supp. 2d 203, 212 (E.D.N.Y. 2009) (holding that permission for commercial fishing or hunting in Gateway National Park was left to NPS); see also *Fund for Animals v. Mainella*, 294 F. Supp. 2d 46, 48, 52 (D.D.C. 2003) (refusing to enjoin state's bear hunt in Delaware Gap National Recreation Area since statutory language provided that federal regulation was required only when NPS exercised its discretion to place limitations on hunting or to provide areas for intensive management).

³⁸⁷ 36 C.F.R. §§ 2.3(d)(4), 5.3; see *S.F. Herring Ass'n v. U.S. Dep't of Interior*, No. 13-cv-01750-JST, 2014 WL 172232, at *4–6 (N.D. Cal. Jan. 15, 2014) (finding that NPS had authority to issue citations to commercial fishermen in San Francisco Bay near the Golden Gate Recreational Area).

³⁸⁸ 108 F.3d 1065 (9th Cir. 1997).

³⁸⁹ *Id.* at 1067, 1074.

³⁹⁰ *National Wildlife Refuge System Improvement Act of 1997 Public Law 105-57*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/S8FN-FHHT> (last updated Aug. 19, 2009).

³⁹¹ *National Wildlife Refuge System Administration Act of 1966*, 16 U.S.C. §§ 668dd–668ee (2012); see *The Refuge System and FWS*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/4N9R-GDXQ> (last visited Nov. 11, 2017).

³⁹² *National Wildlife Refuge System Improvement Act of 1997*, Pub. L. No. 105-57, 111 Stat. 1252 (1997).

³⁹³ See 50 C.F.R. pts. 31–32 (2016).

³⁹⁴ See 50 C.F.R. pts. 31–32 (2016).

The Act authorizes the agency to permit the use of any area within the system for any purpose as long as it is determined that the proposed use is compatible with the "major purposes for which the areas were established."³⁹⁵ The Act further clarifies that all actions on a refuge must be compatible with both the mission of the refuge system and the purposes of the relevant individual refuge (as determined by the establishment legislation of that refuge).³⁹⁶ Where the system mission and refuge purposes conflict, refuge purposes should be given precedence, while still fulfilling the system mission to the extent that is possible.³⁹⁷ The agency's discretion in determining whether a use is compatible is further limited by the requirement that compatibility be based on "sound professional judgment."³⁹⁸ Furthermore, agency regulations require compatibility determinations to: 1) be written, 2) identify the proposed or existing use that the compatibility determination applies to, and 3) state whether the proposed use is in fact a compatible use based on "sound professional judgment."³⁹⁹

The mission of the refuge system, as provided by the Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁴⁰⁰ In meeting the mission of the system, the statute lays out explicit obligations for the agency.⁴⁰¹ Three of these statutory requirements are particularly relevant to this discussion and are elaborated upon in greater detail below:

In administering the system the Secretary shall—

(A) provide for the conservation of fish, wildlife, and plants, and their habitat within the System;

(B) ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans;

³⁹⁴ See *Service Manual Chapters: Series 600 – Land Use and Management Series*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/Q93L-S223> (last updated Nov. 2, 2017).

³⁹⁵ 16 U.S.C. § 668dd(d)(1)(A).

³⁹⁶ *Id.* § 668ee(1). Establishment legislation is of key importance in refuge management as a source of refuge purposes and a guide to refuge management. Many refuges have purposes derived from multiple pieces of establishment legislation, which can lead to confusion regarding the relative priorities of the various refuge purposes. ROBERT L. FISCHMAN, *THE NATIONAL WILDLIFE REFUGES: COORDINATING A CONSERVATION SYSTEM THROUGH LAW* 164 (2003).

³⁹⁷ 16 U.S.C. § 668dd(a)(4)(D).

³⁹⁸ *Id.* § 668ee(1); see *Del. Audubon Soc'y v. Salazar*, 829 F. Supp. 2d 273, 288–89 (D. Del. 2011) (finding that a dune restoration decision was within sound professional judgment when it was "supported by scientific literature").

³⁹⁹ 50 C.F.R. § 25.12 (2016).

⁴⁰⁰ 16 U.S.C. § 668dd(a)(2).

⁴⁰¹ See *id.* § 668dd(a)(4).

(E) ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the System are located.⁴⁰²

Two significant court cases interpret many of the provisions of the Act. In *Wyoming v. United States*, the state argued that FWS interfered with the state's sovereign right to manage wildlife by prohibiting the state from vaccinating elk against brucellosis on refuge lands.⁴⁰³ The Tenth Circuit ultimately determined that ordinary principles of preemption applied; if the state's actions would conflict with federal mandates or present an obstacle to their accomplishment, then the state is preempted by the Improvement Act.⁴⁰⁴ In *National Audubon Society, Inc. v. Davis*, environmental groups challenged California over a state law banning the use of all leg-hold traps in the state, including those used on federal lands or to protect endangered species.⁴⁰⁵ The Ninth Circuit found that the ban conflicted with FWS's statutory authority to manage refuges, and so the state law was preempted.⁴⁰⁶ These two cases are discussed in detail below.⁴⁰⁷

i. Provide for the Conservation of Fish, Wildlife, Plants, and Their Habitats

The Refuge Improvement Act groups the terms "conserving," "conservation," "manage," "managing," and "management" together, and provides a single definition for all of them: "to sustain and, where appropriate, restore and enhance, healthy populations of fish, wildlife, and plants."⁴⁰⁸ As the *Wyoming* court states, it would be impossible for the agency to meet its obligation for conservation "unless [refuges] are consistently directed and managed as a national system."⁴⁰⁹ Furthermore, that court found that "Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System]."⁴¹⁰ The *Audubon* court concurred in this reasoning,

⁴⁰² *Id.*

⁴⁰³ *Wyoming*, 279 F.3d 1214, 1222, 1229 (10th Cir. 2002).

⁴⁰⁴ *Id.* at 1234–35.

⁴⁰⁵ 307 F.3d 835, 842–44 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416 (9th Cir. 2002).

⁴⁰⁶ *Id.* at 854.

⁴⁰⁷ See *infra* notes 409–411, 426–433 and accompanying text.

⁴⁰⁸ 16 U.S.C. § 668ee(4) (2012).

⁴⁰⁹ *Wyoming*, 279 F.3d 1214, 1233 (10th Cir. 2002) (quoting H.R. REP. NO. 105-106, at 8 (1997)).

⁴¹⁰ *Id.* at 1234. In another case, *Defenders of Wildlife v. Salazar*, the D.C. Circuit defined "conservation" in this context by referencing the specific facts of the case. 651 F.3d 112, 115–17 (D.C. Cir. 2011). In that case, FWS was accused of violating the conservation mandate of the Improvement Act by failing to commit to a deadline to end the agency's elk feeding program in the National Elk Refuge. *Id.* at 115. The court determined that there was "no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System," yet the court determined that a phased (rather than an abrupt) ending of that program was reasonable. *Id.* at 117.

referencing the goals of the Improvement Act and FWS's authority over refuge lands in its finding that state law was preempted.⁴¹¹

ii. Ensure That the Biological Integrity, Diversity, and Environmental Health of the System Are Maintained

While the statute itself does not define these terms, FWS defines them in its manual.⁴¹² The manual states that the "highest measure of biological integrity, diversity, and environmental health is viewed as those intact and self-sustaining habitats and wildlife populations that existed during historic conditions."⁴¹³ Therefore, the agency "favor[s] management that restores or mimics natural ecosystem processes or functions."⁴¹⁴ The agency's manual also lays out the major principles underlying the biological integrity policy, the first of which is that wildlife conservation must always be the primary concern in the management of the refuges,⁴¹⁵ and that ensuring biological integrity, diversity, and environmental health is necessary for the agency to fulfill the system mission of conservation.⁴¹⁶

The requirement to maintain "biological integrity, diversity, and environmental health" requires refuge officials to "manage lands to conserve the full range of wild species and plant communities" that existed in a refuge before it was substantially changed by humans, and also "calls for the conservation of basic ecological processes with little human alteration, including the natural biological processes that shape genomes, organisms, and communities."⁴¹⁷ As Fischman describes the biological integrity requirement: "No other organic mandate employs as unconditional or specific a series of ecological criteria to constrain management and promote conservation."⁴¹⁸

iii. Ensure Effective Coordination, Interaction, and Cooperation

Congress clearly intended for FWS to cooperate meaningfully with other land managers, particularly states. Included in the statute is a requirement that the agency issue a conservation plan for each refuge that is "consistent with the provisions of this Act and, to the extent practicable, consistent with fish and wildlife conservation plans of the State in which the refuge is located."⁴¹⁹ As the *Wyoming* court states, the Improvement Act calls

⁴¹¹ *Nat'l Audubon Soc'y*, 307 F.3d at 854.

⁴¹² U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 3, BIOLOGICAL INTEGRITY, DIVERSITY, AND ENVIRONMENTAL HEALTH § 3.6 (2001), www.fws.gov/policy/601fw3.html.

⁴¹³ *Id.* § 3.10.

⁴¹⁴ *Id.* § 3.7(E).

⁴¹⁵ *Id.* § 3.7(A).

⁴¹⁶ *Id.* § 3.7(B).

⁴¹⁷ FREYFOGLE & GOBLE, *supra* note 292, at 212.

⁴¹⁸ FISCHMAN, *supra* note 396, at 126; see also *Defs. of Wildlife*, 651 F.3d 112, 116 (D.C. Cir. 2011) (emphasizing the agency's "biological integrity" mandate).

⁴¹⁹ 16 U.S.C. § 668dd(e)(1)(A)(iii) (2012).

for, “at a minimum, state involvement and participation in the management of the [National Wildlife Refuge System] as that system affects surrounding state ecosystems.”⁴²⁰ However, in understanding the statute we must give effect to all of the language provided, and while Congress strongly encourages cooperation, it also tempers that goal by finding that it is only necessary “to the extent practicable,” otherwise the agency would not be capable of fulfilling its congressionally designated mission.⁴²¹ As the *Wyoming* court observed: “Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System].”⁴²²

iv. Savings Clause

The Improvement Act also contains two savings clauses. First, the Act prohibits the taking of any fish or animal within refuges without FWS permission,⁴²³ but the prohibition does not extend beyond refuge boundaries: “Nothing in this Act shall be construed to authorize the Secretary to control or regulate hunting or fishing of fish and resident wildlife on lands or waters that are not within the System.”⁴²⁴ Next, the Act provides that:

Nothing in this Act shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations in any area within the System. Regulations permitting hunting or fishing of fish and resident wildlife within the System shall be, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans.⁴²⁵

The state in *Wyoming* argued that the first sentence of the savings clause retains to the state “the absolute right to manage wildlife . . . free from federal intervention.”⁴²⁶ However, the Tenth Circuit found that as a matter of statutory construction the first sentence cannot be read in isolation; instead, the clause must be understood in its entirety, giving effect to the whole clause.⁴²⁷ The second sentence of the savings clause indicates that federal regulation of wildlife on refuges only has to be consistent with state law “to the extent practicable.”⁴²⁸ So while consistency is encouraged, it is not mandated at the expense of the other requirements of the statute.

⁴²⁰ *Wyoming*, 279 F.3d 1214, 1231 (10th Cir. 2002).

⁴²¹ 16 U.S.C. § 668dd(e)(1)(A)(iii); *Wyoming*, 279 F.3d at 1233.

⁴²² *Wyoming*, 279 F.3d at 1234.

⁴²³ 16 U.S.C. § 668dd(c); see *United States v. Kilpatrick*, 347 F. Supp. 2d 693, 695 (D. Neb. 2004) (upholding conviction for trespassing on and shooting deer in a closed portion of a wildlife refuge).

⁴²⁴ *Id.* § 668dd(f).

⁴²⁵ *Id.* § 668dd(m).

⁴²⁶ *Wyoming*, 279 F.3d at 1231.

⁴²⁷ *Id.*

⁴²⁸ 16 U.S.C. § 668dd(m); *Wyoming*, 279 F.3d at 1232.

The *Wyoming* court also found that if the first sentence is read so as to exclude the possibility of FWS authority to manage wildlife in ways that might conflict with state law, such a result “would be inconsistent with the [Improvement Act’s] ‘mission . . . to administer a national network of lands.’”⁴²⁹ Interpreting the statute as prohibiting FWS from ever acting contrary to state law would leave the state “free to manage and regulate the [refuge] in a manner the FWS deemed incompatible with the [refuge’s] purpose.”⁴³⁰ The *Wyoming* court found it “highly unlikely . . . that Congress would carefully craft the substantive provisions of the [Improvement Act] to grant authority to the FWS to manage the [refuge] and promulgate regulations thereunder and then essentially nullify those provisions and regulations with a single sentence.”⁴³¹ The *Audubon* court agreed, stating “the first sentence of the savings clause was not meant to eviscerate the primacy of federal authority over [National Wildlife Refuge] management.”⁴³² To the extent that state law conflicts with or undermines statutory requirements or federal objectives, it is preempted.⁴³³ The Department of the Interior has adopted this cooperative federalism interpretation of the savings clause as well.⁴³⁴

v. Compatibility Determinations

The compatibility determination forms the central criterion for determining whether or not actions will be allowed to proceed on refuge lands and therefore is the key mechanism in implementing the statute’s goal of conservation. A compatible use is one that “in the sound professional judgment of [FWS] will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”⁴³⁵ In implementing this provision, FWS must consider direct, indirect, and cumulative impacts of the proposed use.⁴³⁶ However, actions categorized as

⁴²⁹ *Wyoming*, 279 F.3d at 1234 (omission in original) (quoting 16 U.S.C. § 668dd(a)(2)).

⁴³⁰ *Id.*

⁴³¹ *Id.* at 1234–35 (citation omitted); see *Geier v. Am. Honda Motor Co.*, 529 U.S. 861, 870 (2000) (“[T]his Court has repeatedly ‘decline[d] to give broad effect to savings clauses where doing so would upset the careful regulatory scheme established by federal law.’” (second alteration in original) (quoting *United States v. Locke*, 529 U.S. 89, 106–07 (2000))).

⁴³² *Nat’l Audubon Soc’y*, 307 F.3d 835, 854 (9th Cir.), *amended on denial of reh’g*, 312 F.3d 416 (9th Cir. 2002).

⁴³³ *Id.*; see *Sch. Bd. of Avoyelles Par. v. U.S. Dep’t of Interior*, 647 F.3d 570, 582 (5th Cir. 2011) (finding that Louisiana law was in direct conflict with Property Clause and the National Refuge Act and was therefore pre-empted insofar as the Louisiana statute—allowing owner of estate that has no access to public road to claim right of passage over neighboring property—“would permit the School Board to enter, use, or otherwise occupy Refuge lands in violation of FWS regulations”).

⁴³⁴ 43 C.F.R. § 24.4(e) (2016).

⁴³⁵ 16 U.S.C. § 668ee(1) (2012); 50 C.F.R. § 25.12(a) (2016).

⁴³⁶ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. 62,484, 62,489 (Oct. 18, 2000).

"refuge management activity" do not require compatibility determinations,⁴³⁷ though refuge management activities must be actions in furtherance of the system mission or refuge purposes and so are inherently compatible.⁴³⁸ State wildlife management activities may be considered "refuge management activities" if they are taken "pursuant to a cooperative agreement between the State and [FWS] where the Refuge Manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission."⁴³⁹ Because compatibility determinations must be made using "sound professional judgment,"⁴⁴⁰ the *Wyoming* court found that a reviewing court has "law to apply," and the determinations are reviewable in court.⁴⁴¹

In conclusion, Congress delegated to FWS the responsibility to manage the national wildlife refuges in accordance with the specific requirements laid out in both the Refuge Improvement Act and the establishment legislation for individual refuges. Ultimately, it is up to refuge managers to determine whether it is "practicable" and "consistent" for state laws to be applied on refuge lands.⁴⁴² As the *Wyoming* court stated: "The first sentence of the saving clause does not deny the FWS, where at odds with the State, the authority to make a binding decision bearing upon the 'biological integrity, diversity, and environmental health of the System.'"⁴⁴³ Both the compatibility requirement and the mandate to promote biological integrity, diversity, and environmental health impose legally enforceable restrictions and obligations on FWS that cannot be cast aside at the request of states.

4. The National Forest System

a. The 1897 Organic Act

USFS's 1897 "Organic Act"⁴⁴⁴ authorizes the establishment of national forests.⁴⁴⁵ It states in part that "[n]o national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."⁴⁴⁶ The law also authorizes USFS to regulate "the occupancy

⁴³⁷ *Id.* at 62,488; U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 1, GENERAL OVERVIEW OF WILDERNESS STEWARDSHIP POLICY § 1.5(V) (2008) [hereinafter FWS WILDERNESS POLICY].

⁴³⁸ 50 C.F.R. § 25.12(a); Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,489; see Joly, *supra* note 275, at 45–46.

⁴³⁹ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,488.

⁴⁴⁰ 16 U.S.C. § 668ee(1).

⁴⁴¹ *Wyoming*, 279 F.3d 1214, 1237 (10th Cir. 2002).

⁴⁴² FREYFOGLE & GOBLE, *supra* note 292, at 215.

⁴⁴³ *Wyoming*, 279 F.3d at 1234 (quoting 16 U.S.C. § 668dd(a)(4)(B)).

⁴⁴⁴ Act of June 4, 1897, ch. 2, 30 Stat. 11, 34–36 (codified as amended at 16 U.S.C. §§ 473–482, 551 (2012)).

⁴⁴⁵ 16 U.S.C. § 475.

⁴⁴⁶ *Id.*

and use" of the national forests and "to preserve the forests thereon from destruction."⁴⁴⁷

The Organic Act is silent on fish and wildlife management on national forests. In an early wildlife decision, however, the Supreme Court found USFS to have broad powers in protecting the national forests (in this case the Kaibab) from damage inflicted by deer in northern Arizona.⁴⁴⁸ The power of the United States, said the Court, to "protect its lands and property does not admit of doubt, the game laws of any other statute of the state to the contrary notwithstanding."⁴⁴⁹

b. The Multiple-Use Sustained-Yield Act of 1960

In 1960, Congress passed the Multiple-Use Sustained-Yield Act⁴⁵⁰ (MUSYA). For the first time, it was statutorily recognized that USFS had some responsibility to consider fish and wildlife values on the national forests.⁴⁵¹ MUSYA states in pertinent part: "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."⁴⁵² This language does not require USFS to conserve wildlife in any specific way, only to consider wildlife and fish in the context of multiple-use decision making. As defined in the law, multiple use means:

The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various

⁴⁴⁷ See *id.* § 551 ("The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests which may have been set aside or which may be hereafter set aside under the provisions of section 471 of this title, and which may be continued; and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction." (footnote omitted)); see also *Forest Serv. Emps. for Envtl. Ethics v. U.S. Forest Serv.*, 689 F. Supp. 2d 891, 905 (W.D. Ky. 2010) (finding that USFS unlawfully delegated its Organic Act authority in allowing the National Wild Turkey Federation to issue special use permits on forest lands).

⁴⁴⁸ *Hunt*, 278 U.S. 96, 100 (1928).

⁴⁴⁹ *Id.* (citations omitted).

⁴⁵⁰ Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517, 74 Stat. 215 (codified as amended at 16 U.S.C. §§ 528-531).

⁴⁵¹ 16 U.S.C. § 528.

⁴⁵² *Id.* (emphasis added).

resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.⁴⁵³

As the courts generally view it, the multiple-use mandate “breathe[s] discretion at every pore”⁴⁵⁴ and grants USFS wide latitude in determining the “proper mix of uses” for national forest lands.⁴⁵⁵ In *Perkins v. Bergland*, the plaintiffs argued that MUSYA contained standards that cabined USFS’s discretion over the proper number of grazing permits to protect the public land from damage.⁴⁵⁶ The Ninth Circuit disagreed:

These sections of MUSYA contain the most general clauses and phrases. For example, the agency is “directed” in section 529 to administer the national forests “for multiple use and sustained yield of the several products and services obtained therefrom,” with “due consideration [to] be given to the relative values of the various resources in particular areas.” This language, partially defined in section 531 in such terms as “that [which] will best meet the needs of the American people” and “making the most judicious use of the land,” can hardly be considered concrete limits upon agency discretion. Rather, it is language which “breathe[s] discretion at every pore.” What appellants really seem to be saying when they rely on the multiple-use legislation is that they do not agree with the Secretary on how best to administer the forest land on which their cattle graze. While this disagreement is understandable, the courts are not at liberty to break the tie by choosing one theory of range management as superior to another.⁴⁵⁷

Since *Perkins v. Bergland*, the courts have consistently found that USFS has broad discretion under the multiple-use framework.⁴⁵⁸ This includes *Wyoming v. U.S. Department of Agriculture*, where the Tenth Circuit upheld the 2001 Roadless Rule⁴⁵⁹ over challenges that the Rule failed to satisfy the statutory multiple-use mandate because it precluded timber harvesting in

⁴⁵³ *Id.* § 531(a).

⁴⁵⁴ *Perkins v. Bergland*, 608 F.2d 803, 806 (9th Cir. 1979) (alteration in original) (quoting *Strickland v. Morton*, 519 F.2d 467, 469 (9th Cir. 1975)).

⁴⁵⁵ *Wyoming v. U.S. Dep’t of Agric.*, 661 F.3d 1209, 1268 (10th Cir. 2011).

⁴⁵⁶ *Perkins*, 608 F.2d at 806.

⁴⁵⁷ *Id.* at 806–07 (alterations in original) (citations and footnotes omitted).

⁴⁵⁸ See, e.g., *Cal. Forestry Ass’n v. Bosworth*, No. 2:05-cv-00905-MCE-GGH, 2008 WL 4370074, at *4 (E.D. Cal. Sept. 24, 2008); *Pac. Rivers Council v. U.S. Forest Serv.*, No. 2:05-cv-00953-MCE-GGH, 2008 WL 4291209, at *16–17 (E.D. Cal. Sept. 18, 2008), *aff’d in part and rev’d in part*, 689 F.3d 1012 (9th Cir. 2012); *California ex rel. Lockyer v. U.S. Dep’t of Agric.*, No. 2:05-cv-0211-MCE-GGH, 2008 WL 3863479, at *7–8 (E.D. Cal. Aug. 19, 2008), *aff’d sub nom.*, *Sierra Forest Legacy v. Sherman*, 646 F.3d 1161 (9th Cir. 2011); *Nat. Res. Def. Council, Inc. v. U.S. Forest Serv.*, 634 F. Supp. 2d 1045, 1058 (E.D. Cal. 2007); *Clinch Coal v. Damon*, 316 F. Supp. 2d 364, 378 (W.D. Va. 2004); *Sierra Club v. Marita*, 845 F. Supp. 1317, 1328 (E.D. Wis. 1994), *aff’d*, 46 F.3d 606 (7th Cir. 1995); *Wind River Multiple-Use Advocates v. Espy*, 835 F. Supp. 1362, 1372 (D. Wyo. 1993), *aff’d*, 85 F.3d 641 (10th Cir. 1996); *Big Hole Ranchers Ass’n v. U.S. Forest Serv.*, 686 F. Supp. 256, 264 (D. Mont. 1988).

⁴⁵⁹ *Special Areas; Roadless Area Conservation*, 66 Fed. Reg. 3244 (Jan. 12, 2001).

certain areas.⁴⁶⁰ The court reaffirmed MUSYA's discretionary nature and found that, while the Rule did not permit timber harvesting, it permitted other multiple uses, such as "outdoor recreation," "watershed," and "wildlife and fish purposes."⁴⁶¹

A relatively short and simple savings clause is also provided in MUSYA: "Nothing herein shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish on the national forests."⁴⁶² However, as noted above, in *California Coastal Commission v. Granite Rock Co.*, the Supreme Court held that federal law preempted the extension of state land use plans onto national forest lands because the savings clause merely indicates that ordinary principles of preemption govern such disputes.⁴⁶³ By the same token, contradictory state regulation of wildlife in the national forests would be preempted despite the savings clause.⁴⁶⁴

c. The National Forest Management Act of 1976

Born out of the timber clear-cutting controversies of the 1960s and 1970s, NFMA was passed in order to better balance timber management, resource use, and environmental protection.⁴⁶⁵ Unlike the highly discretionary Organic Act and MUSYA, NFMA provides substantive and procedural planning requirements, goals, and constraints on the agency, including obligations for managing fish and wildlife.⁴⁶⁶ NFMA requires the writing of land and resource management plans (LRMPs or forest plans) by every national forest and grassland in the National Forest System (NFS).⁴⁶⁷

NFMA created a three-tiered regulatory approach to planning.⁴⁶⁸ At the highest level, national-level NFMA regulations govern the development and revision of second-tier forest plans.⁴⁶⁹ Forest plans typically make zoning and suitability decisions, and limit and regulate various activities within a forest area, therefore acting as a gateway through which subsequent project-level proposals must pass.⁴⁷⁰ Forest plans also include long-term goals and desired

⁴⁶⁰ *Wyoming*, 661 F.3d at 1267-69; accord *Am. Whitewater v. Tidwell*, 959 F. Supp. 2d 839, 863 (D.S.C. 2013), *aff'd*, 770 F.3d 1108 (4th Cir. 2014); *Ark Initiative v. Tidwell*, 816 F.3d 119, 128 (D.C. Cir.), *cert. denied*, 137 S. Ct. 301 (2016).

⁴⁶¹ *Wyoming*, 661 F.3d at 1268-69 (quoting 16 U.S.C. § 528 (2012)).

⁴⁶² 16 U.S.C. § 528.

⁴⁶³ *Granite Rock Co.*, 480 U.S. 572, 585, 593-94 (1987).

⁴⁶⁴ *Hunt*, 278 U.S. 96, 100 (1928) (upholding federal removal of deer from the Kaibab National Forest to protect the forest from damage caused by overgrazing, despite objections from the state).

⁴⁶⁵ 16 U.S.C. § 1600.

⁴⁶⁶ See *id.* §§ 1603-1604; 36 C.F.R. § 219.1 (2016).

⁴⁶⁷ 16 U.S.C. § 1604(a).

⁴⁶⁸ *Id.* § 1604. For a more elaborate explanation of this tiered approach, see *Citizens for Better Forestry v. U.S. Department of Agriculture*, 341 F.3d 961, 965-66 (9th Cir. 2003).

⁴⁶⁹ *Citizens for Better Forestry*, 341 F.3d at 965 (citing 16 U.S.C. § 1604(g)).

⁴⁷⁰ Scott W. Hardt, *Federal Land-Use Planning and Its Impact on Resource Management Decisions*, in *PUBLIC LAND LAW II* (Rocky Mountain Mineral Law Found., Special Inst. 1997).

conditions of the land and resources.⁴⁷¹ Site-specific projects make up the third tier of planning.⁴⁷² Any such proposed use of a national forest is subject to the requirement in NFMA that “[r]esource plans and permits, contracts, and other instruments for use and occupancy of National Forest System lands shall be consistent with” the applicable forest plan.⁴⁷³ Thus, to the extent that states are subject to USFS authority, that authority must be exercised in conformance with the provisions in the current forest plan.

i. NFMA and Wildlife

One of NFMA’s most powerful provisions is its wildlife diversity mandate.⁴⁷⁴ It requires that forest plans “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁴⁷⁵ According to Wilkinson and Anderson’s authoritative history of NFMA’s development, the diversity provision was meant to require “[USFS] planners to treat the wildlife resource as a controlling, co-equal factor in forest management and, in particular, as a substantive limitation on timber production.”⁴⁷⁶ Regulations implementing NFMA address requirements for diversity in greater detail.⁴⁷⁷ If state wildlife management actions occur on national forest lands they must be considered in this statutory and regulatory context, and may be subject to preemption based on USFS’s authority and obligations for wildlife diversity.⁴⁷⁸

Most “first-generation” forest plans were written pursuant to the 1982 NFMA regulations. Those regulations required that “[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”⁴⁷⁹ While this language emphasized management of habitat, the regulation also established a minimum population threshold, at least in concept, by defining “viable population” as “one which has the estimated numbers and distribution of

⁴⁷¹ See generally Michael J. Gippert & Vincent L. DeWitte, *The Nature of Land and Resource Management Planning Under the National Forest Management Act*, 3 ENVTL. LAW. 149 (1996) (discussing the various planning processes under NFMA); see also *Ohio Forestry Ass’n v. Sierra Club*, 523 U.S. 726, 729 (1998) (describing the nature of forest plans).

⁴⁷² *Citizens for Better Forestry*, 341 F.3d at 966.

⁴⁷³ 16 U.S.C. § 1604(i).

⁴⁷⁴ See generally Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service’s 2012 Planning Rule*, 77 J. WILDLIFE MGMT. 428 (2013) (exploring the broad implications for wildlife management under the 2012 Planning Rule).

⁴⁷⁵ 16 U.S.C. § 1604(g)(3)(B).

⁴⁷⁶ CHARLES F. WILKINSON & H. MICHAEL ANDERSON, *LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS* 296 (1987).

⁴⁷⁷ See, e.g., National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026, 43,050 (Sept. 30, 1982) (to be codified at 36 C.F.R. pt. 219).

⁴⁷⁸ See, e.g., 36 C.F.R. § 219.26 (2016) (discussing the requirements for pursuing and maintaining ecological diversity).

⁴⁷⁹ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19); see, e.g., *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401, 1404–05 (9th Cir. 1996) (applying viability regulations to northern spotted owl).

reproductive individuals to insure its continued existence is well distributed in the planning area.⁴⁸⁰

Existing forest plans will be revised (many during the next decade) and amended under new NFMA implementing procedures codified in the 2012 Planning Rule.⁴⁸¹ They include a different set of substantive requirements for management of wildlife. For ESA-listed species, forest plan components (e.g., desired future conditions, objectives, standards, and guidelines) must provide the "ecological conditions necessary to[] contribute to" their recovery.⁴⁸² For other at-risk species, referred to as species of conservation concern (SCC), forest plan components must provide the "ecological conditions necessary to . . . maintain a viable population of each species of conservation concern within the plan area."⁴⁸³ There is an exception for SCC management: where population viability is beyond the authority of USFS or capability of the land, USFS must coordinate to the extent practicable with others having management authority over lands relevant to a larger population.⁴⁸⁴

The 2012 Planning Rule defines "ecological conditions" to include "habitat and other influences on species and the environment."⁴⁸⁵ Other influences include "human uses."⁴⁸⁶ The Rule defines "viable population" as "[a] population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments."⁴⁸⁷ Like its predecessor, the 2012 Planning Rule thus establishes population levels for at-risk species as a goal, which is to be achieved by providing ecological conditions and regulating human uses.

Forest plans may be considered as "regulatory mechanisms," as defined by the ESA, during the listing process and may be a basis for not listing a species.⁴⁸⁸ Regulations of the United States Department of Agriculture

⁴⁸⁰ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19).

⁴⁸¹ National Forest System Land Management Planning, 77 Fed. Reg. 21,162 (Apr. 9, 2012).

⁴⁸² 36 C.F.R. § 219.9(b)(1).

⁴⁸³ *Id.* Agency planning policy requires that species identified by states as being at risk be considered as potential SCC. U.S. FOREST SERV., FOREST SERVICE HANDBOOK: LAND MANAGEMENT PLANNING HANDBOOK § 1909.12 (2013).

⁴⁸⁴ 36 C.F.R. § 219.9(b)(2).

⁴⁸⁵ *Id.* § 219.19.

⁴⁸⁶ *Id.*

⁴⁸⁷ *Id.* § 219.49.

⁴⁸⁸ *See* Greater Yellowstone Coal, Inc. v. Servheen, 665 F.3d 1015, 1030–32 (9th Cir. 2011) (finding forest plan direction was properly considered a valid regulatory mechanism for providing protection for grizzly bears). The decision to list Canada lynx as a threatened species was based largely on the lack of regulatory mechanisms in federal plans. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,074 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17) ("Therefore, amendment of Forest Plans to provide protection for lynx and lynx habitat is needed to conserve habitat for lynx and its prey on Federal forest lands. Without such amendments, the species is threatened."). The decision to not list the greater sage grouse was based largely on plans for federal lands that conserved the species. *See* Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to

(USDA) require USFS—and other USDA agencies—to “avoid actions which may cause a species to become threatened or endangered.”⁴⁸⁹ Under current plans and policies, species identified as “sensitive” were so designated in part to avoid their listing under the ESA,⁴⁹⁰ and agency actions may not create “significant trends towards federal listing.”⁴⁹¹ Current forest plans must ensure that viable populations of sensitive species are maintained.⁴⁹² The relationship of newly identified SCC and the ESA has not been as clearly articulated, but their role in developing adequate forest plan regulatory mechanisms should be similar.

When forest plans are amended or revised, they are also subject to the substantive requirements of the ESA for listed species.⁴⁹³ This means that they cannot jeopardize the continued existence of listed species,⁴⁹⁴ or destroy or adversely modify any critical habitat that has been designated,⁴⁹⁵ or result in prohibited incidental take.⁴⁹⁶ Forest plans may also be viewed as the primary means by which the agency is “carrying out programs for the conservation of” listed species, in accordance with section 7(a)(1) of the ESA.⁴⁹⁷

When it prepares forest plans under NFMA, USFS may include plan components that govern activities affecting wildlife.⁴⁹⁸ These plan components may include both desired ecological conditions and restrictions

List Greater Sage-Grouse (*Centrocercus urophasianus*) as an Endangered or Threatened Species, 80 Fed. Reg. 59,858, 59,858 (Oct. 2, 2015) (to be codified at 50 C.F.R. pt. 17).

⁴⁸⁹ U.S. DEP’T OF AGRIC., NO. 9500-004, DEPARTMENTAL REGULATION: FISH AND WILDLIFE POLICY § 1(d) (2008), <https://perma.cc/7T2X-FD7T>.

⁴⁹⁰ U.S. FOREST SERV., FOREST SERVICE MANUAL [FSM] § 2670.22(1) (2005).

⁴⁹¹ *Id.* § 2670.32(4).

⁴⁹² *Id.* § 2672.41 (2009).

⁴⁹³ *See, e.g., Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1086–88 (9th Cir. 2015), *cert. denied*, 137 S. Ct. 293 (2016).

⁴⁹⁴ *See, e.g., Res. Ltd. v. Robertson*, 35 F.3d 1300, 1304 n.3 (9th Cir. 1993) (finding FWS conditioned its “no jeopardy” conclusion on the USFS’s continued adherence to grizzly bear guidelines).

⁴⁹⁵ *See Cottonwood*, 789 F.3d at 1088 (reinitiation of consultation on forest plans required after designation of critical habitat for Canada lynx).

⁴⁹⁶ Recently settled litigation involving the Superior National Forest Plan claimed that USFS is responsible for the take of Canada lynx resulting from hunting and trapping on the national forest. Complaint for Declaratory and Injunctive Relief at 2, 6, Ctr. for Biological Diversity v. Tidwell, No. 1:16-cv-01049-TSC (D.D.C. June 6, 2016).

⁴⁹⁷ 16 U.S.C. § 1536(a)(1) (2016). The Preamble to the 2012 Planning Rule states that the requirement to contribute to recovery, “will further the purposes of § 7(a)(1) of the ESA, by actively contributing to threatened and endangered species recovery and maintaining or restoring the ecosystems upon which they depend.” National Forest System Land Management Planning, 77 Fed. Reg. 21,162, 21,215 (Apr. 9, 2012) (to be codified at 50 C.F.R. pt. 219). The FWS Handbook for consultation states that a programmatic review based on section 7(a)(1) is appropriate for Federal agency planning and program management documents. U.S. FISH & WILDLIFE SERV. & NAT’L MARINE FISHERIES SERV., CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING CONSULTATION AND CONFERENCE ACTIVITIES UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT 1-1, 5-1 (1998), <https://perma.cc/LN7H-HNNL>.

⁴⁹⁸ *See National Forest System Land and Resource Management Planning*, 47 Fed. Reg. 43,026, 43,044 (Sept. 30, 1982) (to be codified at 36 C.F.R. § 219.11) (listing ecological factors as a planning criteria).

on activities that are likely to adversely affect these conditions.⁴⁹⁹ Such restrictions could be applicable to state actions occurring in a national forest.⁵⁰⁰ However, the 2012 Planning Rule states that plans do not themselves regulate uses by the public, such as hunting and fishing.⁵⁰¹

ii. Wildlife and Special Use Authorization

Several wildlife conflicts playing out in the national forests involve the question of whether or not USFS should authorize a wildlife-focused action by a nonfederal actor. For example, states may be engaged in introducing new species on national forest lands, or limiting or removing species that are undesirable from the state's perspective. Questions may arise about USFS's role in these state actions and the applicability of federal law to them.

USFS implements forest plans by authorizing specific uses that promote achievement of the desired outcomes, such as plant and animal diversity and viable populations.⁵⁰² It may also authorize activities that would not necessarily promote these outcomes.⁵⁰³ This is often the case with requests for special use authorizations by applicants for permits, which could include state and local governments.⁵⁰⁴ A forest plan may include mandatory requirements (e.g., standards or guidelines) applicable to the issuance of such permits.⁵⁰⁵

The objective of the USFS special uses program is to "[a]uthorize and manage special uses of National Forest System lands in a manner which protects natural resources and public health and safety, consistent with [forest plans]."⁵⁰⁶ Permits may be granted only if "[t]he proposed use cannot reasonably be accommodated on non-National Forest System lands."⁵⁰⁷

Almost all uses of NFS lands, improvements, and resources are designated "special uses."⁵⁰⁸ Wildlife management activities on national

⁴⁹⁹ *See id.*

⁵⁰⁰ A conflict between a state action and NFMA's diversity requirement could possibly arise where a state game species is considered at-risk by USFS. This is the case for bighorn sheep, where the State of Wyoming passed a law authorizing removal of bighorn sheep if USFS were to eliminate domestic sheep grazing. WYO. STAT. ANN. § 11-19-604(e) (2017); *see also* Idaho Wool Growers Ass'n v. Vilsack, 7 F. Supp. 3d 1085, 1092 (D. Idaho 2014) (finding USFS's forest plan "committed 'no clear error in judgment'" by reducing domestic sheep grazing in order to prevent disease transmission to bighorn sheep), *aff'd*, 816 F.3d 1095 (9th Cir. 2016).

⁵⁰¹ 36 C.F.R. § 219.2(b)(2) (2016). A forest plan direction to limit public uses must be implemented by a closure order, pursuant to *id.* § 261.50, and may include special closures to protect wildlife pursuant to *id.* § 261.53(a).

⁵⁰² *Id.* § 219.9.

⁵⁰³ *Id.* § 219.9(b)(2).

⁵⁰⁴ *Id.* § 251.50(a).

⁵⁰⁵ *Id.* § 251.52.

⁵⁰⁶ FSM § 2702 (2011).

⁵⁰⁷ *Id.* § 2703.2(2)(b).

⁵⁰⁸ 36 C.F.R. § 251.50(a), (e) (some uses are not considered "special uses" because they are regulated by separate authorities); *see also* FSM § 2701.1 (listing the various authorities for different kinds of special uses).

forests by nonfederal parties would be considered special uses.⁵⁰⁹ Before conducting a special use, individuals or entities must obtain a special use authorization from the authorized officer, unless that requirement is waived by regulation.⁵¹⁰ There is no waiver provision that necessarily allows state actions taken on NFS lands without a permit. A special use authorization is normally not required for hunting or fishing.⁵¹¹ However, USFS may manage public recreation of any kind by issuing a closure order.⁵¹²

iii. Coordination with State and Local Governments

NFMA includes a requirement to coordinate with the land and resource management planning processes of state and local governments in the development of forest plans.⁵¹³ The 2012 Planning Rule requires review of the planning and land use policies of state and local governments, consideration of the objectives of these policies, and opportunities to reduce conflicts.⁵¹⁴ However, it explicitly does not permit the responsible USFS official to “conform the management to meet non-[USFS] objectives or policies.”⁵¹⁵

The 2012 Planning Rule also requires the official responsible for forest planning to “encourage States, counties, and other local governments to seek cooperating agency status in the NEPA process for development, amendment, or revision of a plan.”⁵¹⁶ The role of such cooperating agencies is to assist in the environmental review process.⁵¹⁷ NEPA also includes a requirement to “cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements.”⁵¹⁸ In addition, NEPA documents must identify any inconsistencies with state and local plans or laws, and “describe the extent to which the agency would reconcile its proposed action with the plan or

⁵⁰⁹ 36 C.F.R. § 251.50(a).

⁵¹⁰ *Id.* § 251.50(c)–(e) (the requirement for a special use permit is waived for most noncommercial recreational activities not involving a large organized group, most forms of travel on NFS roads, uses with nominal effects, and uses regulated by a state agency or another federal agency in a manner that adequately protects national forest lands and resources).

⁵¹¹ *Id.* § 251.50(c).

⁵¹² *Id.* § 261.50; *see also id.* § 261.70(a)(4) (among other reasons, closure orders are authorized for the “[p]rotection of threatened, endangered, rare, unique, or vanishing species of plants, animals, birds or fish, or special biological communities”).

⁵¹³ *See* NFMA, 16 U.S.C. § 1604(a) (2012) (providing that, “as appropriate,” forest plan revisions should be “coordinated with the land and resource management planning processes of State and local governments and other Federal agencies”); *see also* 36 C.F.R. § 219.4(b)(1) (requiring NFMA officials to coordinate with the “equivalent and related planning efforts” of Tribes, agencies, and state and local governments).

⁵¹⁴ 36 C.F.R. § 219.4(b)(2).

⁵¹⁵ *Id.* § 219.4(b)(3); *see, e.g.*, Letter from USDA Forest Serv., Intermountain Region, to Matt Mead, Governor of Wyo. (Feb. 20, 2015) (on file with authors) (Bridger-Teton National Forest refused to “adopt” a Wyoming plan for bighorn sheep, describing it only as “a valuable framework”).

⁵¹⁶ 36 C.F.R. § 219.4(a)(1)(iv).

⁵¹⁷ *Id.* § 219.4(a)–(b).

⁵¹⁸ 40 C.F.R. §§ 1501.6, 1506.2(b) (2016).

law.⁵¹⁹ There is no general NEPA requirement to coordinate decision-making processes or for USFS decisions to be consistent with state plans.

In conclusion, although it is clear that USFS must coordinate the development of LRMPs with tribal, state, and local governments, this coordination requirement does not give such nonfederal entities equal footing in managing NFS lands, nor does it require USFS to act and manage NFS lands consistent with these nonfederal plans.

d. U.S. Forest Service Cooperation in Wildlife Management

Federal regulations applicable to USFS require cooperation among wildlife management agencies:

The Chief of [USFS], through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of [USFS] will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.⁵²⁰

USFS directives provide additional coordination guidance.⁵²¹ In particular, they require development of a written Memorandum of Understanding with each state involving policies or procedural matters.⁵²²

Hunting, fishing, and trapping on NFS lands are subject to state fish and wildlife laws and regulations, unless those regulations conflict with federal laws or they would permit activities that conflict with land and resource management responsibilities of USFS or that are inconsistent with direction in forest plans.⁵²³ Memorandums with state fish and wildlife agencies must

⁵¹⁹ *Id.* § 1506.2(d) ("To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.").

⁵²⁰ 36 C.F.R. § 241.2.

⁵²¹ *See* FSM § 2671.1 (2005).

⁵²² *Id.* § 2611.1 (1990).

⁵²³ *Id.* § 2643.1 (1995); *see, e.g.,* *Meister v. U.S. Dep't of Agric.*, 623 F.3d 363, 379–80 (6th Cir. 2010) (stating that it is not beyond USFS's authority to consider using a forest plan to prohibit gun hunting in areas to be managed for non-motorized recreation); *La. Sportsmen All. v. Vilsack*, 984 F. Supp. 2d 600, 611 (W.D. La. 2013) (holding that a forest plan may prohibit hunting deer with dogs to reduce conflicting uses), *rev'd on other grounds*, 583 F. App'x 379 (5th Cir. 2014); *Ctr. for Biological Diversity v. U.S. Forest Serv.*, No. CV-12-8176-PCT-SMM, 2013 WL 3335234,

"recognize the role of [USFS] in cooperating in the development of State fish and wildlife laws and regulations, especially those addressing hunting, fishing, and trapping as they would apply to occupancy and use of National Forest System lands."⁵²⁴

"Introductions or stocking of species may be made to restore resources following environmental changes, [and] to provide recreation opportunities where reproduction is insufficient to meet demand."⁵²⁵ Authority is also provided to "restore locally extinct indigenous species, to recover threatened and endangered species, and to introduce new species in coordination with State and Federal agencies."⁵²⁶ A prior joint agreement with appropriate state fish and wildlife agencies is needed for any introductions.⁵²⁷ "Such MOU's must document agreements on each fish and wildlife translocation project and appropriate environmental documentation."⁵²⁸ When stocking and reintroductions occur, USFS "has the responsibility to prevent damage to resources occurring on [NFS] lands" and comply with the ESA and Wilderness Act.⁵²⁹

State cooperative agreements are found in MOUs that are appended to the USFS Manual as regional supplements that pertain to the states found in each region. For example, an MOU between Idaho and USFS commits USFS to considering state goals when developing its forest plans.⁵³⁰ It also recognizes that special use permits may be needed for some state actions on federal lands.⁵³¹ The MOU requires prior consultation (but not permission) for use of chemicals and for transplants or introductions of wildlife or fish "with sufficient lead time to permit joint field investigations regarding the effects of such programs on National Forest System lands."⁵³² It also contains a savings clause regarding state and federal authorities.⁵³³

e. Special Designated Areas Managed by the U.S. Forest Service

The laws and regulations reviewed above generally apply throughout the NFS, but the System also includes special areas, designated by Congress or the President, that may include additional authority and direction for

*3 (D. Ariz. July 2, 2013) (determining that USFS has authority to regulate the use of lead bullets to protect California condors), *rev'd on other grounds*, 640 F. App'x 617 (9th Cir. 2016).

⁵²⁴ FSM § 2643.

⁵²⁵ *Id.* § 2640.3(3); *see also* Exec. Order No. 11,987, 3 C.F.R. § 116 (1977) (generally restricting federal agencies from introducing exotic species to lands they administer and encouraging the prevention of introductions by other levels of government and by private citizens).

⁵²⁶ FSM § 2640.3. "The State has the responsibility to make the determination as to which wildlife and fish species are native or indigenous." *Id.* § 2641.

⁵²⁷ *Id.* §§ 2640.41–42.

⁵²⁸ *Id.* § 2641.

⁵²⁹ *Id.*

⁵³⁰ *Id.* § 1561.2(A)(3) (1994).

⁵³¹ *Id.* § 1561.2(A)(6)–(7).

⁵³² *Id.* § 1561.2(B)(6)–(8).

⁵³³ *Id.* § 1561.2(C)(12).

managing wildlife. These include an assortment of USFS-administered national recreation areas, conservation areas, and other specially designated landscapes.⁵³⁴ These include national monuments that are established by the President using the Antiquities Act.⁵³⁵ A recent national monument established on NFS lands (which also includes BLM lands) is the Sand to Snow National Monument in California.⁵³⁶ President Obama's Proclamation establishing the monument emphasizes the area's "remarkable species richness that makes it one of the most biodiverse areas in southern California," that it "is home to 12 federally listed threatened and endangered animal species" and "frequented by over 240 species of birds," and that the area's "intersection of mountains makes th[e] area a critical bridge for wildlife traversing the high elevations of southern California's desert landscape."⁵³⁷ The Proclamation orders USFS and BLM to use "their respective applicable legal authorities" to implement these wildlife-focused purposes of the national monument and includes a savings clause stating that the Proclamation does nothing "to enlarge or diminish the jurisdiction of the State of California, including its jurisdiction and authority with respect to fish and wildlife management."⁵³⁸

5. Public Lands Managed by the Bureau of Land Management

a. Federal Land Policy Management Act (1976)

Of most relevance to wildlife on public lands managed by BLM is the Federal Land Policy Management Act of 1976. FLPMA is considered to be BLM's Organic Act because it consolidated and articulated the agency's mission and management responsibilities.⁵³⁹ Its full history is beyond the purview of this Article, but it is commonly recognized that the Act was designed, in part, to correct the agency's historic practice of prioritizing livestock grazing and mining as the dominant uses of public lands.⁵⁴⁰ In FLPMA, Congress declared that fish and wildlife values were to be balanced with other resources and uses of the public lands, and expressed a policy that:

⁵³⁴ For a comprehensive listing of "special recreation and conservation overlays," see GEORGE CAMERON COGGINS ET AL., *FEDERAL PUBLIC LAND AND RESOURCES LAW* 946-47 (6th ed. 2007); NAT. RES. LAW CTR., *PROTECTIVE DESIGNATIONS ON FEDERAL LANDS: CASE STUDIES OF NATIONAL CONSERVATION AREAS, NATIONAL MONUMENTS, NATIONAL PARKS, NATIONAL RECREATION AREAS, AND WILDERNESS AREAS 2* (2004); Martin Nie & Michael Fiebig, *Managing the National Forests Through Place-Based Legislation*, 37 *ECOLOGY L.Q.* 1, 15-23 (2010).

⁵³⁵ Antiquities Act of 1906, 54 U.S.C. §§ 320301-320303 (Supp. III 2016); see *id.* § 320301.

⁵³⁶ Proclamation No. 9396, 81 Fed. Reg. 8379 (Feb. 18, 2016).

⁵³⁷ *Id.* at 8380.

⁵³⁸ *Id.* at 8382-83.

⁵³⁹ See DEBRA L. DONAHUE, *THE WESTERN RANGE REVISITED: REMOVING LIVESTOCK FROM PUBLIC LANDS TO CONSERVE NATIVE BIODIVERSITY* 203 (1999); JAMES R. SKILLEN, *THE NATION'S LARGEST LANDLORD: THE BUREAU OF LAND MANAGEMENT IN THE AMERICAN WEST* 102 (2009).

⁵⁴⁰ See DONAHUE, *supra* note 539, at 206-07; SKILLEN, *supra* note 539, at 102-03.

[T]he public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.⁵⁴¹

FLPMA also codified a multiple-use mandate,⁵⁴² which is defined as follows:

[T]he management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, *wildlife and fish*, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.⁵⁴³

Three components of this definition are essential to understanding BLM's multiple-use mandate. First, it means that some lands may be used for less than all of the possible resources and values present in an area. In fact, some land may be used for only one resource or value. Second, "multiple use" means that some lands may be used for purposes that do not return the greatest profit to individuals, corporations, or federal, state, or local governments. Third, the diverse resources for which BLM is given direction to manage include "wildlife and fish," and not just fish and wildlife *habitat*. We return to this issue in Part IV.A.

Similar to other federal land laws, Congress recognized the national interest in these public lands and wanted their management to be based on a systematic inventory and an informed land use planning process. To this end, FLPMA requires the preparation of resource management plans.⁵⁴⁴ In preparing these plans, the agency must consider such things as the "present and potential uses of the public lands[,] . . . the relative scarcity of the values involved," to "rely, to the extent it is available, on the inventory of the public

⁵⁴¹ 43 U.S.C. § 1701(a)(8).

⁵⁴² Congress first codified a multiple-use management for BLM in the Classification and Multiple Use Act of 1964, 43 U.S.C. §§ 1411–1418 (1970) (omitted as obsolete in 1976).

⁵⁴³ 43 U.S.C. § 1702(c) (2012) (emphasis added).

⁵⁴⁴ *Id.* § 1712.

lands, their resources, and others values," and "weigh long-term benefits to the public against short-term benefits."⁵⁴⁵

As in the case of the national forests, the multiple-use mandate given to BLM provides a great deal of agency discretion.⁵⁴⁶ But this discretion is not boundless. The agency violates FLPMA if it fails to "engage in any reasoned or informed decisionmaking process" concerning the implementation of multiple use.⁵⁴⁷ FLPMA's multiple-use mandate is also bounded by two additional provisions of FLPMA: 1) the requirement to avoid "permanent impairment . . . [to] the quality of the environment,"⁵⁴⁸ and 2) the requirement that the Secretary of Interior (and hence BLM) must "take any action necessary to prevent unnecessary or undue degradation of the lands."⁵⁴⁹

i. Areas of Critical Environmental Concern

FLPMA requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern" (ACECs).⁵⁵⁰ As defined in FLPMA:

The term "areas of critical environmental concern" means areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, *fish and wildlife resources* or other natural systems or processes, or to protect life and safety from natural hazards.⁵⁵¹

This is a unique provision in federal land law. ACECs are often designated because of the fish and wildlife values associated with them.⁵⁵² Congress, in unambiguous fashion, ordered the agency to *prioritize* the designation and protection of ACECs.⁵⁵³ This means that BLM should be giving ACECs priority for consideration in the planning process and extra

⁵⁴⁵ *Id.* § 1712(c)(4)–(7).

⁵⁴⁶ See, e.g., *Nat. Res. Def. Council, Inc. v. Hodel*, 624 F. Supp. 1045, 1058 (D. Nev. 1985), *aff'd*, 819 F.2d 927 (9th Cir. 1987).

⁵⁴⁷ *Nat'l Wildlife Fed'n*, 140 Interior Dec. 85, 101 (IBLA 1997). For a more complete history of this case and its implications for multiple use, see generally Joseph M. Feller, *The Comb Wash Case: The Rule of Law Comes to the Public Rangelands*, 17 PUB. LAND & RESOURCES L. REV. 25 (1996).

⁵⁴⁸ 43 U.S.C. § 1702(c).

⁵⁴⁹ *Id.* § 1732(b). See generally Roger Flynn, *Daybreak on the Land: The Coming of Age of the Federal Land Policy and Management Act of 1976*, 29 VT. L. REV. 815 (2005) (reviewing the application of this provision as it relates to water, mining, and property rights).

⁵⁵⁰ 43 U.S.C. § 1712(c)(3).

⁵⁵¹ *Id.* § 1702(a) (emphasis added).

⁵⁵² Karin P. Sheldon & Pamela Baldwin, *Areas of Critical Environmental Concern: FLPMA's Unfulfilled Conservation Mandate*, 28 COLO. NAT. RESOURCES ENERGY & ENVTL. L. REV. 1, 28 (2017).

⁵⁵³ Debra L. Donahue, *Federal Rangeland Policy: Perverting Law and Jeopardizing Ecosystem Services*, 22 J. LAND USE & ENVTL. L. 299, 337–38 (2007).

weight in decision making.⁵⁵⁴ As summarized in a recent study: "The legislative history of FLPMA establishes Congress' clear intent to provide for special protection of ACECs and to direct BLM to accord priority for that protection over other multiple uses in the agency's inventory, land designation and planning activities."⁵⁵⁵ The study finds that such prioritization has not taken place and recommends a number of steps be taken to meet FLPMA's mandate. This includes "restor[ing] the visibility and effectiveness of ACECs"—in BLM regulations, policy guidance, and budget justifications—and providing them "the heightened level of protection required by FLPMA."⁵⁵⁶

ii. Bureau of Land Management Regulation and Policy

Three provisions are of particular importance to wildlife management on public lands managed by BLM. The first is the "fundamentals of rangeland health" regulation that requires standards and guidelines to be developed by BLM, including those focused on wildlife habitat.⁵⁵⁷ The regulation requires that "[h]abitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal proposed or candidate threatened and endangered species, and other special status species."⁵⁵⁸

The second is found in the BLM Manual for management of "special status species."⁵⁵⁹ This policy was written pursuant to FLPMA, the ESA, and other laws.⁵⁶⁰ BLM special status species are defined as: "(1) species listed or proposed for listing under the [ESA], and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA."⁵⁶¹ The objectives of the policy are "[t]o conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species," and "[t]o initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."⁵⁶² Candidate species for ESA listing are included in BLM's sensitive species category.⁵⁶³ Furthermore, BLM must address "Bureau sensitive species and their habitats in land use plans and associated NEPA documents."⁵⁶⁴ With

⁵⁵⁴ See *id.* (noting that Congress repeatedly emphasized the "priority" to be given to ACECs).

⁵⁵⁵ Sheldon & Baldwin, *supra* note 552, at 5.

⁵⁵⁶ *Id.* at 61, 63.

⁵⁵⁷ 43 C.F.R. § 4180.1 (2016).

⁵⁵⁸ *Id.* § 4180.1(d).

⁵⁵⁹ BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6840—SPECIAL STATUS SPECIES MANAGEMENT (2008), <https://perma.cc/ME8D-HBTM>.

⁵⁶⁰ *Id.* § 6840.03.

⁵⁶¹ *Id.* § 6840.01.

⁵⁶² *Id.* § 6840.02.

⁵⁶³ *Id.* § 6840.01; see also *id.* at Glossary 5.

⁵⁶⁴ *Id.* § 6840.2A1(B).

respect to implementation-level planning, BLM "should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the Bureau sensitive species policies would no longer be necessary."⁵⁶⁵

The third regulation pertains to the issuance of special recreation permits. Wildlife is implicated when it is the object of a commercial or competitive event.⁵⁶⁶ BLM is obligated to regulate the use and occupancy of public lands,⁵⁶⁷ and its regulations and policy require special recreation permits for "commercial use, organized group activities or events, competitive use, and for use of special areas."⁵⁶⁸ Discretion is provided to the agency over whether to issue a permit based on the following factors:

- (a) Conformance with laws and land use plans,⁵⁶⁹
- (b) Public safety,
- (c) Conflicts with other uses,
- (d) Resource protection,
- (e) The public interest served,
- (f) Whether in the past [the applicant] complied with the terms of [the] permit or other authorization from BLM and other agencies, and
- (g) Such other information that BLM finds appropriate.⁵⁷⁰

BLM may also impose stipulations and conditions on the permit "to meet management goals and objectives and to protect lands and resources and the public interest."⁵⁷¹

⁵⁶⁵ *Id.*

⁵⁶⁶ 43 C.F.R. § 2932.11 (2016) ("[Y]ou must obtain a Special Recreation Permit for: (1) Commercial use, including vending associated with recreational use; or (2) Competitive use."); *see also id.* § 2932.14(b) ("Outfitters and guides providing services to hunters, trappers, or anglers must obtain Special Recreation Permits from BLM. Competitive event operators and organized groups may also need a Special Recreation Permit for these activities.").

⁵⁶⁷ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁵⁶⁸ 43 C.F.R. § 2931.2. A competitive use is defined as "[a]ny organized, sanctioned, or structured use, event, or activity on public land in which 2 or more contestants compete" and either register, enter, or apply for the event and/or use a "predetermined course or area." *Id.* § 2932.5. Commercial use means "recreational use of the public lands and related waters for business or financial gain," and the activity, service, or use is commercial if "[a]ny person, group, or organization makes or attempts to make a profit, receive money, amortize equipment, or obtain goods or services, as compensation from participants in recreational activities occurring on public lands led, sponsored, or organized by that person, group, or organization." *Id.*

⁵⁶⁹ Permits must be consistent with the applicable resource management plan for the area. *See* 43 U.S.C. § 1732(a); 43 C.F.R. § 1610.5-3(a).

⁵⁷⁰ 43 C.F.R. § 2932.26.

⁵⁷¹ *Id.* § 2932.41.

b. The National Landscape Conservation System

BLM is also tasked with managing units within the National Landscape Conservation System (NLCS).⁵⁷² NLCS includes BLM-administered national conservation areas (NCAs) and similar designations, national monuments, and wilderness study areas, and provides direction, either through statute or presidential proclamation, in how to manage individual units.⁵⁷³ It is beyond the scope of this Article to review the full extent and diversity of the NLCS. Importantly, however, most conservation areas and monuments managed by BLM include special provisions, going beyond FLPMA, that pertain to wildlife management and the biological values associated with the designations. For example, a purpose declared by Congress in establishing the Morley Nelson Snake River Birds of Prey NCA in Idaho is to “provide for the conservation, protection, and enhancement of raptor populations and habitats and the natural and environmental resources and values associated therewith.”⁵⁷⁴ Many of these laws also include wildlife savings clauses, some simply stating that nothing in the designation “shall be deemed to enlarge or diminish the jurisdiction” of the state “with respect to fish and wildlife management.”⁵⁷⁵ In 2009, Congress formally recognized and established the NLCS and provided another wildlife-specific savings clause that would serve as a backup if the enabling legislation was silent on the matter.⁵⁷⁶

c. Federal-State Interactions

FLPMA includes a provision encouraging the coordination and consistency of federal and state land use plans:

[T]o the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management

⁵⁷² 16 U.S.C. § 7202(c) (2012).

⁵⁷³ *Id.* § 7202(b). BLM manages roughly 4.1 million acres of NCAs and lands with similar designations, and roughly 9.5 million acres of national monuments. BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL CONSERVATION AREAS AND SIMILAR DESIGNATIONS, <https://perma.cc/XYV3-H4UZ> (last updated Oct. 2016); BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL MONUMENTS, <https://perma.cc/8F7Y-6CNV> (last updated Jan. 2017). Federal wilderness areas are also included in the NLCS, and we address those areas in Part III.B.7.

⁵⁷⁴ 16 U.S.C. § 460iii-2(a)(2).

⁵⁷⁵ *E.g.*, Proclamation No. 7398, 66 Fed. Reg. 7359, 7361 (Jan. 22, 2001).

⁵⁷⁶ Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, 123 Stat. 991 (codified as amended in scattered sections of 7, 16, 33, 36, 42, and 43 U.S.C.)

“Nothing in this chapter shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations, including the regulation of hunting, fishing, trapping and recreational shooting on public land managed by the Bureau of Land Management. Nothing in this chapter shall be construed as limiting access for hunting, fishing, trapping, or recreational shooting.”

16 U.S.C. § 7202(d)(2).

activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans, and shall provide for meaningful public involvement of State and local government officials, both elected and appointed, in the development of land use programs, land use regulations, and land use decisions for public lands, including early public notice of proposed decisions which may have a significant impact on non-Federal lands. Such officials in each State are authorized to furnish advice to the Secretary with respect to the development and revision of land use plans, land use guidelines, land use rules, and land use regulations for the public lands within such State and with respect to such other land use matters as may be referred to them by him. Land use plans of the Secretary under this section *shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.*⁵⁷⁷

This provision provides state governors the opportunity to advise BLM of their positions on draft land use plans. BLM must consider this advice in so-called "consistency reviews."⁵⁷⁸

In short, there are several engagement points for state and local governments to participate in the land use planning process and multiple responsibilities on the part of BLM to respond to state and local concerns. But this entire process is conditioned on federal primacy: that priority be given to federal law and purposes in the land use planning processes. We return to this provision in Part IV.F, as we believe the coordination/consistency provisions of FLPMA provide a constructive opportunity for federal and state governments to plan for the management and conservation of wildlife across political jurisdictions.

FLPMA's savings clause pertaining to wildlife provides additional direction on federal-state interactions regarding wildlife management:

That nothing in this Act shall be construed as authorizing the Secretary concerned to require Federal permits to hunt and fish on public lands or on lands in the National Forest System and adjacent waters or as enlarging or diminishing the responsibility and authority of the States for management of fish and resident wildlife. However, the Secretary concerned may designate areas of public land and of lands in the National Forest System where, and establish periods when, no hunting or fishing will be permitted for reasons of

⁵⁷⁷ 43 U.S.C. § 1712(c)(9) (2012) (emphasis added).

⁵⁷⁸ Resource Management Planning, 81 Fed. Reg. 89,580, 89,666 (Dec. 12, 2016) (to be codified at 43 C.F.R. § 1610.3-3); see *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 721 (10th Cir. 2009) ("A meaningful opportunity to comment is all the regulation requires."); *W. Expl., LLC v. U.S. Dep't of the Interior*, No. 3:15-cv-00491-MMD-VPC, 2017 WL 1237971, at *16 (D. Nev. Mar. 31, 2017) ("The statute and regulations are silent on how detailed or specific BLM needs to be," and that BLM met its obligation to resolve inconsistencies between local plans and federal sage grouse plans "to the extent practical.").

public safety, *administration, or compliance with provisions of applicable law*. Except in emergencies, any regulations of the Secretary concerned relating to hunting and fishing pursuant to this section shall be put into effect only after consultation with the appropriate State fish and game department. Nothing in this Act shall modify or change any provision of Federal law relating to migratory birds or to endangered or threatened species.⁵⁷⁹

This provision was at the center of a dispute involving a proposed wolf hunt on federal lands by the State of Alaska. In *Alaska v. Andrus*,⁵⁸⁰ the United States District Court for the District of Alaska found that this provision of FLPMA, along with the multiple-use mandate, “taken together clearly provide the Secretary with the power to halt the wolf hunt.”⁵⁸¹ Furthermore, said the court, under the power of “[a]dministration,” the Secretary is commanded to manage the public lands under principles of multiple use [and m]ultiple use includes the management of wildlife.”⁵⁸² Although FLPMA grants authority to either permit or prohibit the wolf hunt, this authority, in and of itself, did not trigger NEPA when the agency failed to exercise it because there was no major federal action.⁵⁸³ The NEPA application question was at the heart of two circuit court reviews, both affirming that the non-exercise of power by the Secretary did not trigger NEPA, though the Ninth Circuit seemed to lament that it did “not reach the intriguing questions of statutory construction and application that would lurk in defining the Secretary’s power to supersede the State in managing wildlife.”⁵⁸⁴ We return to the questions unresolved by these courts in Part IV.D.

The Department of the Interior sought to provide more guidance on federal-state relationships through a policy statement in 1983.⁵⁸⁵ In essence, Department of Interior’s Policy simply recognizes some of the principles of wildlife federalism that we covered in Parts II and III.A of the Article, from states as trustees of wildlife to federal constitutional powers to manage

⁵⁷⁹ 43 U.S.C. § 1732(b) (emphasis added).

⁵⁸⁰ 429 F. Supp. 958 (D. Alaska 1977), *aff’d*, 591 F.2d 537 (9th Cir. 1979).

⁵⁸¹ *Id.* at 961–62.

⁵⁸² *Id.* at 962.

⁵⁸³ *Id.* at 963; see NEPA, 42 U.S.C. § 4332(c) (2012); COGGINS & GLICKSMAN, *supra* note 124, § 17:16 (noting that “[i]f federal and state projects are sufficiently interrelated to constitute a single ‘federal action’ for NEPA purposes, state agencies may be enjoined for NEPA violations”).

⁵⁸⁴ *Alaska v. Andrus*, 591 F.2d 537, 538 (9th Cir. 1979). The District of Columbia Circuit reached the same conclusion regarding NEPA, but used language in dicta that was relatively favorable to the state’s authority to manage wildlife. See *Defs. of Wildlife v. Andrus*, 627 F.2d 1238, 1250 (D.C. Cir. 1980) (“We are simply unable to read [FLPMA’s] cautious and limited permission to intervene in an area of state responsibility and authority as imposing such supervisory duties on the Secretary that each state action he fails to prevent becomes a ‘Federal action.’”).

⁵⁸⁵ Department of the Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24). Although the Policy appears in the C.F.R. “as a matter of convenience to the public,” *id.*, it was not subject to the rulemaking requirements of the Administrative Procedure Act, 5 U.S.C. § 553 (2012), and as such does not carry the force of law. *Christensen v. Harris County*, 529 U.S. 576, 587 (2000).

wildlife. For example, the Policy states that "[f]ederal authority exists for specified purposes while State authority regarding fish and resident wildlife remains the comprehensive backdrop applicable in the absence of specific, overriding Federal Law."⁵⁸⁶

The Policy goes further than these fundamental principles of federalism, however, by stating that it is intended "to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife."⁵⁸⁷ In other sections, the Policy recognizes that "[s]tate jurisdiction remains concurrent with Federal authority,"⁵⁸⁸ and asserts that, in passing FLPMA, Congress "recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁵⁸⁹ While the Policy does acknowledge basic constitutional principles pertaining to the Property Clause, Commerce Clause, federal preemption, and treaty-making powers,⁵⁹⁰ it also makes the often-repeated assertion that BLM "has custody of the land itself and the habitat upon which fish and resident wildlife are dependent" and that "[m]anagement of the habitat is a responsibility of the Federal Government,"⁵⁹¹ thereby implying that BLM only has power over the land and not the wildlife that inhabit it.

In Part IV.C, we explain the fundamental problems with the Department of Interior's Policy on federal-state relationships and discuss the implications resulting from this problematic interpretation of law.

6. The Special Case of Alaska

a. Alaska National Interest Lands Conservation Act

Alaska presents a unique situation within the federal public lands system. Alaska includes all of the same land categories and federal laws that exist elsewhere in the country. However, federal land managers in Alaska must also contend with the Alaska National Interest Lands Conservation Act⁵⁹² (ANILCA), which creates new land categories⁵⁹³ and statutory exceptions⁵⁹⁴ that do not exist elsewhere, as well as an overarching system of subsistence management which adds an additional management

⁵⁸⁶ 43 C.F.R. § 24.1(a) (2016).

⁵⁸⁷ *Id.* § 24.2(a).

⁵⁸⁸ *Id.* § 24.3(c).

⁵⁸⁹ *Id.* § 24.4(c).

⁵⁹⁰ *Id.* § 24.3.

⁵⁹¹ *Id.* § 24.4(d).

⁵⁹² 16 U.S.C. §§ 3101–3233 (2012).

⁵⁹³ See, e.g., *id.* § 3201 (establishing National Preserves, a subcategory of National Park Lands on which sport hunting is permitted); *id.* § 410hh-2.

⁵⁹⁴ Such as exceptions to the prohibitions laid out by the Wilderness Act. For instance, snow machine use, which is banned as mechanized transport in every other state, is permitted in Alaska Wilderness Areas where that use was established before the creation of the Wilderness Area. See *id.* §§ 3121(a)–(b), 3170(a), 3171(a).

mission/goal to nearly all federal lands in Alaska.⁵⁹⁵ In *Sturgeon v. Frost*,⁵⁹⁶ the Supreme Court explicitly acknowledged this unusual status, stating that "ANILCA repeatedly recognizes that Alaska is different . . . [And] ANILCA itself accordingly carves out numerous Alaska-specific exceptions."⁵⁹⁷

i. Subsistence

It is the subsistence requirement that is the single biggest difference between managing wildlife on federal lands in Alaska and managing them in the rest of the country. ANILCA is the establishment legislation for nearly every federal conservation unit in the state.⁵⁹⁸ This creates an opportunity for uniformity in management strategy across agencies and conservation units that could not exist elsewhere in the country where units were set aside in a more haphazard manner. Taking advantage of that opportunity, ANILCA establishes that subsistence shall be permitted on all federal lands with few exceptions,⁵⁹⁹ and creates a subsistence preference that applies to rural Alaskans that grants them a priority position in relation to other consumptive users of fish and game.⁶⁰⁰

Subsistence is defined by ANILCA as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption."⁶⁰¹ More colloquially, it refers to rural hunting, fishing, and gathering of resources for personal use.⁶⁰² When ANILCA was originally passed, the intent of the statute was for the state to administer the subsistence hunting program (like all other hunting programs) on federal lands, and merely required that the state abide by ANILCA's requirements.⁶⁰³ It soon became clear, however, that the state could not implement the rural subsistence preference because it violated the state's constitutional requirement for equal access to fish and game, according the Alaska Supreme Court.⁶⁰⁴ Several efforts were made to amend the Alaska constitution so that the state could reclaim authority over all

⁵⁹⁵ See generally *id.* §§ 3111–3126 (establishing the overarching system of subsistence management under ANILCA).

⁵⁹⁶ 136 S. Ct. 1061 (2016).

⁵⁹⁷ *Id.* at 1070.

⁵⁹⁸ 16 U.S.C. §§ 410hh–410hh-1; *id.* §§ 460mm–460mm-2; *id.* § 539; ANILCA, Pub. L. No. 96-487, §§ 302–303, 94 Stat. 2371, 2385–93 (1980); *id.* §§ 601–603, 94 Stat. 2412–15; *id.* §§ 701–704, 94 Stat. 2371, 2417–19.

⁵⁹⁹ The exceptions are within the original boundaries of Denali National Park and Preserve and Glacier Bay National Park and Preserve, which were both expanded by ANILCA. 16 U.S.C. § 410hh-1(1), (3)(a).

⁶⁰⁰ See *id.* § 3112(2) ("[N]onwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska.").

⁶⁰¹ *Id.* § 3113.

⁶⁰² ANILCA states that "the situation in Alaska is unique in that, in most cases, no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses." *Id.* § 3111(2).

⁶⁰³ *Id.* § 3115(d).

⁶⁰⁴ *McDowell v. State*, 785 P.2d 1, 9 (Alaska 1989).

hunting, but those attempts were never successful.⁶⁰⁵ In 1990, the Federal Subsistence Board, which mirrors the functions of the state's Board of Game, was created, and the federal government began to assume control of subsistence hunting on federal lands.⁶⁰⁶

ANILCA instructs the agencies to manage subsistence "consistent with sound management principles, and the conservation of healthy populations of fish and wildlife," and "consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit."⁶⁰⁷ ANILCA also states that "[n]othing in this title shall be construed as . . . permitting the level of subsistence uses of fish and wildlife within a conservation system unit to be inconsistent with the conservation of healthy populations, and within a national park or monument to be inconsistent with the conservation of natural and healthy populations, of fish and wildlife."⁶⁰⁸ So the management standard for all federal public lands is the requirement to maintain healthy populations, but for national park lands, the requirement is to maintain natural and healthy populations of wildlife. Agencies must also evaluate the effect of all uses on public lands on subsistence uses and needs, and formally notify subsistence users if there could be any effects on subsistence harvests as a result of other uses.⁶⁰⁹

ii. Sport Hunting

Sport hunting (non-subsistence hunting) is permitted on most non-park lands in Alaska and is managed largely through the state regulatory process, as it is elsewhere in the United States.⁶¹⁰ However, ANILCA creates a new category of park lands called "Preserves" where sport hunting and commercial trapping are permitted.⁶¹¹ The State of Alaska regulates sport hunting statewide, including on federal lands.⁶¹² However, conflicts have arisen between the state's hunting regulations, which express the state's wildlife laws and goals, and the wildlife management goals expressed by several federal statutes. For instance, the State of Alaska is required to intensively manage wildlife populations in order to maximize a sustained yield of desirable prey (e.g., moose, caribou, and deer).⁶¹³ This intensive

⁶⁰⁵ FRANK NORRIS, ALASKA SUBSISTENCE: A NATIONAL PARK SERVICE MANAGEMENT HISTORY 162-63 (2002).

⁶⁰⁶ *Id.* at 165; Kyle Joly, Sanford P. Rabinowitch & Julie Lurman Joly, *Dual Management of Wildlife in Alaska: Making Federal Practice Align with Federal Mandates*, 32 GEORGE WRIGHT F. 18, 18 (2015).

⁶⁰⁷ 16 U.S.C. § 3112(1).

⁶⁰⁸ *Id.* § 3125(1).

⁶⁰⁹ *Id.* § 3120(a).

⁶¹⁰ *Id.* § 3202(c).

⁶¹¹ *Id.* §§ 410hh-2, 3201; see Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. 64,325, 64,325 (Oct. 23, 2015) (to be codified at 36 C.F.R. pt. 13).

⁶¹² Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326.

⁶¹³ ALASKA STAT. § 16.05.255(e) (2016).

management requirement often leads to predator reduction efforts.⁶¹⁴ NPS on the other hand is required to maintain natural and healthy populations of all species according to ANILCA and “to conserve the scenery and the natural and historic objects and the wild life” according to the NPS Organic Act.⁶¹⁵ NPS policies implementing the Organic Act require the agency to “protect natural ecosystems and processes, including the natural abundances, diversities, distributions, densities, age-class distributions, populations, habitats, genetics, and behaviors of wildlife.”⁶¹⁶ These state and federal goals are mutually exclusive.⁶¹⁷

In 2015, NPS promulgated new regulations restricting how the state’s sport hunting laws could apply within parks, so that they do not conflict with NPS’s legal obligations under the Organic Act and ANILCA.⁶¹⁸ The new rules clarify that state wildlife regulations that conflict with NPS regulations or laws are not applicable on NPS lands.⁶¹⁹ The Alaska Regional Park Service Director will publish a list, at least annually, of all state-permitted activities that are prohibited on NPS lands.⁶²⁰

There has been a great deal of criticism of these rule changes. NPS’s effort has been characterized by the state as statutory overreach and a violation of the public trust doctrine,⁶²¹ though both ANILCA and the Organic Act recognize NPS’s authority to regulate these activities.⁶²²

Once the NPS rules were successfully promulgated, FWS began a similar rulemaking process. FWS’s effort to follow a similar course was initially marked by efforts to block the development of such rules on national wildlife refuges,⁶²³ though FWS’s effort was eventually successful,

⁶¹⁴ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (“In the last several years, the State of Alaska has allowed an increasing number of liberalized methods of hunting and trapping wildlife and extended seasons to increase opportunities to harvest predator species.”).

⁶¹⁵ 54 U.S.C. § 100101 (Supp. II 2015) (previously codified at 16 U.S.C. § 1).

⁶¹⁶ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (citing NPS MANAGEMENT POLICIES, *supra* note 375, §§ 4.1, 4.4.1, 4.4.1.2, and 4.4.2).

⁶¹⁷ Lurman & Rabinowitch, *supra* note 275, at 165.

⁶¹⁸ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,325. This rule change has been followed by a similar rule change on National Wildlife Refuges. See *infra* notes 623–624 and accompanying text.

⁶¹⁹ 36 C.F.R. § 13.42(a), (f) (2016).

⁶²⁰ *Id.* § 13.42(f)(1).

⁶²¹ See, e.g., Doug Vincent-Lang, *Alaska Must Reject Feds’ Claim to Control Hunting in Preserves and Refuges*, ALASKA DISPATCH NEWS (June 26, 2016), <https://perma.cc/2F3L-VGYN>. Lang is the former director of Wildlife Conservation at the Alaska Department of Fish and Game. *Id.*

⁶²² Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,329, 64,333.

⁶²³ Senator Sullivan (R. AK) submitted an amendment, which was ultimately never passed, to the Bipartisan Sportsmen’s Act of 2015 that would prohibit FWS from implementing regulations restricting the application of state hunting rules on Refuge lands. Sam Friedman, *Sullivan Moves to Prohibit Federal Refuge Predator Hunt Rules*, FAIRBANKS DAILY NEWS-MINER (Jan. 20, 2016), <https://perma.cc/E7EA-WNY9>.

and the rules were promulgated.⁶²⁴ Ultimately, in 2017, Congress—exercising its authority under the Congressional Review Act⁶²⁵—abolished the FWS regulations.⁶²⁶ Therefore, the FWS regulations are no longer in force (though this elimination of the regulations does not speak in any way to their legality), while the NPS regulations remain in place. Furthermore, while the FWS regulations have been eliminated, the statutes animating them are still in place. FWS still possesses the authority, and often the obligation, to prevent the state from acting in ways contrary to federal mandates regarding wildlife management on refuges, regardless of the status of these particular regulations. As NPS states, “the State’s responsibility [to manage fish and wildlife] is not exclusive and it does not preclude federal regulation of wildlife on federal public lands, as is well-established in the courts and specifically stated in ANILCA.”⁶²⁷

7. The National Wilderness Preservation System

a. The Policy and Objectives of the Wilderness Act

The Wilderness Act of 1964 expresses the following policy:

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as “wilderness areas”, and *these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness.*⁶²⁸

The Act defines wilderness⁶²⁹ and imposes a duty on the federal agencies to administer designated areas for “preserving the wilderness character.”⁶³⁰ In addition, Congress designated fifty-four areas managed by USFS,⁶³¹ detailed inventory procedures,⁶³² prohibited a number of uses,⁶³³ and

⁶²⁴ Non-Subsistence Take of Wildlife, and Public Participation and Closure Procedures, on National Wildlife Refuges in Alaska, 81 Fed. Reg. 52,248 (Aug. 5, 2016) (to be codified at 50 C.F.R. pts. 32 and 36).

⁶²⁵ 5 U.S.C. §§ 801–808 (2012). The law authorizes Congress to review and repeal federal agency regulations passed within the last sixty legislative days. *Id.* § 801(a)(3).

⁶²⁶ Act of Apr. 3, 2017, Pub. L. No. 115-20, 131 Stat. 86 (providing congressional disapproval).

⁶²⁷ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,331.

⁶²⁸ 16 U.S.C. § 1131(a) (2012) (emphasis added).

⁶²⁹ *Id.* § 1131(c).

⁶³⁰ *Id.* § 1133(b).

⁶³¹ *Id.* § 1132(a); KATIE HOOVER, CONG. RESEARCH SERV., RL31447, WILDERNESS: OVERVIEW AND STATISTICS (2015).

adopted special provisions to clarify certain other uses.⁶³⁴ Sections of the Act particularly relevant to managing wildlife in wilderness areas include the definition of wilderness and the federal responsibility to preserve wilderness character; the prohibited uses; and the congressionally authorized special provisions that apply to managing wildlife in wilderness.

i. Preserving Wilderness Character

Congress directed each federal agency managing a wilderness to “preserve its wilderness character.”⁶³⁵ To implement this requirement, the four wilderness-managing agencies have endorsed the following definition of wilderness character:

Wilderness character is a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection with nature. Taken together, these tangible and intangible values define wilderness character and distinguish wilderness from all other lands.⁶³⁶

Specifically, five qualities of wilderness character are identified in the Act’s definition of wilderness: untrammeled; natural; undeveloped; solitude or primitive and unconfined recreation; and other features of value, including ecological and scientific features.⁶³⁷ We review each of these qualities below.

Untrammeled. In one of the most poetic passages found in the U.S. Code, the Wilderness Act provides that “wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are

⁶³² 16 U.S.C. § 1132(b)–(d). BLM’s authority to inventory for wilderness characteristics and to manage areas designated by Congress was expressed in FLPMA. 43 U.S.C. §§ 1711, 1782 (2012).

⁶³³ 16 U.S.C. § 1133(c).

⁶³⁴ *Id.* § 1133(d).

⁶³⁵ *Id.* § 1133(b).

⁶³⁶ PETER LANDRES ET AL., RMRS-GTR-340, KEEPING IT WILD 2: AN UPDATED INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 7 (2015) [hereinafter KIW2]; see Memorandum from Chair, Interagency Wilderness Steering Committee to Chair, Interagency Wilderness Policy Council, Interagency Wilderness Steering Committee’s *Keeping It Wild 2* Recommendations (Sep. 21, 2015) (approved by the Wilderness Policy Council Dec. 23, 2015). Understanding the complex meaning of the term “wilderness character” has been an ongoing task for the federal agencies mandated to preserve it for over a decade. See PETER LANDRES ET AL., RMRS-GTR-212, KEEPING IT WILD: AN INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 5–7 (2008) [hereinafter KIW]; PETER LANDRES ET AL., RMRS-GTR-151, MONITORING SELECTED CONDITIONS RELATED TO WILDERNESS CHARACTER: A NATIONAL FRAMEWORK, at iii–iv, 4–6 (2005).

⁶³⁷ 16 U.S.C. § 1131(c).

untrammeled by man" that "generally appears to have been affected primarily by the forces of nature" and "retain[s] its primeval character and influence."⁶³⁸ Untrammeled means "essentially unhindered and free from the intentional actions of modern human control or manipulation."⁶³⁹ In terms of wildlife management, this concept precludes intentional manipulation of species, populations, and individuals (with the exception of casual, noncommercial hunting and fishing, where allowed).⁶⁴⁰ The Untrammeled Quality is a unique requirement among federal land management legislation; it is what puts the "wild" in "wilderness." When manipulation is necessary—for instance, to comply with another law such as the ESA or to improve another quality of wilderness character—action should be taken with the utmost restraint and humility.⁶⁴¹

Natural. The Act provides that wilderness is "protected and managed so as to preserve its natural conditions."⁶⁴² This means that ecological systems within wilderness areas "are substantially free from the effects of modern civilization."⁶⁴³ In terms of wildlife management, wilderness ecosystems should retain their native or indigenous species composition, distribution patterns, and ecological processes, including predator-prey dynamics, disturbance regimes, and abiotic and biotic fluctuations.⁶⁴⁴ These ecosystems should be uncompromised by non-native species, or by artificially increased (or decreased) populations of native species or other biophysical conditions.⁶⁴⁵ While the Untrammeled Quality reflects the wilderness character mandate to halt actions undertaken to consciously manipulate "the earth and its community of life," the Natural Quality minimizes the adverse ecological effects to a wilderness area from intentional or unintentional actions, as well as the adverse effects from larger scale ecological change occurring outside the wilderness—for example, the spread of non-native species and habitat fragmentation.⁶⁴⁶

Undeveloped. The Wilderness Act also identifies wilderness as "an area of undeveloped Federal land . . . without permanent improvements or human habitation," "where man himself is a visitor who does not remain . . . with the imprint of man's work substantially unnoticeable."⁶⁴⁷ This means that wilderness is unmarred by "the sights and sounds of modern human occupation."⁶⁴⁸ The Act's prohibition on "improvements" is not restricted to those that are permanent, but includes any physical developments (e.g.,

⁶³⁸ *Id.*

⁶³⁹ KIW2, *supra* note 636, at 10–11.

⁶⁴⁰ *See id.* at 104.

⁶⁴¹ *See* Sandra B. Zellmer, *Wilderness Imperatives and Untrammeled Nature*, in ENVIRONMENTAL LAW AND CONTRASTING IDEAS OF NATURE: A CONSTRUCTIVIST APPROACH 179, 184–85 (Keith H. Hirokawa ed., 2014).

⁶⁴² 16 U.S.C. § 1131(c).

⁶⁴³ KIW2, *supra* note 636, at 11; *see also id.* at 39.

⁶⁴⁴ *Id.* at 41–43.

⁶⁴⁵ *Id.* at 11.

⁶⁴⁶ *Id.* at 101, 109–10.

⁶⁴⁷ 16 U.S.C. § 1131(c).

⁶⁴⁸ KIW2, *supra* note 636, at 11; *see also id.* at 45–48.

structures, installations, and both permanent and temporary roads) as well as temporal developments (i.e., where the wilderness is “developed” for the duration of the use of the prohibited tool, such as motor vehicles, motorized equipment, and mechanical transport).⁶⁴⁹ Again, restraint and humility are key: “[In wilderness areas] we stand without our mechanisms that make us immediate masters over our environment.”⁶⁵⁰ The implications for wildlife management are discussed in greater detail below.⁶⁵¹

Solitude or Primitive and Unconfined Recreation. Wilderness areas provide “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”⁶⁵² This means that, in wilderness, recreational opportunities occur “in an environment that is relatively free from the encumbrances of modern society, and for the experience of the benefits and inspiration derived from self-reliance, self-discovery, physical and mental challenge, and freedom from societal obligations.”⁶⁵³ In terms of wildlife management, recreational opportunities to enjoy wildlife (including hunting and fishing) are allowed within the constraints of preserving wilderness character as a whole—that is, without structures, installations, the use of motorized equipment, motor vehicles, or mechanical transport, and without manipulating populations for a more “desirable” (and less natural) assemblage of species.⁶⁵⁴

Other Features of Value. Finally, the Wilderness Act provides that wilderness “may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”⁶⁵⁵ “This quality captures important elements or ‘features’ of a particular wilderness that are not [necessarily] covered by the other four qualities.”⁶⁵⁶ In terms of wildlife management, the ecological and scientific values are key, and in most cases, they are already addressed within the purview of the Natural Quality.⁶⁵⁷

ii. Within and Supplemental

Under section 4(a) of the Wilderness Act: “The purposes . . . are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and national wildlife refuge systems are established and administered.”⁶⁵⁸ As section 4(b) makes clear, however, “each agency administering any area designated as wilderness shall be responsible for *preserving the wilderness character* of the area and shall so administer such area for such other purposes for which it may have been

⁶⁴⁹ See 16 U.S.C. § 1133(c).

⁶⁵⁰ Howard Zahniser, *The Need for Wilderness Areas*, 59 LIVING WILDERNESS 37, 38 (1956).

⁶⁵¹ See discussion *infra* Part III.B.7.a.iii.

⁶⁵² 16 U.S.C. § 1131(c).

⁶⁵³ KIW2, *supra* note 636, at 11–12; see also *id.* at 51–55.

⁶⁵⁴ *Id.* at 51, 78.

⁶⁵⁵ 16 U.S.C. § 1131(c).

⁶⁵⁶ KIW2, *supra* note 636, at 12; see also *id.* at 57–60.

⁶⁵⁷ *Id.* at 39, 57–58.

⁶⁵⁸ 16 U.S.C. § 1133(a).

established as also *to preserve its wilderness character*.⁶⁵⁹ For all four agencies, upon designation as wilderness, the preservation of wilderness character becomes the primary duty of the underlying unit,⁶⁶⁰ and management of other purposes must meet the requirements of the Wilderness Act in addition to the requirements of each agency's Organic Act.⁶⁶¹

All four land management agencies struggle with this concept, but it has been especially problematic for FWS and NPS, largely because many employees of these two agencies believe that their conservation-oriented purposes are equivalent to wilderness preservation.⁶⁶² How these agencies have addressed this problem is discussed below.⁶⁶³ Implications and continuing issues surrounding "within and supplemental" are discussed in Part IV.E. The "within and supplemental" requirement crops up routinely with respect to justifying uses explicitly prohibited by the Wilderness Act.⁶⁶⁴

iii. Prohibition of Certain Uses

Section 4(c) of the Wilderness Act specifically prohibits ten uses.⁶⁶⁵ These are all subject to two exceptions: "Except as specifically provided for in this chapter, and subject to existing private rights."⁶⁶⁶ Notably, there are no "existing private rights" associated with the management of wildlife in wilderness, and other specific provisions are discussed below.⁶⁶⁷ Two of the ten prohibited uses—commercial enterprise and permanent roads—are subject *only* to these two exceptions (unless specifically authorized in subsequent legislation).⁶⁶⁸ The prohibition on commercial enterprises has been a significant issue in wildlife management.

Commercial enterprise is defined as "a project or undertaking of or relating to commerce."⁶⁶⁹ Only three types of commercial activity may be allowed in wilderness, as they are specifically provided for in the Act:

⁶⁵⁹ *Id.* § 1133(b) (emphasis added).

⁶⁶⁰ See *Wilderness Watch v. Vilsack*, 229 F. Supp. 3d 1170, 1182 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal. v. Timchak*, No. CV-06-04-E-BLW, 2006 WL 3386731, at *6 (D. Idaho Nov. 21, 2006))), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁶⁶¹ 16 U.S.C. § 1133(a).

⁶⁶² See Sandra B. Zellmer, *Wilderness Management in National Parks and Wildlife Refuges*, 44 ENVTL. L. 497, 500 (2014) (analyzing wilderness management on dominant use lands).

⁶⁶³ See discussion *infra* Part III.B.7.c

⁶⁶⁴ See discussion *infra* Part IV.E.

⁶⁶⁵ 16 U.S.C. § 1133(c).

⁶⁶⁶ *Id.*

⁶⁶⁷ See discussion *infra* Part III.B.7.a.iv.

⁶⁶⁸ ROSS W. GOETE, CONG. RESEARCH SERV., R41649, WILDERNESS LAWS: STATUTORY PROVISIONS AND PROHIBITED AND PERMITTED USES 10–11 (2011).

⁶⁶⁹ See *Wilderness Soc'y v. U.S. Fish & Wildlife Serv. (Tustemena Lake)*, 353 F.3d 1051, 1061, 1065 (9th Cir. 2003) (en banc) (stating that commercial means "work that is intended for the mass market" and "even non-profit entities may engage in commercial activity"), *amended en banc by* 360 F.3d 1374 (9th Cir. 2004).

livestock grazing,⁶⁷⁰ exercising certain mineral rights,⁶⁷¹ and commercial services.⁶⁷² Absent those three activities, no commercial enterprise can take place in wilderness, and no wilderness resources can be removed for financial gain, including animals or parts of animals such as antlers and fur.⁶⁷³ Therefore, collection of wilderness wildlife resources may be allowed only for personal use. Not only is it a violation of the Wilderness Act to remove wilderness resources for financial gain, but also, no action may be taken to enhance a commercial activity, even if the activity itself takes place entirely outside the wilderness and even if it causes only “minimal intrusion on wilderness values.”⁶⁷⁴

Although commercial enterprises and permanent roads are tightly proscribed by the Wilderness Act, the other eight prohibited uses—temporary roads; use of motor vehicles, motorized equipment, and motorboats; landing of aircraft; any other form of mechanical transport; structures; and installations—are subject to an exception “as necessary to meet minimum requirements for the administration of the area for the purpose of this chapter.”⁶⁷⁵ This “minimum requirements” exception has three components.

For the purpose of this Act. As described above, the purpose of the Wilderness Act, and congressional direction to the federal agencies on the means of accomplishing that purpose, is to preserve wilderness character.⁶⁷⁶ Unless necessary in the exercise of a legal right, or unless specifically allowed elsewhere in the Wilderness Act (or other federal law), Congress has made it clear that otherwise-prohibited uses cannot be authorized for any purpose other than preserving wilderness character.⁶⁷⁷

For the administration of the area. Otherwise-prohibited uses cannot be authorized to facilitate management objectives or activities occurring *outside* of the wilderness area.⁶⁷⁸ Notably, in section 4(c), Congress clearly

⁶⁷⁰ 16 U.S.C. § 1133(d)(4).

⁶⁷¹ *Id.* § 1133(d)(3).

⁶⁷² *Id.* § 1133(d)(5); see *supra* notes 693–696 and accompanying text.

⁶⁷³ See BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6340—MANAGEMENT OF DESIGNATED WILDERNESS AREAS (PUBLIC) § 1.6(C)(21)(c)(ix)(E) (2012), <https://perma.cc/287T-JA3V> [hereinafter BLM MANUAL] (“Sale of wildlife products gathered from wilderness is prohibited.”).

⁶⁷⁴ *Tustemena Lake*, 353 F.3d at 1062, 1066–67 (prohibiting FWS approval of salmon stocking within the Kenai Wilderness).

⁶⁷⁵ 16 U.S.C. § 1133(c).

⁶⁷⁶ See discussion *supra* Part III.B.7.a.i.

⁶⁷⁷ 16 U.S.C. § 1133(b)–(c).

⁶⁷⁸ See *High Point, LLLP v. Nat’l Park Serv.*, 850 F.3d 1185, 1197–98 (11th Cir. 2017) (finding that, just as a van filled with tourists could not “be construed as ‘necessary’ to meet the ‘minimum requirements’ for administering the area,” neither could enlargement of a dock (a prohibited structure) be construed as an “existing private right[.]” given the narrow construction applied to Wilderness Act exceptions (citing *Wilderness Watch v. Mainella*, 375 F.3d 1085, 1092 (11th Cir. 2004))); *High Sierra Hikers Ass’n v. U.S. Forest Serv.*, 436 F. Supp. 2d 1117, 1134, 1137, 1144 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance downstream flows for fisheries and to preserve historical values was not necessary to meet minimum requirements for the administration of the area as the

referenced "*the area*";⁶⁷⁹ not, as the Act does elsewhere, the National Wilderness Preservation System as a whole.⁶⁸⁰ In other words, prohibited uses cannot be authorized in Wilderness A to preserve the wilderness character of Wilderness B, unless they also preserve the wilderness character of Wilderness A.

Necessary to meet minimum requirements. Defining the "minimum" "necessary" is a work of art. One court cautioned that a generic finding of necessity will not suffice, and while it declared that the agencies need not "make a finding of 'absolute necessity,'"⁶⁸¹ it offered no measure of exactly how necessary is necessary enough to meet the statute's requirements when coupled with the qualifier "minimum."⁶⁸² To guide the agencies, the Arthur Carhart National Wilderness Training Center (Carhart) has devised a two-step process: first, managers must determine if any action is *necessary* to address a problem of wilderness stewardship; if so, managers must then determine what the *least amount* of an otherwise prohibited use is necessary to accomplish the problem identified in the first step.⁶⁸³ Though not specifically required by the Act, Carhart's *Minimum Requirements Decision Guide* is the most frequently used tool for making a minimum requirements decision, and the two-step analysis process has become ubiquitous.⁶⁸⁴ In any event, the courts have made it clear that before the federal agency can authorize one of these prohibited uses, it must explain why non-prohibited uses would be insufficient to preserve the area's wilderness character.⁶⁸⁵

enhancement of fisheries was not necessary to meet minimum requirements for the administration of the area).

⁶⁷⁹ 16 U.S.C. § 1133(c).

⁶⁸⁰ See, e.g., *id.* § 1281(b) ("Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system . . . shall be subject to the provisions of both the Wilderness Act and this chapter . . .").

⁶⁸¹ *Wilderness Watch, Inc. v. U.S. Fish & Wildlife Serv. (Kofa)*, 629 F.3d 1024, 1037 n.8 (9th Cir. 2010) (emphasis added).

⁶⁸² See *id.* at 1049 & n.9 (Bybee, J., dissenting) (arguing that the word "necessary" should be construed broadly, as it has with respect to other legislation, but failing to recognize that none of the other examples couples "necessity" with the Wilderness Act's qualifier "minimum").

⁶⁸³ See ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: OVERVIEW 1, 3 (2016), <https://perma.cc/XDH4-F6BP>.

⁶⁸⁴ See, e.g., Director's Order No. 41, Jonathan Jarvis, Dir., Nat'l Park Serv., U.S. Dep't of Interior, Wilderness Stewardship § 6.4 (May 13, 2013), <https://perma.cc/5XKB-L9TJ> (requiring national parks to follow the two-step analysis process when completing the minimum requirements analysis); ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: U.S. FOREST SERVICE GUIDELINES 1 (2008), <https://perma.cc/8YL6-S3V7> ("Use of the MRDG is not currently required by law or agency policy However, use of the MRDG or a similar minimum requirements analysis (MRA) process was strongly recommended by the chief in a 2000 memo."); BLM MANUAL, *supra* note 673, app. B-1 ("BLM will use the Minimum Requirements Decision Guide (MRDG) developed by the Arthur Carhart National Wilderness Training Center."); FWS WILDERNESS POLICY, *supra* note 437, § 1.20 (requiring national wildlife refuge staff to attend a wilderness training at Carhart before making minimum requirement decisions).

⁶⁸⁵ See *Kofa*, 629 F.3d at 1037-38 ("[T]he key question—whether water structures were necessary at all—remains entirely unanswered and unexplained by the record [N]owhere in the record does the Service explain why [conforming] actions, alone or in combination, are insufficient"); *cf.* *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 646 (9th Cir. 2004)

iv. Special Provisions

The Wilderness Act contains a number of “special provisions.”⁶⁸⁶ Three of these are applicable to the management of wildlife in wilderness. One special provision deals wholly with wildlife management, the so-called savings clause: “Nothing in this chapter shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests.”⁶⁸⁷ As with similar savings clauses discussed above, this provision retains federal jurisdiction over wildlife on federal lands, while recognizing the traditional interest of the states with respect to wildlife management insofar as consistent with Wilderness Act purposes.⁶⁸⁸ Federal land managers cannot defer to state management prerogatives when doing so would violate the express terms of the Wilderness Act,⁶⁸⁹ or undermine the purposes of the Act.⁶⁹⁰

The second relevant special provision involves pre-existing uses of aircraft or motorboats. The Wilderness Act states “the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary . . . deems

(construing the Wilderness Act’s provision for commercial services “to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas,” and holding that in order to invoke that exception, the agency must make a reasoned finding of necessity (quoting 16 U.S.C. § 1133(d)(5))).

⁶⁸⁶ 16 U.S.C. § 1133(d).

⁶⁸⁷ *Id.* § 1133(d)(7). This provision was extended to BLM: “Once an area has been designated for preservation as wilderness, the provisions of the Wilderness Act which apply to national forest wilderness areas shall apply with respect to the administration and use of such designated area.” FLPMA, 43 U.S.C. § 1782(c) (2012) (citation omitted).

⁶⁸⁸ See Lindsay Sain Jones, Note, *The Problem with the Bureau of Land Management’s Delegation of Wildlife Management in Wilderness*, 47 GA. L. REV. 1281, 1310 (2013) (stating that the savings clause does not affect “the nature of the jurisdiction or responsibility of the states with respect to wildlife on federal lands”; thus “the federal government’s jurisdiction over wildlife on federal lands remains intact”); cf. *Izaak Walton League of Am. v. St. Clair*, 353 F. Supp. 698, 707 (D. Minn. 1973) (holding that, despite the general rule that the federal government has no inherent police power and that zoning is a power of the states, state zoning provisions were not applicable within a national forest wilderness area), *rev’d on other grounds*, 497 F.2d 849 (8th Cir. 1974).

⁶⁸⁹ See *Kofa*, 629 F.3d at 1027, 1039–40 (invalidating a cooperative initiative with Arizona to maintain water structures); *Tustemena Lake*, 353 F.3d 1051, 1066–67, 1069 (9th Cir. 2003) (*en banc*) (prohibiting a salmon enhancement project as a prohibited “commercial enterprise” even though the state had previously administered and maintained regulatory control over the project), *amended en banc* by 360 F.3d 1374 (9th Cir. 2004); *Californians for Alts. to Toxics v. U.S. Fish & Wildlife Serv.*, 814 F. Supp. 2d 992, 996 (E.D. Cal. 2011) (invalidating a joint federal-state plan to restore cutthroat trout to its historic range in a wilderness area by eradicating non-native trout with rotenone); *High Sierra Hikers Ass’n*, 436 F. Supp. 2d 1117, 1122, 1137 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance fisheries was not necessary to meet minimum requirements and thus was prohibited despite involvement and support of the California Department of Fish and Game).

⁶⁹⁰ See *Wolf Recovery Found. v. U.S. Forest Serv.*, 692 F. Supp. 2d 1264, 1266, 1269–70 (D. Idaho 2010) (affirming a decision to allow the Idaho Fish and Game Commission to use helicopters to monitor wolves in the Frank Church Wilderness, but only because the activity was “designed to aid the restoration of a specific aspect of the wilderness character of the Frank Church Wilderness that had earlier been destroyed by man”).

desirable.⁶⁹¹ Agency regulations and policy specify the conditions to allow such uses and also limit the permissible locations to established sites to be used by the public, rather than for any agency's administrative uses (such as wildlife management), which is subject to the more liberal analysis of simply meeting the "minimum necessary" test.⁶⁹²

Third, while commercial activity in wilderness is severely restricted, commercial services are allowable "to the extent necessary for activities which are proper for realizing . . . wilderness purposes."⁶⁹³ In a series of cases over outfitters in wilderness areas on the Inyo National Forest as well as the Sequoia-Kings Canyon Wilderness, the courts have made it clear that "the [federal] agency's primary responsibility is to protect the wilderness, not cede to commercial needs."⁶⁹⁴ Determining the "extent necessary" is paramount: "[The] argument that [certain services] are not specifically forbidden in the wilderness area confuses the absence of a specific prohibition with the requirement of *necessity*; the fact that something is otherwise 'legal' does not make it necessary."⁶⁹⁵ In allocating guiding permits, the federal agency errs if it "elevate[s] recreational activity over the long-term preservation of the wilderness character of the land."⁶⁹⁶

*b. Subsequent Wilderness Legislation with Wildlife Provisions*⁶⁹⁷

A common refrain from wilderness managers is that "the Act designating *my* wilderness contains special direction on the management of wildlife." In most cases, however, the precise language of any given piece of

⁶⁹¹ 16 U.S.C. § 1133(d)(1); see also *Wilderness Watch, Inc. v. Bureau of Land Mgmt.*, 799 F. Supp. 2d 1172, 1176, 1181 (D. Nev. 2011) (holding that this exception supported BLM's determination to allow police department to conduct search and rescue helicopter training where aircraft use pre-dated designation as protected wilderness area); *United States v. Gregg*, 290 F. Supp. 706, 706-08 (W.D. Wash. 1968) (upholding conviction for an unauthorized landing of an airplane in a wilderness, but noting that the Secretary could, by regulation, "create an exception to this blanket prohibition at places where the use of aircraft was established before the passage of the Act").

⁶⁹² See, e.g., U.S. FOREST SERV., HELICOPTER LANDINGS IN WILDERNESS: FINAL ENVIRONMENTAL IMPACT STATEMENT 2-3 (1997), <https://perma.cc/BS2C-PGTU> ("Established helicopter use was for general public access, not helicopter access authorized by . . . law (such as . . . administrative use by [USFS] or other agencies)."); see also Memorandum from James Sippel, Wilderness Planner, Bureau of Land Mgmt., to Robert Taylor, Assistant Field Manager for Nat'l Landscape Conservation Sys., & Juan Palma, Las Vegas Field Manager (Mar. 1, 2007) (on file with authors) (stating that this section of the Wilderness Act is "in reference to previously existing landing strips used as fly-in trailheads" in relatively few wilderness areas).

⁶⁹³ 16 U.S.C. § 1133(d)(5).

⁶⁹⁴ *High Sierra Hikers Ass'n v. U.S. Dep't of the Interior*, 848 F. Supp. 2d 1036, 1042, 1047 (N.D. Cal. 2012); see also *Blackwell*, 390 F.3d 630, 636, 647 (9th Cir. 2004).

⁶⁹⁵ *High Sierra Hikers Ass'n v. Weingardt*, 521 F. Supp. 2d 1065, 1078 (N.D. Cal. 2007) (emphasis added) (noting the agency's conclusion, "improperly equates 'preference' with 'need'").

⁶⁹⁶ *Blackwell*, 390 F.3d at 636, 647.

⁶⁹⁷ For a comprehensive analysis of wildlife management provisions in post-1964 wilderness bills, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

subsequent legislation makes no substantive difference in the implementation of the Wilderness Act's provisions.⁶⁹⁸

As of 2017, Congress has designated 711 wilderness areas⁶⁹⁹ since the original fifty-four were designated in 1964.⁷⁰⁰ Each subsequent bill contains nearly identical "boilerplate" regarding administration of the area: "Subject to valid existing rights, this wilderness area shall be administered by the Secretary . . . in accordance with the Wilderness Act."⁷⁰¹

The first wilderness legislation to include extra special language⁷⁰² specifically pertaining to wildlife was passed in 1972, with the establishment of the Sawtooth National Recreation Area, including the Sawtooth Wilderness.⁷⁰³ The relevant language of this extra special provision makes no actual difference in wildlife management within the Sawtooth Wilderness.⁷⁰⁴ In 1978, Congress started the custom of including not only the blanket "boilerplate" direction,⁷⁰⁵ but also repeating or rewording the Wilderness Act's statement on wildlife jurisdiction and responsibilities.⁷⁰⁶

⁶⁹⁸ See *infra* notes 707–708 and accompanying text.

⁶⁹⁹ *National Wilderness Preservation System Fact Sheet*, WILDERNESS CONNECT, <https://perma.cc/7EUS-4TBN> (last updated June 27, 2017).

⁷⁰⁰ Shannon Meyer & Peter Landres, *A National Wilderness Preservation System Database*, INT'L J. WILDERNESS, April 2000, at 13, 13.

⁷⁰¹ See, e.g., Act of Mar. 21, 1968, Pub. L. No. 90-271, § 3, 82 Stat. 51, 52 (codified at 16 U.S.C. § 1132 (2012)) ("The . . . Wilderness shall be administered by the Secretary . . . in accordance with the provisions of the Wilderness Act governing areas designated by that Act as wilderness areas, except that any reference in such provisions to the effective date of the Wilderness Act shall be deemed to be a reference to the effective date of this Act."); Sawtooth National Recreation Area and Jerry Peak Wilderness Additions Act, Pub. L. No. 114-46, § 102(a), 129 Stat. 477, 477 (2015) (similar); Big Sur Wilderness and Conservation Act of 2002, Pub. L. No. 107-370, § 3(a), 116 Stat. 3071, 3073 (similar). With minor variations, this wording is found in every subsequent law designating wilderness.

⁷⁰² We use the term "extra special language" to describe provisions other than those found in the Special Provisions enumerated at 16 U.S.C. § 1133(d) or other direction found in the Wilderness Act of 1964.

⁷⁰³ Sawtooth National Recreation Area Act, Pub. L. No. 92-400, §§ 1(a), 8, 86 Stat. 612, 612, 614 (1972) (codified at 16 U.S.C. §§ 460aa-460aa-14).

⁷⁰⁴ See 16 U.S.C. § 460aa-7 (providing that hunting and fishing "shall" be permitted "within the boundaries of the recreation area in accordance with applicable laws of the United States and the State of Idaho, except that the Secretary may designate zones where, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment," after consultation with the State; the consultation requirement is inapplicable in emergencies); *id.* § 460aa-1(b) ("The lands designated as the Sawtooth Wilderness Area . . . shall be administered in accordance with the provisions of this Act and the provisions of the Wilderness Act whichever is more restrictive . . ." (citation omitted)).

⁷⁰⁵ See *supra* note 701 and accompanying text (describing boilerplate language found in all bills designating wilderness areas).

⁷⁰⁶ See, e.g., Act of Oct. 21, 1978, Pub. L. No. 95-495, § 14, 92 Stat. 1649, 1657 ("Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of the State with respect to fish and wildlife in the wilderness . . ."); *cf.* Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(a), 116 Stat. 1994, 2005 (reasserting that nothing "affects or diminishes" state jurisdiction).

Of the 139 laws designating wilderness since the passage of the 1964 Act,⁷⁰⁷ only four have extra special language that create minor effects in wilderness stewardship of wildlife resources in those particular wilderness areas,⁷⁰⁸ and only one has extra special language affecting that particular wilderness that is completely out of the norm of all other wilderness legislation. That bill designated the Wovoka Wilderness and is embedded within the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.⁷⁰⁹ The unique provisions of this law are as confusing as they are astonishing, and so are given extended attention here as an extreme outlier. On the one hand, the legislation states the Wovoka "shall be administered by the Secretary in accordance with the Wilderness Act"⁷¹⁰ and House Report 101-405 Appendix B.⁷¹¹ The law then adds: "The State, including a designee of the State, may conduct wildlife management activities . . . in accordance with the . . . Memorandum of Understanding: Intermountain Region [USFS] and the Nevada Department of Wildlife State of Nevada" and signed . . . [in] 1984."⁷¹² The legislation says "may," retaining a measure of federal discretion. But the cited MOU, which does not mention wilderness, contains contradictory direction and does not conform to federal law: "[USFS] agrees [t]o recognize the Department [of Wildlife of the State of Nevada] as the agency responsible for the preservation and management of the wildlife resources in Nevada and for determining the regulations under which fish and wildlife will be managed, utilized, and protected."⁷¹³ There is no authority for a state to determine federal regulations, and this provision is contradicted later in the document: "[E]ach and every provision of the Memorandum is subject to the laws of the State of Nevada, the laws of the United States, and the regulations of the Secretary of Agriculture."⁷¹⁴ The MOU also defines "exotic" wildlife species as "those species that do not or have not existed within the continental United States within recorded historical times."⁷¹⁵ By this definition, any

⁷⁰⁷ Methodology for counting wilderness bills varies. Here, we count as a separate law bills with their own public law number, separate titles within one public law, and separate sections where the law refers to that section as a Wilderness Act.

⁷⁰⁸ See California Desert Protection Act of 1994, Pub. L. No. 103-433, §§ 503, 506(b), 108 Stat. 4471, 4490 (directing the Secretary to allow hunting in the Mojave National Preserve Wilderness, which was created largely out of BLM lands where hunting was permitted); North Cascades National Park Service Complex Fish Stocking Act, Pub. L. No. 113-137, § 3, 128 Stat. 1741, 1741 (2014) (mandating fish stocking in the North Cascades NPS Complex); Endangered American Wilderness Act of 1978, Pub. L. No. 95-237, § 4(c), 92 Stat. 40, 44 (directing the USFS to conduct wildlife research in cooperation with the State of Idaho in the Gospel-Hump Wilderness); Lee Metcalf Wilderness and Management Act of 1983, Pub. L. No. 98-140, § 2(c), 97 Stat. 901, 901-02 (limiting the use of motor vehicles for wildlife management in the Lee Metcalf Wilderness).

⁷⁰⁹ Pub. L. No. 113-291, § 3066(b)(1), 128 Stat. 3292, 3838 (2014) (codified in scattered sections of 10, 16, 40, and 46 U.S.C.).

⁷¹⁰ *Id.* § 3066(c)(1), 128 Stat. at 3839.

⁷¹¹ *Id.* § 3066(d)(2)(B)(ii), 128 Stat. at 3841; see H.R. REP. NO. 101-405 (1990).

⁷¹² *Id.* § 3066(d)(5), 128 Stat. at 3842.

⁷¹³ FSM § 1561.2 exhibit 3(A)(1) (1994).

⁷¹⁴ *Id.* § 1561.2 exhibit 3(C)(16).

⁷¹⁵ *Id.* § 1561.2 exhibit 3(B)(6)(1).

species from anywhere in the world that is currently anywhere within the continental United States is not exotic (and, according to the MOU, no USFS-advanced approval is necessary for species within the continental United States to be transplanted by the State).⁷¹⁶ This conflicts with the Executive Order defining exotic species as, “with respect to a particular ecosystem, any species . . . that is not native to that ecosystem,” and defining a native species as, “with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.”⁷¹⁷

Two other statutes are notable in that they contain language affecting the management of wildlife in multiple wilderness areas. The first is ANILCA, which contains far more extra special language on a variety of issues than any other wilderness-designating language “in recognition of the unique conditions in Alaska.”⁷¹⁸ Concerning wildlife, ANILCA provides that in national forest wilderness areas the Secretary *may* allow activities and facilities to enhance aquaculture “in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource.”⁷¹⁹ Other provisions dealing with wildlife center on allowable public uses, rather than management actions per se. These include construction of certain structures—with some Secretarial discretion—to facilitate the taking of fish and wildlife,⁷²⁰ and public use of motor vehicles for subsistence hunting.⁷²¹ Additional analysis of the wildlife provisions in ANILCA is found in Part III.B.6.

The other wilderness legislation with extra special language affecting multiple areas is in Title I of the California Desert Protection Act of 1994,⁷²² which designated sixty-nine wilderness areas under the stewardship of BLM.⁷²³ Section 103(f) contains a unique provision: “Management activities to maintain or restore fish and wildlife populations and . . . habitats . . . *may* be carried out . . . and shall include the use of motorized vehicles by the appropriate State agencies.”⁷²⁴ The contradictory use of “shall” and “may” caused considerable confusion in the offices tasked with stewardship of

⁷¹⁶ See *id.* § 1561.2 exhibit 3(B)(6) (requiring Regional Forester approval “before transplanting nonindigenous, Federally classified endangered or threatened or exotic[] wildlife species” but not for all other species).

⁷¹⁷ Exec. Order No. 13,112, 3 C.F.R. § 159 (2000) (emphasis added) (defining “alien” and “native” species); see also *Frequently Asked Question About Invasive Species*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/A9YV-MRHT> (last updated Nov. 20, 2012) (“Other terms sometimes used for exotic species include ‘non-native[]’ ‘non-indigenous,’ and ‘alien.’ . . . These definitions come from Executive Order 13112.”).

⁷¹⁸ 16 U.S.C. § 3203(a) (2012).

⁷¹⁹ *Id.* § 3203(b).

⁷²⁰ *Id.* § 3204(a).

⁷²¹ *Id.* § 3121(b).

⁷²² *Id.* §§ 410aaa–410aaa-83.

⁷²³ See, e.g., California Desert Protection Act of 1994, Pub. Law No. 103-433, § 102(3), (55), (61), 108 Stat. 4471, 4473, 4479–80 (designating, among others, the Bighorn Mountain Wilderness, Rodman Mountains Wilderness, and Sheephole Valley Wilderness).

⁷²⁴ *Id.* § 103(f), 108 Stat. at 4482 (emphasis added).

these areas.⁷²⁵ Ultimately, BLM determined the correct interpretation of this language is that "BLM continues to hold the ultimate responsibility for managing any actions occurring within [sic] the wilderness areas . . . [and w]hen BLM and [the California Department of Fish and Wildlife (CDFG)] cooperatively determine the need [for any access by CDFG] . . . CDFG and their volunteer organizations will be allowed to continue to use motor vehicles to carry out these necessary activities."⁷²⁶

Another notable wilderness bill is the Arizona Desert Wilderness Act of 1990,⁷²⁷ which was the first of many laws to direct wildlife management "in accordance with appropriate policies and guidelines such as those set forth in Appendix B of [House Report 101-405]."⁷²⁸ As discussed below, this House Report is a verbatim transcript of the substantive portions of the 1986 International Association of Fish and Wildlife Agencies (IAFWA) agreement,⁷²⁹ and Congressional direction here contains two important points: 1) management actions "*may* be carried out"—i.e., action is not mandatory but discretionary; and 2) actions should be "consistent with relevant wilderness management plans"—i.e., discretion to take action lies with the federal land manager.⁷³⁰ In short, except for aerial fish stocking,⁷³¹ the federal responsibility to manage wildlife in such a way as to preserve an area's wilderness character was not changed.

Some more recent laws in Nevada and Idaho have lengthy sections on wildlife management that affirm federal discretion, but (with one exception)⁷³² these sections change nothing of substance from the authority found in the Wilderness Act itself.⁷³³ The considerable confusion and

⁷²⁵ Memorandum from Ed Hartey, State Dir., Bureau of Land Mgmt., to Dist. Managers of Bakersfield and Cent. Cal. Dist., Bureau of Land Mgmt. (Sept. 30, 1997), <https://perma.cc/T4MU-N2GT>.

⁷²⁶ *Id.*

⁷²⁷ Pub. L. No. 101-628, 104 Stat. 4469 (codified at 16 U.S.C. § 460ddd).

⁷²⁸ *Id.* § 101(h), 104 Stat. at 4474; see H.R. REP. NO. 101-405 (1990).

⁷²⁹ See discussion *infra* Part III.B.7.d.

⁷³⁰ Arizona Desert Wilderness Act of 1990, § 101(h), 104 Stat. at 4474.

⁷³¹ See U.S. FOREST SERV., BUREAU OF LAND MGMT. & INT'L ASS'N OF FISH & WILDLIFE AGENCIES, APPENDIX I: POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS I-8 to -9 (1986), <https://perma.cc/YE3K-8DEF> [hereinafter IAFWA 1986 AGREEMENT]. Under the IAFWA 1986 Agreement: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* (emphasis added). While "[a]erial stocking requires approval by the administering agency," agency discretion is limited in that such use of aircraft is exempted from the "minimum necessary" requirement as discussed above in Part III.B.7.a.iii. *Id.* at I-9.

⁷³² See *supra* notes 709-717 and accompanying text (discussing the Wovoka Wilderness legislation). We review extra special wildlife provisions in wilderness law in more detail in the FAQs accompanying this Article. See *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³³ See Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208, 116 Stat. 1994 (2005); Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209, 118 Stat. 2403, 2411-12; Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329, 120 Stat. 2922, 3036-37; Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, § 1503(b)(8), 123 Stat. 991, 1035-36; Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015,

misinterpretation of these laws by federal managers, state employees, and nongovernmental organizations is discussed in Part IV.E.

c. Agency Policy

Each of the four agencies has developed policy measures to guide wilderness managers. According to NPS's policy, both planning and management activities "must ensure that wilderness character is likewise preserved" within designated units of the National Park System.⁷³⁴ It provides: "The purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."⁷³⁵ "In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved."⁷³⁶

FWS's policy provides that, upon designation, wilderness character becomes an additional purpose of any wilderness area within a refuge. More specifically, the agency's policy states: "As we carry out individual refuge establishing purpose(s), the Administration Act purposes, the Refuge System mission and goals, and [FWS]'s mission in areas designated as wilderness, we do so in a way that preserves wilderness character."⁷³⁷

For the National Forest System, USFS's policy states that "[w]ildlife and fish management programs shall be consistent with wilderness values."⁷³⁸ It commits the agency to "[b]ase any [USFS] recommendation to State wildlife and fish agencies on the need for protection and maintenance of the wilderness resource";⁷³⁹ "[p]rovide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist";⁷⁴⁰ and "[d]iscourage measures for direct control (other than normal harvest) of wildlife and fish populations."⁷⁴¹ In addition, practical application of the USFS policies reflects the *Policies and Guidelines for Fish and Wildlife Management in*

Pub. L. No. 113-291, §§ 3064(e), 3066(d), 128 Stat. 3292, 3831-32, 3841-42 (2014). For a section-by-section analysis of these laws, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³⁴ NPS MANAGEMENT POLICIES, *supra* note 375, §§ 6.1, 6.3.1.

⁷³⁵ *Id.* § 6.1.

⁷³⁶ *Id.* § 6.3.1.

⁷³⁷ FWS WILDERNESS POLICY, *supra* note 437, § 1.12(B).

⁷³⁸ FSM § 2323.32(2) (2006).

⁷³⁹ *Id.* § 2323.32(1). This provision recognizes that states also have responsibilities for the protection of wildlife in wilderness and calls for cooperative federalism in fish and wildlife management. *Id.*

⁷⁴⁰ *Id.* § 2323.31(1).

⁷⁴¹ *Id.* § 2323.32(3).

National Forest and Bureau of Land Management Wilderness developed with AFWA.⁷⁴² This document is discussed below.

BLM's wilderness policy was completely rewritten in 2012.⁷⁴³ Though never explicitly stated, the wildlife section of this policy purposefully adheres more closely to the IAFWA 1986 Agreement than the 2006 Agreement.⁷⁴⁴ Importantly, the 2012 BLM policy provides that "States have a primary and critical role" rather than "the primary role" in wildlife management,⁷⁴⁵ recognizing that the states' interests are not supreme, but that either the states or the federal agency may initiate wildlife stewardship proposals in wilderness. In addition, the policy plainly declares "[t]he ultimate responsibility to preserve wilderness character rests with the BLM"; it emphasizes wilderness preservation and requires the use of the Carhart *Minimum Requirements Decision Guide* for any wildlife management action.⁷⁴⁶ It also clarifies the prohibition on commercial use of wildlife.⁷⁴⁷

d. Wilderness and the Association of Fish & Wildlife Agencies

While Congress has not substantially changed wildlife management in wilderness with the recent legislation discussed above, for a little more than a decade there have been significant efforts to do so through legally questionable policy channels and nontransparent agreements between federal agencies and IAFWA or AFWA (the Association changed names in 2006).

In 1986, USFS and BLM made a comprehensive revision of their wilderness management directives with the cooperation of IAFWA.⁷⁴⁸ This agreement consists of a statement of purpose, general sideboards for the management of fish and wildlife in wilderness, and details regarding specified actions that may or may not be taken in cooperation with the states.⁷⁴⁹ It maintains federal control over decision-making processes,

⁷⁴² See *id.* § 2323.32(5) (citing U.S. FOREST SERV. ET AL., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS (2006), <https://perma.cc/MSMK-WDCY> [hereinafter AFWA 2006 AGREEMENT]). For details on the AFWA 2006 Agreement, see discussion *infra* Part III.B.7.d.

⁷⁴³ BLM MANUAL, *supra* note 673 (superseding BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 8560—MANAGEMENT OF DESIGNATED WILDERNESS AREAS).

⁷⁴⁴ See, e.g., *id.* § 1.6(C)(21)(c)(v) (discussing chemical treatment of pesticides). Compare AFWA 2006 AGREEMENT, *supra* note 742, at 6 (providing a less comprehensive policy and guidelines for application of pesticides), with IAFWA 1986 AGREEMENT, *supra* note 731, at I-6 to -7 (providing a more comprehensive policy and guidelines for application of pesticides).

⁷⁴⁵ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(i) (emphasis added). This is a shift from the misleading language of 43 C.F.R. § 24.3 (2016). See discussion *infra* Part IV.C.

⁷⁴⁶ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(ii)–(iii), app. B-1 (discussing application of the ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., *supra* note 683).

⁷⁴⁷ *Id.* § 1.6(C)(21)(c)(ix)(E).

⁷⁴⁸ IAFWA 1986 AGREEMENT, *supra* note 731, at I-1.

⁷⁴⁹ *Id.* at I-1 to -2. Fourteen specific action areas are listed: use of motorized equipment; fish and wildlife research and management surveys; facility development and habitat alteration; threatened and endangered species; angling, hunting, and trapping; population sampling; chemical treatment; spawn taking; fish stocking; aerial fish stocking; transplanting wildlife;

recognizes the responsibility afforded federal managers by the Wilderness Act, and is guided by the following direction: "Fish and wildlife management activities will emphasize the protection of natural processes . . . [and] by the principle of doing only the minimum necessary to manage the area as wilderness."⁷⁵⁰ As noted above, these guidelines were incorporated into House Report 101-405 and referenced in several subsequent wilderness bills.⁷⁵¹

Although USFS, BLM, and IAFWA "reaffirmed [their] mutual commitment" to the 1986 Agreement in 1995⁷⁵² and again in 2002,⁷⁵³ the agencies initiated a complete revision of the document and ultimately issued a revamped "Policies and Guidelines" in 2006.⁷⁵⁴ There were remarkable changes between the 1986 Agreement and the 2006 Agreement.⁷⁵⁵ The solicitor assigned to review the 2006 Agreement on behalf of the Department of the Interior noted several problems with it, including significant inconsistencies with federal law.⁷⁵⁶ At least one AFWA officer was unconcerned: "[U.S. Department of the Interior] Solicitors balked but BLM Director made the decision to sign."⁷⁵⁷

wildlife damage control; visitor management to protect wilderness wildlife resources; and management of fire. *Id.* at I-2 to -11.

⁷⁵⁰ *Id.* at I-1. The 1986 Agreement veers off course in one respect, found in the section on aerial fish stocking: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* at I-8 to -9 (emphasis added).

⁷⁵¹ See *supra* notes 710-712, 727-729 and accompanying text.

⁷⁵² Memorandum from Jack Ward Thomas, Chief, U.S. Forest Serv., et al., to Reg'l Foresters et al., Int'l Ass'n of Fish & Wildlife Agencies 1 (Feb. 23, 1995) (on file with authors).

⁷⁵³ Memorandum from Dale N. Bosworth, Chief, U.S. Forest Serv., et al., to State Gov't Members of the Int'l Ass'n of Fish & Wildlife Agencies, et al. 1-2 (Aug. 9, 2002) (on file with authors) (noting "the statutory endorsement of the existing guidelines by the Arizona Desert Wilderness Act").

⁷⁵⁴ AFWA 2006 AGREEMENT, *supra* note 742.

⁷⁵⁵ Compare IAFWA 1986 AGREEMENT, *supra* note 731, at I-5 ("[S]uch actions [related to threatened and endangered species] must be necessary for the perpetuation or recovery of the species and it must be demonstrated that the actions cannot be done more effectively outside wilderness."), with AFWA 2006 AGREEMENT, *supra* note 742, at 8-9 (omitting the language from the IAFWA 1986 Agreement).

⁷⁵⁶ See Facsimile Transmission from Kris Clark, Div. of Land & Water Res., U.S. Dep't of the Interior, to Dwight Fielder, Bureau of Land Mgmt., & Jeff Jarvis, Bureau of Land Mgmt. 1, 6-7 (Aug. 10, 2006) (on file with authors) ("[T]he handling of the 'minimum requirements' analysis appears to conflict with the Wilderness Act. . . . [I]t materially changes the meaning of the provision [of section 4(c) in the Wilderness Act].," "[T]he Agreement fails to recognize that Federal law, including regulations and discretionary actions, preempt[s] state jurisdiction."); see also e-mail from Kris Clark to E. Dwight Fielder, Chief, Div. of Fish, Wildlife & Plant Conservation, Bureau of Land Mgmt. (June 22, 2006) (on file with authors) (explaining that "decisions about federal agency management of wildlife in wilderness areas is not the appropriate subject for negotiation with an outside group" and stating that the Agreement's characterizations of the Wilderness Act "are misleading and in many cases incorrect").

⁷⁵⁷ E-mail from Gary J. Taylor, Legislative Dir., Ass'n of Fish & Wildlife Agencies, to Duane Shroufe et al. (July 18, 2006) (on file with authors) (also noting "USDI Solicitors question[ed] [the] legal status of AFWA being able to speak for the states. Whatever . . . the important thing is that it is signed." (omission in original)); see also *id.* (stating that the USFS Chief, BLM Director,

A complete inventory of the changes is available elsewhere,⁷⁵⁸ but problematic additions or deletions include the following:

- Declaring that "State fish and wildlife management activities that do not involve Wilderness Act prohibitions identified . . . in Section 4(c) . . . are generally exempt from authorizations by the Federal administering agencies,"⁷⁵⁹ when in fact federal requirements to preserve wilderness character go beyond prohibiting section 4(c) uses and include prevention of any action that may degrade an area's wilderness character (e.g., introducing a non-native species).⁷⁶⁰
- Giving states responsibility to determine whether wildlife and fish species are indigenous, thereby possibly degrading the Natural Quality of wilderness character.⁷⁶¹ Associated with this change is the deletion of the IAFWA 1986 Agreement prohibition on stocking exotic fish.⁷⁶²
- Identifying any state plans and agreements as sufficient to establish if an action is necessary in wilderness, when the Wilderness Act states prohibited uses can be approved only to manage the area for the purpose of the Act.⁷⁶³
- Deleting a passage committing the agencies to being guided by the principle of doing "only the minimum necessary to manage the area as wilderness," and assigning authority for completing the "minimum requirements" analysis in part to the states,⁷⁶⁴ when the Act unequivocally gives federal agencies the sole responsibility to manage wilderness areas and preserve their wilderness character.⁷⁶⁵
- Analyzing implementation alternatives on the basis of impacts to "the wilderness characteristics (naturalness, outstanding

and AFWA Executive Vice President "all agreed no fanfare, news release or anything spotlighting it").

⁷⁵⁸ ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS: A COMPARISON OF THE 1986 IAFWA AND 2006 AFWA DOCUMENTS, <https://perma.cc/KR83-7CNK> (last updated May 30, 2017).

⁷⁵⁹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶⁰ See discussion *supra* Part.III.B.7.a.i.

⁷⁶¹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶² See IAFWA 1986 AGREEMENT, *supra* note 731, at 1-8 ("Exotic species of fish shall not be stocked.").

⁷⁶³ Wilderness Act, 16 U.S.C. § 1133(c) (2012); AFWA 2006 AGREEMENT, *supra* note 742, at 5, 16.

⁷⁶⁴ See IAFWA 1986 Agreement, *supra* note 731, at 1 (containing the now-deleted language about doing only the minimum necessary); AFWA 2006 Agreement, *supra* note 742, at 14 ("[T]he intent of this attachment is to document the analysis process used by the BLM and [USFS], in cooperation with the State fish and wildlife agencies, to determine the 'minimum requirements' for accomplishing fish and wildlife projects and activities within a wilderness area.").

⁷⁶⁵ 16 U.S.C. § 1133(b).

opportunities for solitude or primitive and unconfined recreation, and other special features),” and omitting consideration of other important impacts, in particular, to the untrammelled quality and the undeveloped quality.⁷⁶⁶

These provisions, and other AFWA initiatives, reflect AFWA’s fundamental misunderstanding of the federal role in managing wildlife. According to AFWA: “The state fish and wildlife agencies are responsible for fish and wildlife management within their borders, even on most federal public lands—including federal lands designated as Wilderness.”⁷⁶⁷ While the states have duties related to wildlife management, no statute grants them authority in wilderness—or other federal lands—superior to the federal agencies.⁷⁶⁸

It is clear from the plain text of the Wilderness Act that Congress intended the preservation of wilderness character as the primary purpose of the Act. Congress was adamant that wilderness areas shall be “administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment *as wilderness*,”⁷⁶⁹ and that allowing otherwise prohibited uses to meet minimum necessary requirements must be for the purpose of the Act,⁷⁷⁰ not for meeting “states’ abilities to accomplish big game harvest objectives.”⁷⁷¹ The misconception that federal agencies should only utilize “[w]ilderness management planning processes that support the state wildlife agencies and their wildlife management responsibilities and goals”⁷⁷² is exactly backward. In wilderness, state wildlife agencies should support—and cannot undermine—the congressional mandate to preserve wilderness character. While the state agencies may not be required to do so, the federal agencies must evaluate any action that may degrade wilderness character and are required to deny any action that does so.⁷⁷³

IV. ANALYSIS AND RECOMMENDATIONS

A. The Federal Obligation to Manage and Conserve Fish and Wildlife on Federal Lands

We begin our analysis by recognizing that federal land agencies have an *obligation*, and not just the discretion, to manage and conserve fish and

⁷⁶⁶ AFWA 2006 AGREEMENT, *supra* note 742, at 17.

⁷⁶⁷ John Kennedy, Speech at the National Wilderness Conference in Albuquerque, New Mexico: Fish and Wildlife Management in Wilderness 2 (Oct. 17, 2014) [hereinafter Kennedy Speech] (transcript on file with authors).

⁷⁶⁸ See 16 U.S.C. § 1133(a)(3) (“Nothing in this chapter shall modify the statutory authority under which units of the national park system are created.”).

⁷⁶⁹ *Id.* § 1131(a) (emphasis added).

⁷⁷⁰ *Id.* § 1133(c).

⁷⁷¹ Kennedy Speech, *supra* note 767, at 6.

⁷⁷² *Id.* at 11.

⁷⁷³ 16 U.S.C. § 1133(b).

wildlife on federal lands. Before explaining, it is important to first dispel the common myth that "the states manage wildlife, federal land agencies only manage wildlife habitat."⁷⁷⁴ We found this mantra repeated throughout our study, and it was commonly invoked by state and federal agencies in multiple cases and contexts.

The mantra has a long history and can be traced to the different sources of federal and state powers regarding wildlife management. As discussed in Part II.A, states claim ownership of wildlife and a commensurate public trust duty to manage it in the public's interest. On the other hand, the Property Clause of the U.S. Constitution provides federal land agencies with vast plenary powers to manage public lands—and the wildlife thereon.⁷⁷⁵ Writing in 1970, the Public Land Law Review Commission noted that "[h]istorically, the states have regulated the game population, and the Federal Government has managed the habitat."⁷⁷⁶ But the Commission also observed that, "increasingly, . . . the line between the traditional functions has become shadowy" because of the interplay between wildlife populations and habitat.⁷⁷⁷ The Commission released its report prior to passage of the ESA, NFMA, and FLPMA.⁷⁷⁸ And while these laws gave federal land agencies new responsibilities to conserve at-risk species and manage wildlife, and not just wildlife habitat, the "federal lands-habitat" refrain continued.

Part of the mantra's endurance is also due to the states' traditional role in regulating hunting, fishing, and trapping. As discussed previously, FLPMA and the Sikes Act include provisions related to hunting and fishing on public lands administered by USFS and BLM, meaning that federal agencies most often defer to the states when it comes to regulating the harvest of fish and wildlife on federal lands.⁷⁷⁹ Congress has shown no interest in usurping this traditional role of the states. However, wildlife management goes beyond simply setting harvest levels and methods. Just because the federal government has traditionally deferred to the states in establishing regulations pertaining to hunting, fishing, and trapping does not mean "the states manage wildlife, and federal land agencies manage wildlife habitat." We suspect that this non sequitur explains why the mantra has been so rarely questioned in the past.

⁷⁷⁴ See, e.g., *Kleppe*, 426 U.S. 529, 534 n.4, 536–37 (1976) ("[The State of New Mexico] contend[s] that the [Property] Clause grants Congress essentially two kinds of power: (1) the power to dispose of and make incidental rules regarding the use of federal property; and (2) the power to protect federal property. According to [the State], the first power is not broad enough to support legislation protecting wild animals that live on federal property; and the second power is not implicated since the Act is designed to protect the animals, which are not themselves federal property, and not the public lands.").

⁷⁷⁵ See *id.* at 546; Blumun & Paulsen, *supra* note 5, at 1461.

⁷⁷⁶ PUB. LAND LAW REVIEW COMM'N, ONE THIRD OF THE NATION'S LAND: A REPORT TO THE PRESIDENT AND TO THE CONGRESS BY THE PUBLIC LAND LAW REVIEW COMMISSION 158 (1970), <https://perma.cc/TR83-JWLF>.

⁷⁷⁷ *Id.*

⁷⁷⁸ See *id.* at iii (submitting the report in 1970). The ESA, NFMA, and FLPMA were passed in 1973, 1976, and 1976, respectively. See *supra* notes 87–88, 287 and accompanying text.

⁷⁷⁹ See *supra* notes 104–105, 579–582 and accompanying text.

The mantra is wrong from a legal standpoint, limited from a biological one, and problematically simplifies the complexity of wildlife-habitat relationships. We take issue with the mantra because it invariably leads to fragmented approaches to wildlife conservation and unproductive battles over agency turf, and it often leads to an abdication of federal responsibility over wildlife.

We begin with a review of the public land laws surveyed in Part III.B. We then turn to the public trust and national interest in federal lands, and finally to the biological and ecological concerns perpetuated by the wildlife-habitat mantra.

1. Federal Land Laws Governing Wildlife Management

Part III.B makes clear that Congress directed all four federal land management agencies to manage wildlife on federal lands and to not just provide wildlife habitat. The ESA is a good starting point because the Act and its regulations so clearly intertwine the fate of species and ecosystems. The two are linked together under the law, and the statute mandates that all federal land agencies utilize their authorities to effectuate the purposes of the Act.⁷⁸⁰ And the purpose of the Act, after all, is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”⁷⁸¹ Furthermore, the meaning of “harm,” in the definition of “take” includes “significant habitat modification or degradation.”⁷⁸² The ESA obligates federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat.⁷⁸³

The ESA is also significant because of the role played by federal lands in the conservation of listed and candidate species. The most recent assessment, completed in 2008, measured the distribution of ESA-status species (listed as endangered, threatened, or candidate) and species defined by NatureServe as imperiled.⁷⁸⁴ It found that federal lands are significant reservoirs of biodiversity.⁷⁸⁵ Lands managed by USFS and the Department of Defense (DOD) stood out in terms of supporting the greatest number of species with status under the ESA. Both agencies harbored about 23% of species with ESA-status (at least 355 species for each agency), followed by

⁷⁸⁰ ESA, 16 U.S.C. § 1536(a)(1) (2012); see *supra* note 311 and accompanying text.

⁷⁸¹ 16 U.S.C. § 1531(b).

⁷⁸² 50 C.F.R. § 17.3(c)(3) (2016).

⁷⁸³ 16 U.S.C. § 1536(a)(1)–(2).

⁷⁸⁴ Bruce A. Stein et al., *Federal Lands and Endangered Species: The Role of Military and Other Federal Lands in Sustaining Biodiversity*, 58 *BIOSCIENCE* 339, 341 (2008). NatureServe provides independent conservation status assessments for extinction risks facing species in the United States. *Id.* at 340; *About Us*, NATURESERVE, <https://perma.cc/K8TD-6J8R> (last visited Nov. 11, 2017) (“[W]e collect decision-quality data about imperiled species and entire ecosystems, transform that data into knowledge products and visualizations, and provide meaning through expert analyses and support to guide decision-making, implement action, and enhance conservation outcomes.”).

⁷⁸⁵ Stein et al., *supra* note 784, at 346.

NPS (19%), FWS (18%), and BLM (16%).⁷⁸⁶ USFS also harbored the most NatureServe-defined imperiled species: approximately 27% of the total (at least 821 species).⁷⁸⁷ This was followed by BLM (20%) and DOD lands (15%).⁷⁸⁸

To put these percentages in context, consider the importance of national forest lands to fish and wildlife more broadly:

The 193 million acres of the National Forest System support much of North America's wildlife heritage, including: habitat for 430 federally listed threatened and endangered species, six proposed species, and 60 candidate species, with over 16 million acres and 22,000 miles of streams designated as critical habitat for endangered species; approximately 80% of the elk, mountain goat, and bighorn sheep habitat in the lower 48 States; nearly 28 million acres of wild turkey habitat; approximately 70% of the Nation's remaining old growth forests; over 5 million acres of waterfowl habitat; habitat for more than 250 species of migratory birds; habitat for more than 3,500 rare species; some of the best remaining habitat for grizzly bear, lynx, and many reptile, amphibian and rare plant species; over two million acres of lake and reservoir habitat; and over two hundred thousand miles of fish-bearing streams and rivers.⁷⁸⁹

Amongst federal land agencies, BLM has the "fewest ESA status species" and "ranks second for number of imperiled species."⁷⁹⁰ Nonetheless, over 245 ESA-listed species and at least another 31 candidate species are found on BLM lands, and roughly 450 rare and listed plant and animal species "are believed to occur only on BLM-managed lands."⁷⁹¹ While private and other landholdings are essential to biodiversity conservation, federal lands will play an increasingly crucial role in the future.⁷⁹²

The wildlife conservation mandates given to NPS and FWS are unambiguous in the obligation to prioritize the conservation of fish and wildlife. The National Park Service Organic Act makes the conservation of

⁷⁸⁶ *Id.* at 343 & fig.2.

⁷⁸⁷ *Id.*

⁷⁸⁸ *Id.*

⁷⁸⁹ U.S. FOREST SERV., BIOLOGICAL ASSESSMENT OF THE UNITED STATES DEPARTMENT OF AGRICULTURE NATIONAL FOREST SYSTEM LAND MANAGEMENT PLANNING RULE FOR FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES; SPECIES PROPOSED FOR FEDERAL LISTING; SPECIES THAT ARE CANDIDATES FOR FEDERAL LISTING ON NATIONAL FOREST SYSTEM LANDS 17-18 (2011), <https://perma.cc/F4EP-4LQZ>.

⁷⁹⁰ Stein et al., *supra* note 784, at 345.

⁷⁹¹ *Threatened and Endangered Species*, BUREAU LAND MGMT., <https://perma.cc/2RYC-DFY2> (last visited Nov. 11, 2017); see *Threatened and Endangered . . .*, FLICKR, <https://perma.cc/W65S-3QD4> (last visited Nov. 11, 2017) (follow "Show more" hyperlink).

⁷⁹² Stein and colleagues conclude that "[g]iven the current and projected pace of private land development, we can expect that federal lands will assume greater importance for the protection of our native species." Stein et al., *supra* note 784, at 346; see also U.S. FOREST SERV., FUTURE OF AMERICA'S FORESTS AND RANGELANDS: FOREST SERVICE 2010 RESOURCES PLANNING ACT ASSESSMENT 11 (2012), <https://perma.cc/ZDB2-TJUR> (reviewing how development pressure on nonpublic lands is affecting "the ability of those public lands to sustain important ecosystem services and biodiversity"); *The Disappearing West*, CTR. FOR AM. PROGRESS, <https://perma.cc/RU3C-54L2> (last visited Nov. 11, 2017) (discussing the loss of natural land due to human development and the need for private, state, and federal conservation efforts).

park resources, including wildlife, a primary management goal, and the courts are consistent in their reading that conservation is to be prioritized over facilitating public enjoyment.⁷⁹³ Furthermore, the enjoyment of park resources and wildlife may only occur in “such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”⁷⁹⁴ The wildlife conservation mandate is even more well defined for national wildlife refuges. The 1997 Improvement Act prioritizes “the conservation of fish, wildlife and plants, and their habitats within the System” and seeks to “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans.”⁷⁹⁵ The laws governing national parks and wildlife refuges make clear the obligation to conserve fish and wildlife and its habitat.

The wildlife-habitat mantra is most often invoked in the context of USFS and BLM management.⁷⁹⁶ But the multiple-use mandates given to both agencies require that these lands be managed for fish and wildlife purposes, with no distinction made between wildlife and wildlife habitat.⁷⁹⁷ The multiple-use mandates provide USFS and BLM considerable discretion, but that does not mean that the agencies can arbitrarily opt out of managing fish and wildlife where laws or regulations require such management.

NFMA provides a more substantive and enforceable mandate for USFS: “[to] provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁷⁹⁸ Land and Resource Management Plans, whether written pursuant to the 1982 or 2012 NFMA regulations, must ensure the viability of species in planning areas.⁷⁹⁹ The regulations differ in how the viability requirement is defined, but both regulations emphasize the importance of habitat or “ecological conditions” in meeting the diversity mandate.⁸⁰⁰ Yet the definitions of viability, in both sets of regulations, focus on the population of species (e.g., their distribution, persistence, resilience, etc.).⁸⁰¹

FLPMA provides BLM with no wildlife diversity mandate, and it possesses more discretion than other federal land agencies. But this discretion is limited by FLPMA and its regulations.⁸⁰² Multiple use is defined in the Act to include “wildlife and fish.”⁸⁰³ Though “habitat for fish and wildlife and domestic animals” is referenced in FLPMA as well, the language

⁷⁹³ See discussion *supra* Part II.B.2.a.

⁷⁹⁴ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁷⁹⁵ 16 U.S.C. § 668dd(a)(4) (2012).

⁷⁹⁶ See, e.g., *Kleppe*, 426 U.S. 529, 536–37 (1976) (invoking the wildlife mantra to challenge federal jurisdiction over unbranded and unclaimed horses and burros on public lands administered by USFS and BLM).

⁷⁹⁷ See, e.g., 16 U.S.C. § 1604(e)(1); FLPMA, 43 U.S.C. § 1702(c) (2012).

⁷⁹⁸ 16 U.S.C. § 1604(g)(3)(B).

⁷⁹⁹ 36 C.F.R. § 219.9(b) (2012); *id.* § 219.19 (1983).

⁸⁰⁰ *Id.* §§ 219.9(b), 219.19 (2012); *id.* § 219.19 (1983).

⁸⁰¹ *Id.* § 219.19 (2012); *id.* (1983).

⁸⁰² 43 U.S.C. § 1712(c).

⁸⁰³ 43 C.F.R. § 1601.0-5(i) (2016).

is embedded in a more inclusive section focused on the ecological and other values for which public lands must be managed.⁸⁰⁴ The Act also requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern,"⁸⁰⁵ and "to protect and prevent irreparable damage" to the "fish and wildlife resources" found within these areas.⁸⁰⁶ Furthermore, whatever discretion BLM has regarding wildlife conservation becomes much less relevant once a species found on BLM lands is protected by the ESA.

2. *The Public Trust and National Interest in Federal Lands*

In addition to the statutory requirements summarized above, many of these federal land laws include trust-like language pertaining to the national interest in federal lands, non-impairment, and intergenerational responsibility that further clarifies the federal obligation to conserve wildlife. The NPS Organic Act, for example, requires the conservation of "scenery, natural and historic objects, and wild life" therein and also requires the provision for the enjoyment of the same "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."⁸⁰⁷ The mission of the National Wildlife Refuge System, as provided by the Improvement Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁸⁰⁸ In the Wilderness Act, Congress secured "for the American people of present and future generations the benefits of an enduring resource of wilderness."⁸⁰⁹ Section 101 of NEPA expresses the federal government's responsibility to use all practicable means to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."⁸¹⁰ Finally, the ESA includes similar language pertaining to the multiple values of species "to the Nation and its people" and the importance of "better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants."⁸¹¹

⁸⁰⁴ 43 U.S.C. § 1701(a)(8).

⁸⁰⁵ *Id.* § 1712(c)(3).

⁸⁰⁶ *Id.* § 1702(a).

⁸⁰⁷ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁸⁰⁸ National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. § 668dd(a)(2) (2012); see also Robert L. Fischman & Robert S. Adamcik, *Beyond Trust Species: The Conservation Potential of the National Wildlife Refuge System in the Wake of Climate Change*, 51 NAT. RESOURCES J. 1, 6 (2011) (analyzing FWS's "variable and amorphous application of 'trust' terminology and the doctrine that such terminology reflects").

⁸⁰⁹ 16 U.S.C. § 1131(a).

⁸¹⁰ NEPA, 42 U.S.C. § 4331(b)(1) (2012).

⁸¹¹ 16 U.S.C. § 1531(a); see also *Palila*, 471 F. Supp. 985, 994 (D. Haw. 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff'd*, 852 F.2d 1106 (9th Cir. 1988). According to the court: "It is also possible that Congress can assert a property interest in endangered species which is superior to that of the state. . . . The importance of preserving such a national resource may be of such magnitude as to rise to the level of a federal property interest." *Palila*, 471 F. Supp. at

While the multiple-use statutes of USFS and BLM do not specifically reference an intergenerational trust, it is implied in various provisions pertaining to the national interest in federal lands and the command to not impair them. MUSYA, for instance, requires USFS to manage multiple uses in a combination “that will best meet the needs of the American people . . . without impairment of the productivity of the land.”⁸¹² NFMA speaks to “the public interest” and serving “the national interest” in the renewable resources program.⁸¹³ And finally, FLPMA similarly recognizes “the national interest” in public lands and requires multiple-use management to “meet the present and future needs of the American people” as well as “long-term needs of future generations,” and to do so “without permanent impairment of the productivity of the land and the quality of the environment.”⁸¹⁴ The public trust is also acknowledged in Department of the Interior regulations on intergovernmental cooperation in fish and wildlife management:

The Secretary of the Interior reaffirms that fish and wildlife must be maintained for their ecological, cultural, educational, historical, aesthetic, scientific, recreational, economic, and social values to the people of the United States, and that these resources are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.⁸¹⁵

As the statutory language suggests, applying trust principles to lands as varied as those found in the federal system is challenging. It is one thing, for example, to find a trust duty for the national parks, but it becomes murkier when thinking of the routine multiple-use decisions that must be made by USFS and BLM, decisions that often involve the private use of public resources. But even here, there is an understanding by the courts that such private uses must be for “national and public purposes,”⁸¹⁶ and that anti-monopoly restrictions impose a constraint on Congress in making decisions about federal lands as a trust resource.⁸¹⁷ At least one prominent scholar places federal public lands “at the outer reaches of the public trust doctrine.”⁸¹⁸ This is in part because federal public land law is a field heavy

995 n.40. See generally Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605 (2004) (analyzing the wildlife trust doctrine).

⁸¹² 16 U.S.C. §§ 529, 531(a).

⁸¹³ *Id.* § 1600(2)–(3).

⁸¹⁴ 43 U.S.C. §§ 1701(a)(2), (a)(7), 1702(c) (2012).

⁸¹⁵ 43 C.F.R. § 24.1(b) (2016).

⁸¹⁶ *Light*, 220 U.S. 523, 537 (1911).

⁸¹⁷ See *Camfield*, 167 U.S. 518, 524 (1897) (“[The United States] would be recreant to its duties as trustee for the people . . . to permit any individual or private corporation to monopolize them for private gain . . .”); *United States v. Trinidad Coal & Coking Co.*, 137 U.S. 160, 170 (1890) (“[I]n making regulations for disposing of [lands], Congress took no thought of their pecuniary value, but, in the discharge of a high public duty and in the interest of the whole country, sought to develop the material resources of the United States . . .”).

⁸¹⁸ Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. DAVIS L. REV. 269, 273 (1980).

with statutes and regulations, leaving some to question the relevance of applying a common law-based trust doctrine,⁸¹⁹ and also because, in the past, Congress has not hesitated to deploy its Property Clause powers to privatize federal public lands and resources.⁸²⁰ But by the same token, when it appears Congress has chosen to dispose of federal property, the Court has demanded a clear expression of congressional intent.⁸²¹

The issue of a federal trust duty has received vigorous judicial and scholarly debate in recent years,⁸²² but the courts have nonetheless referenced a public trust duty in numerous federal land cases.⁸²³ It is fair to say that the federal public trust, like the Property Clause, "favors retention of federal land in national ownership (retention), national over state and local authority (nationalization), and environmental preservation (conservation)," as a matter of constitutional common law.⁸²⁴

Whether employed as an interpretive canon by the courts or a conservation tool by the federal agencies, the federal public trust provides a useful way of understanding the broad obligations of federal agencies to

⁸¹⁹ See *id.* at 276 ("The legislative matrix is sufficiently comprehensive that doubts can fairly be raised as to whether there is room for a broad, common law doctrine to operate.").

⁸²⁰ See *id.* (explaining that the government "sold or . . . transferred away" its public lands to allow settlement of the western United States and that "[n]o serious suggestion could be made that private title to some 1.4 billion acres is clouded due to the United States' inability to convey clear title"); *Light*, 220 U.S. at 537 (describing the federal public trust doctrine as applicable to "[a]ll the public lands of the nation [which] are held in trust for the people of the whole country" but also stating that Congress had sole power to dispose of those lands).

⁸²¹ See John D. Leshy, *A Property Clause for the Twenty-First Century*, 75 U. COLO. L. REV. 1101, 1110 (2004) ("[T]he Court demands that Congress express itself more clearly when it wants to dispose of federal lands than when it retains them."). Leshy places the *Light* opinion within the burgeoning conservation thrust of 20th century cases. See *id.* at 1120. Although the Court remarked that Congress, when exercising its rights incident to proprietorship and sovereignty, holds the power to "establish[] a forest reserve for what it decides to be national and public purposes . . . [or] disestablish a reserve," it in fact upheld federal authority to reserve and protect its public lands from destruction by unregulated grazing. *Light*, 220 U.S. at 537.

⁸²² Much of the recent debate stems from a misinterpretation of *PPL Montana, LLC v. Montana*, 565 U.S. 576 (2012). See, e.g., *Juliana v. United States*, 217 F. Supp. 3d 1224, 1256, 1258 (D. Or. 2016) ("[A] close reading of *PPL Montana* reveals that it says nothing about the viability of federal public trust claims."). For additional background, see Amicus Curiae Brief of Law Professors in Support of Granting Writ of Certiorari at 3–8, Alec L. *ex rel.* Looz v. McCarthy, 135 S. Ct. 774 (2014) (No. 14-496), 2014 WL 5841697, at *3–8 [hereinafter Amicus Curiae Brief] (arguing the lower court misapplied *PPL Montana*). See generally Hope M. Babcock, *Using the Federal Public Trust Doctrine to Fill Gaps in the Legal Systems Protecting Migrating Wildlife from the Effects of Climate Change*, 95 NEB. L. REV. 649 (2017) (arguing the legal basis for a federal version of the public trust doctrine); Michael C. Blumm & Lynn S. Schaffer, *The Federal Public Trust Doctrine: Misinterpreting Justice Kennedy and Illinois Central Railroad*, 45 ENVTL. L. 399, 408–09 (2015) (discussing Justice Kennedy's comments in *PPL Montana* regarding the public trust doctrine).

⁸²³ See Wilkinson, *supra* note 818, at 298 (identifying thirty-six court opinions describing "the inland public lands as being held in trust"); *Juliana*, 217 F. Supp. 3d at 1258–89 (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty).

⁸²⁴ See Leshy, *supra* note 821, at 1101 (reviewing Property Clause powers); *Juliana*, 217 F. Supp. 3d at 1260 ("[P]ublic trust rights both predated the Constitution and are secured by it.").

manage and conserve wildlife located on or integral to federal lands.⁸²⁵ We are not suggesting that the trust doctrine will provide a precise guide or formula that can be used by federal agencies to make complicated wildlife decisions. Rather, it will require that federal agencies explicitly consider their own trust obligations in decision-making processes and stop the practice of reflexively acquiescing to state claims of wildlife authority.

The famous "Mono Lake decision" by the California Supreme Court provides a constructive way of thinking about this obligation and what it means in practice.⁸²⁶ There, the court had to reconcile two different systems of legal thought—the prior appropriation doctrine and public trust doctrine of Western water law—that were on a "collision course."⁸²⁷ Though the court did not dictate any "particular allocation" of water in the dispute, leaving that decision to the water management agencies, it did make clear that there is "an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible."⁸²⁸ The public trust duty, said the court, "imposes a duty of continuing supervision over the taking and use of the appropriated water."⁸²⁹ In the case, the court asked state agencies to integrate two different doctrines of law and corrected the State of California who "mistakenly thought itself powerless to protect" trust resources.⁸³⁰ Federal agencies similarly have statutory and trust obligations for federal lands and wildlife, and these responsibilities must be factored into their decision-making processes.

Another trust responsibility of relevance is that between the federal government and Indian tribes. While we cannot give this complicated issue full consideration, it is important to recognize yet another layer of trust responsibilities found on federal lands. The federal government has a unique trust responsibility to protect the rights, assets, and property of Indian tribes.⁸³¹ This trust responsibility extends to protecting those off-reservation

⁸²⁵ See Melissa K. Scanlan, *A Comparative Analysis of the Public Trust Doctrine for Managing Water in the United States and India*, in ROUTLEDGE HANDBOOK OF WATER LAW AND POLICY 23, 25 (Alistair Rieu-Clarke et al. eds., 2017) (describing the trust as a judicial presumption that the state cannot privatize or substantially impair trust resources without a clear statutory directives and findings); William D. Araiza, *The Public Trust Doctrine as an Interpretive Canon*, 45 U.C. DAVIS L. REV. 693, 738 (2012) (characterizing the public trust doctrine as "[a]n interpretive canon . . . that provides courts with a judicially manageable method of vindicating the fundamental principle of public purpose in government management of natural resources").

⁸²⁶ Nat'l Audubon Soc'y v. Superior Court of Alpine Cty., 658 P.2d 709, 711–12 (Cal. 1983).

⁸²⁷ *Id.* at 712.

⁸²⁸ *Id.* at 728, 732.

⁸²⁹ *Id.* at 728.

⁸³⁰ *Id.* at 732.

⁸³¹ "Though sovereign, Indian tribes are not foreign nations, but rather distinct political communities 'that may more correctly perhaps be denominated domestic, dependent nations,' whose 'relations to the United States resemble that of a ward to his guardian.'" Martin Nie, *The Use of Co-Management and Protected Land-Use Designations to Protect Tribal Cultural Resources and Reserved Treaty Rights on Federal Lands*, 48 NAT. RESOURCES J. 585, 595 (2008) (quoting *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 2 (1831)). "A less paternalistic way of thinking about this trust relationship" is cast in terms of property; "the federal government has a

use rights that were reserved by tribes through treaties.⁸³² Hundreds of treaties precede the creation of federal land agencies, and many of these contain provisions that reserved rights on what is now federally managed land.⁸³³ These off-reservation treaty rights often include "hunting and fishing rights, gathering rights, water rights, grazing rights, and subsistence rights."⁸³⁴ The trust responsibility to protect these rights is recognized by Congress, the Executive Branch, and the courts.⁸³⁵

3. *The Ecological Fallacy of Separating Wildlife from Habitat*

The "states manage wildlife, federal land agencies manage habitat" mantra is also problematic from a biological and wildlife management perspective. This is because it creates a reductionist and oversimplified dichotomy between wildlife and habitat. It is obvious that 1) land management decisions made by federal agencies impact fish and wildlife populations, and 2) the decisions made by state agencies about fish and wildlife populations impact federal land and resources. Consider, for example, the impact a federal oil and gas lease can have on a state-managed mule deer population, or a state introducing non-native mountain goats to a national forest and the impact this introduction will have to that forest's alpine environment. Now, imagine in the latter case, USFS acquiescing to the introduction of non-native mountain goats on the grounds that the agency does not have authority over wildlife management and that it simply manages habitat. In cases like this, the habitat mantra becomes an abdication of federal responsibility over wildlife and its habitat.

duty to prevent harm to another sovereign's property." *Id.* (citing Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471, 1503-04 (1994)).

⁸³² *Id.*

⁸³³ See *id.* at 585-86, 596 (discussing reserved treaty rights of Native Nations on federal lands and approaches for protecting such rights).

⁸³⁴ *Id.* at 597.

⁸³⁵ See Exec. Order 13,175, 3 C.F.R. § 304 (2000) ("The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian tribes."); Order No. 3335, Sally Jewel, Sec'y of the Interior, Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries § 3 (Aug. 20, 2014) (providing background on the trust responsibility including a review of relevant statutes and case law). USFS "recognizes the Federal Government has certain trust responsibilities and a unique legal relationship with federally recognized Indian Tribes." 36 C.F.R. § 219.4(a)(2) (2016); see also U.S. FOREST SERV. HANDBOOK § 1509.13(11) (2016) (discussing consultation with Indian tribes); Joint Secretarial Order No. 3206, Sec'y of the Interior & Sec'y of Commerce, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act § 1 (June 5, 1997), <https://perma.cc/U45L-UWXF> ("This Order further acknowledges the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship in dealing with tribes.").

The fields of wildlife biology and management recognize the complex interplay between wildlife and habitat. For example, state wildlife agencies often make clear in their educational and outreach materials that wildlife management *is* habitat management.⁸³⁶ And a popular text views habitat

as a concept that is related to a particular species, and sometimes even to a particular population, of plant or animal. Habitat, then, is an area with a combination of resources (like food, cover, water) and environmental conditions (temperature, precipitation, presence or absence of predators and competitors) that promotes occupancy by individuals of a given species (or population) and allows those individuals to survive and reproduce.⁸³⁷

What is wildlife? The authors propose a similarly inclusive definition that includes “the full array of all biota present in an ecosystem as well as their ecological functions.”⁸³⁸ From here, the text goes on to analyze the interconnections between wildlife and habitat, while noting the obvious: “That vegetation plays a central role in the life of many animals is self-evident.”⁸³⁹ The authors, as do others in the field, call for managing wildlife in this larger ecosystem context.⁸⁴⁰ In some ways, the call differs little from Aldo Leopold’s views of “thinking like a mountain” and protecting the integrity of biotic communities: “The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.”⁸⁴¹

B. State Wildlife Governance

1. State Ownership and the Wildlife Trust

The common claim that “states own wildlife”—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. The claim is especially dubious when states assert ownership as a basis to challenge federal authority over wildlife on federal lands. As

⁸³⁶ See, e.g., Mont. Fish, Wildlife & Parks, *Fish & Wildlife: Fish Habitat*, MONTANA.GOV, <https://perma.cc/5QWH-7TKS> (last visited Nov. 11, 2017) (“Habitat is the KEY to fish and wildlife management in Montana.”).

⁸³⁷ MICHAEL L. MORRISON ET AL., *WILDLIFE—HABITAT RELATIONSHIPS: CONCEPTS AND APPLICATIONS* 10 (3d ed. 2006).

⁸³⁸ *Id.* at 380.

⁸³⁹ *Id.* at 43.

⁸⁴⁰ *Id.* at 12; see, e.g., Michael A. Huston, *Introductory Essay: Critical Issues for Improving Predictions*, in *PREDICTING SPECIES OCCURRENCES: ISSUES OF ACCURACY AND SCALE* 7, 7 (J. Michael Scott et al. eds., 2002) (explaining that theories of “how certain processes are expected to produce particular ecological patterns” are important “for the management and conservation of natural resources, including endangered species and biodiversity”); BRENDA C. MCCOMB, *WILDLIFE HABITAT MANAGEMENT: CONCEPTS AND APPLICATIONS IN FORESTRY* 7 (2d. ed. 2016) (“[V]egetation management by forest-land managers is probably the greatest factor influencing the abundance and distribution of animals in our forests today.”).

⁸⁴¹ ALDO LEOPOLD, *A SAND COUNTY ALMANAC: WITH ESSAYS ON CONSERVATION FROM ROUND RIVER* 137–41, 239 (1953).

reviewed in Part III.A, the U.S. Supreme Court has rejected this argument time and again. "To put the claim of the State upon title is to lean upon a slender reed," ruled the Court in *Missouri v. Holland*.⁸⁴² Decades later, in *Hughes v. Oklahoma*, the Court called such claims a "19th-century legal fiction."⁸⁴³

The states are on firm ground when declaring a "sovereign ownership" of wildlife that must be managed in the public interest. However, a more accurate phrase is to say that states manage wildlife under a doctrine of "sovereign trusteeship."⁸⁴⁴ In Part II, we highlighted trust-like language found in state constitutions, statutes, and case law. The so-called "wildlife trust doctrine" is essentially a branch of the public trust doctrine. It requires governmental trustees to manage the corpus of the trust—in this case wildlife—in the public interest and for the benefit of present and future generations, who are the beneficiaries of the trust.⁸⁴⁵ But the development and application of the wildlife trust is limited when contrasted to other trust resources, such as navigable waterways, submerged lands, and public access.⁸⁴⁶

While rejecting claims of state ownership, the *Hughes* Court makes clear that there nevertheless remain "legitimate state concerns for conservation and protection of wild animals" and that the states are not "powerless to protect and conserve wild animal life within their borders."⁸⁴⁷ The *Kleppe* Court also acknowledged that "States have broad trustee and police powers over wild animals within their jurisdictions."⁸⁴⁸ Although it did not elaborate on these powers, the Court emphasized that they were nevertheless subject to the constitutional powers and supremacy of the federal government.⁸⁴⁹ Similarly, in *Baldwin v. Fish & Game Commission of Montana*, the Court remarked that "the State's control over wildlife is not exclusive and absolute in the face of federal regulation."⁸⁵⁰ In Part III.A, we

⁸⁴² 252 U.S. 416, 434 (1920).

⁸⁴³ 441 U.S. 322, 335 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁸⁴⁴ Mary Christina Wood, *The Tribal Property Right to Wildlife Capital (Part I): Applying Principles of Sovereignty to Protect Imperiled Wildlife Populations*, 37 IDAHO L. REV. 1, 59 (2000).

⁸⁴⁵ See *Juliana*, 217 F. Supp. 3d 1224, 1254 (D. Or. 2016) ("[B]asic trust principles . . . impose upon the trustee a fiduciary duty to 'protect the trust property against damage or destruction.' The trustee owes this duty equally to both current and future beneficiaries of the trust." (citation omitted)).

⁸⁴⁶ See, e.g., Frank, *supra* note 15, at 678 ("[T]here has been precious little development of public trust principles in the fish and wildlife context over the past three decades. . . . [T]he reported decisions that do exist seem reluctant to apply public trust principles vigorously to protect fish and wildlife resources."). But see Robin Kundis Craig, *A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 ECOLOGY L.Q. 53, 84–86 (2010) (noting that California courts, for example, have applied the public trust doctrine to wildlife).

⁸⁴⁷ *Hughes*, 441 U.S. at 336, 338 (emphasis added).

⁸⁴⁸ *Kleppe*, 426 U.S. 529, 545 (1976).

⁸⁴⁹ *Id.*

⁸⁵⁰ *Baldwin*, 436 U.S. 371, 386 (1978) ("Nor does a State's control over its resources preclude the proper exercise of federal power."); see also *Otter v. Jewel*, 227 F. Supp. 3d 117, 124–26, (D.D.C. 2017) (holding that sovereign ownership of wildlife based on a state statute did not

reviewed other cases where the courts struck down state wildlife laws—and assertions of state ownership of wildlife—as being in violation of the U.S. Constitution, thus clarifying that state powers over wildlife on federal lands are qualified.

The problem is that states seem to most frequently reference ownership and a public trust in wildlife when declaring broad powers to manage it in opposition to federal (or tribal) interests. In other words, states often claim the powers of a trustee without the accompanying responsibilities.⁸⁵¹ The public trust in wildlife raises a number of related questions. What are the state's affirmative conservation duties under their trust obligations? What must they refrain from doing? Does the doctrine apply to just game species or to biological diversity more broadly?⁸⁵² Does it help resolve conflicts amongst species and if so how? Does the doctrine extend to the protection of wildlife habitat? How is the doctrine enforced and, in particular, do private citizens—the beneficiaries of the trust—have the ability to challenge state agencies to ensure protection of trust resources?⁸⁵³ How can a state exert its trust responsibilities for wildlife on federal lands when a state's trust responsibility is limited to the people of that state only, while federal land and its resources are to be managed for the benefit of all Americans? It is only when these and related questions are sufficiently answered by the states that the term “sovereign ownership” can be used meaningfully.⁸⁵⁴

To summarize, unqualified proclamations that states own wildlife and that the rights associated with ownership limit federal agencies from taking actions to conserve wildlife and its habitat must be challenged. We appreciate that the term “state ownership” is sometimes used as a shortcut to express the trust principles on which it is based and to characterize the state's substantial interest in conserving wildlife. But the term is too often used by the states as a way to challenge federal authority—as if “ownership”

mean that management of sage grouse on federal lands by the federal government produced an injury-in-fact for the purpose of state standing to challenge federal land management plans), *appeal filed sub nom.*, *Otter v. Zinke*, No. 17-5050 (D.C. Cir. Mar. 28, 2017).

⁸⁵¹ See Horner, *supra* note 14, at 28 (“[S]tates have been quick to assert their ‘rights’ with respect to public trust resources Unfortunately, their corresponding ‘duties’ have not been as readily accepted.”).

⁸⁵² See, e.g., Jeremy T. Bruskotter et al., *Rescuing Wolves from Politics: Wildlife as a Public Trust Resource*, 333 SCIENCE 1828, 1828–29 (2011) (arguing that states should utilize the public trust doctrine to protect wildlife species in need of support); Edward A. Fitzgerald, *The Alaskan Wolf War: The Public Trust Doctrine Missing in Action*, 15 ANIMAL L. 193, 197 (2009) (“The public trust doctrine . . . imposes a fiduciary duty on state government to protect and preserve public resources. . . . [It] ‘demands fair procedures, decisions that are justified, and results that are consistent with protection and perpetuation of the resource.’”).

⁸⁵³ See *Ctr. for Biological Diversity, Inc. v. FPL Grp., Inc.*, 83 Cal. Rptr. 3d 588, 603 (Cal. Ct. App. 2008) (affirming that the public has standing to challenge the state's management of wildlife under the public trust doctrine).

⁸⁵⁴ Eric Freyfogle and Dale Goble summarize: “The problem with taking [wildlife] trust language literally is that there is no trust document that sets forth the precise terms of the trust.” FREYFOGLE & GOBLE, *supra* note 292, at 33. So far, they say, “courts have had little or no occasion to struggle with these issues” and “[t]he duties states have and the limits they face in managing wildlife remain largely undecided.” *Id.* at 34; accord Blumun & Paulsen, *supra* note 5, at 1471; Horner, *supra* note 14, at 27.

provides them with more clout than "trust responsibility"—and it does little to help solve conflict or find common ground with federal agencies.⁸⁵⁵

Further complicating matters is that the state's wildlife trust duty, insofar as it is defined at all, is subject to the federal government's statutory and trust obligations over federal lands. As we discussed above, courts have found a trust responsibility for federal lands and integral resources. Although its potential application and parameters remain ill-defined, the cases tend to reinforce and strengthen federal powers over public lands, not limit them.⁸⁵⁶ This is in stark contrast to cases addressing the state public trust doctrine, which tend to restrict legislative and executive actions that run counter to trust responsibilities.⁸⁵⁷ This is not to suggest, however, that the doctrine cannot be used to impose limits and obligations on federal agencies. The Redwood National Park litigation is the most well-known example.⁸⁵⁸ In a series of cases involving the Park, national park statutes and the public trust doctrine were invoked to require affirmative action be taken to protect park resources from external threats posed by logging.⁸⁵⁹ There was, according to the court, an obligation to act: "any discretion vested in the Secretary concerning time, place and specifics of the exercise of such

⁸⁵⁵ As summarized by the Tenth Circuit in the Wyoming National Elk Refuge dispute: "FWS's apparent indifference to the State of Wyoming's problem and the State's insistence of a 'sovereign right' to manage wildlife on the [National Elk Refuge] do little to promote 'cooperative federalism.'" *Wyoming*, 279 F.3d 1214, 1240 (10th Cir. 2002).

⁸⁵⁶ See *Juliana*, 217 F. Supp. 3d 1224, 1253, 1260 (D. Or. 2016) (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty, and finding that "plaintiffs' public trust rights both predated the Constitution and are secured by it"); Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 J. LAND RESOURCES & ENVTL. L. 173, 175 (2004) (noting that the trust doctrine "supplements federal power rather than restricts it"); Wilkinson, *supra* note 818, at 284 ("[T]he trust concept was used to reach results in favor of the United States, that is, to create and reinforce federal powers."). But see MICHAEL C. BLUMM & MARY CHRISTINA WOOD, *THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW* 305 (2d ed. 2015) (challenging the notion that the trust obligation does not impose a restraint on federal land management and noting that these early cases never tested the issue, as many of them centered on the federal government's ability to protect federal lands from trespassers).

⁸⁵⁷ See *Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 452–54 (invalidating a transfer of state trust lands—submerged lands under Lake Michigan—to a private company); Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 784 (2010) (discussing how "the classic statement of the American public trust doctrine" provides limitations on the States' ability to alienate trust resources).

⁸⁵⁸ See *Redwoods III*, 424 F. Supp. 172, 175 (N.D. Cal. 1976) (finding that the Department of the Interior had taken all the necessary steps required of it to protect Redwood National Park under the Redwood National Park Act, 16 U.S.C. §§ 79a–79j (2012), and therefore was discharged of its previous failure to perform duties required by law); *Redwoods II*, 398 F. Supp. 284, 287, 293–94 (N.D. Cal. 1975) (stating that there is a "general trust duty" to conserve and provide for enjoyment of "scenery and natural and historic objects and wildlife . . . in such manner and by such means as will leave them unimpaired"), modified, *Redwoods III*, 424 F. Supp. 172 (N.D. Cal. 1976); *Redwoods I*, 376 F. Supp. 90, 93, 95–96 (N.D. Cal. 1974) (finding that any discretion vested in the Secretary of Interior was subordinate to his obligations to protect the park under the public trust doctrine as "guardian of the people of [the] United States over the public lands" and the Redwood National Park Act).

⁸⁵⁹ *Redwoods III*, 424 F. Supp. at 172–73; *Redwoods II*, 398 F. Supp. at 285; *Redwoods I*, 376 F. Supp. at 93.

powers is subordinate to his paramount legal duty imposed, not only under his trust obligation but by the statute itself, to protect the park.⁸⁶⁰

In moving forward, then, there would be value in attempting to harmonize the multiple trust obligations found on federal lands. As a starting place, the federal government must respond to state assertions of ownership and a wildlife trust by making clear that it too has statutory and trust obligations over federal lands, and they may extend to the conservation of wildlife. In some cases, the implication may be that the federal interest in wildlife preempts that of the states. But, in other cases when there are no competing objectives, a more cooperative form of "co-trusteeship" is possible. Mary Christina Wood uses this term to characterize the multiple trust obligations—at the federal, state, and tribal levels—as they apply to the interjurisdictional nature of salmon conservation and resource management more generally.⁸⁶¹ This co-trustee approach provides one way of reframing what is too often an adversarial relationship between federal and state governments. As Wood explains, the co-trustee framework creates mutual rights to transboundary assets along with collective responsibilities for conserving the resource.⁸⁶²

2. Hunting and the North American Model of Wildlife Conservation

Several conflicts examined as part of this project are partially driven by the way in which wildlife is managed and funded at the state level. Many of the cases reviewed as part of this research involve federal agency actions that are perceived to be in conflict with the state's interest in promoting and regulating fishing, hunting, and trapping. The Alaska cases provide the clearest examples, as the State of Alaska views actions by NPS and FWS to be in direct opposition to the state's mandate to intensively manage wildlife population in order to maximize a sustained yield of prey species in order to achieve high levels of human harvest.⁸⁶³ The wolf management cases in Idaho

⁸⁶⁰ *Redwoods I*, 376 F. Supp. at 96.

⁸⁶¹ Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43, 84–85 (2009).

⁸⁶² *Id.* at 85. Wood calls the approach a "sovereign cotenancy" over shared assets. *Id.* "A cotenancy is a tenancy under more than one distinct title, but with unity of possession." *Id.* She cites, among other cases, *Puget Sound Gillnetters Ass'n v. U.S. District Court for the Western District of Washington*, 573 F.2d 1123, 1126 (9th Cir. 1978), *vacated sub nom.*, *Washington v. Wash. State Commercial Passenger Fishing Vessel Ass'n*, 443 U.S. 658 (1979), where the Ninth Circuit "invoked the cotenancy model to describe shared sovereign rights to migrating salmon." Wood, *supra* note 861, at 85 & n.226. The most referenced case pertaining to co-trusteeship is *United States v. 1.58 Acres of Land Situated in Boston, Suffolk, Massachusetts*, 523 F. Supp. 120, 123–24 (D. Mass. 1981). See Amicus Curiae Brief, *supra* note 822, at 7 (reviewing the co-trustee/cotenancy model and its application to wildlife and other resources); Wood, *supra* note 861, at 71 & n.149 (stating that the public trust doctrine is not only prevalent in litigation at state level but applies with equal force to the federal government).

⁸⁶³ See, e.g., *Alaska*, 591 F.2d 537, 539 (9th Cir. 1979) (discussing Alaska's challenge to the Secretary of the Interior's decision "to close . . . federal lands to [a state-run] wolf-kill program," which had been "designed to relieve pressure upon the caribou herd").

provide another example.⁸⁶⁴ In the Frank Church River of No Return Wilderness, the State of Idaho undertook actions to protect elk from wolves and did so in complete contravention of the Wilderness Act.⁸⁶⁵

In these cases, and others, those outside interests challenging federal agency action/inaction on state wildlife management express a deep mistrust in a state's willingness to protect nongame species and predators. Clearly, some interests prefer federal management, or continued protection under the ESA or federal land law, because they believe that most states prioritize the management of fish and game and the revenue it produces through their license-based funding systems.

This is one reason why it is important for the states to find a more secure and predictable stream of funding for nongame management. Increased funding for nongame species would build capacity at the state level and help harmonize federal-state responsibilities over wildlife on federal lands. It is also necessary to broaden the base of wildlife funding at the state level. Doing so would bring states closer to the principles of wildlife trust management. Jacobson and others get to the crux of the matter:

According to the [public trust doctrine], wildlife is owned by no one and held in trust for the benefit of all, but with the user pay-benefit model, those who both derive direct benefits from wildlife and fund wildlife conservation from user fees may believe they have the only legitimate voice in governance of public wildlife conservation and management. Further, this model logically encourages those who pay via licenses and permits for the privilege of using wildlife to expect greater benefits than those who do not pay. This is a potentially fatal, deeply rooted inconsistency between rhetoric and reality in wildlife management in the United States, given the core premise of the [public trust doctrine] that wildlife is a public resource and no single stakeholder group should benefit from wildlife management more than others.⁸⁶⁶

It is beyond the scope of this Article to comprehensively address the North American Model of Wildlife Conservation. But, we were surprised to find the Model referenced so often in the cases examined, as it is merely a set of principles and is not based in law or regulation.⁸⁶⁷ Its frequent invocation by AFWA and the states is problematic, from providing a

⁸⁶⁴ See, e.g., *Wilderness Watch*, 229 F. Supp. 3d 1170, 1174, 1182–83 (D. Idaho 2017) (finding that USFS's approval of the efforts made by the Idaho Department of Fish and Game's (IDFG) to collar elk violated NEPA and the Wilderness Act), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017); *Maughan v. Vilsack*, No. 4:14-CV-0007-EJL, 2014 WL 12605649, at *1–2 (D. Idaho July 25, 2014) (discussing plaintiffs' claim that a wolf trapping and hunting program conducted by IDFG in a wilderness area violated NFMA, NEPA, the Wilderness Act, and other federal laws).

⁸⁶⁵ *Wilderness Watch*, 229 F. Supp. 3d at 1174, 1182–83.

⁸⁶⁶ Cynthia A. Jacobson et al., *A Conservation Institution for the 21st Century: Implications for State Wildlife Agencies*, 74 J. WILDLIFE MGMT. 203, 205–06 (2010).

⁸⁶⁷ See *supra* notes 56–57 and accompanying text.

particularly narrow and hunting-centric view of conservation history to asserting the power and authority of the states to regulate wildlife.⁸⁶⁸

First, the Model is often used to emphasize the importance of hunting, hunter access, and the significance of license-based revenue for state wildlife agencies.⁸⁶⁹ This exacerbates the potential for intergovernmental conflict by displaying an institutional bias toward game species and hunters, primarily because of the role hunters play in funding state wildlife agencies. Instead of building bridges between federal and state governments, the Model is wielded to draw distinctions between federal and state priorities.

In addition, the Model further undermines the potential for cooperative federalism by failing to include a principle focused on habitat and the role played by federal lands in the conservation of wildlife. As detailed above, federal lands and the habitat they provide are increasingly significant to biodiversity.⁸⁷⁰ Any story of wildlife conservation failing to acknowledge the contribution of federal lands—and the laws and regulations governing them—is woefully incomplete.

Another problem is that while the Model has a principle regarding wildlife as an international resource, it includes no such principle related to intergovernmental cooperation within the United States.⁸⁷¹ This makes little sense because of the transboundary and interjurisdictional nature of wildlife conservation. Some proponents of the Model suggest that it “must be viewed as a dynamic set of principles that can grow and evolve” and that its “future rests to a high degree on the adaptability and application of its principles to contemporary wildlife conservation needs.”⁸⁷² If so, the Model must consider more seriously how states can cooperate, as co-trustees, with federal and tribal governments in the conservation of wildlife.

C. The Department of Interior's Policy Statement on Federal-State Relationships

In Part III.B.5.c, we reviewed the Interior Department's 1983 policy statement and regulations on federal-state relations in wildlife policy. Although the Policy appears in the Code of Federal Regulations “as a matter of convenience to the public,”⁸⁷³ it was not subject to the rulemaking

⁸⁶⁸ See, e.g., Brief for the Ass'n of Fish & Wildlife Agencies as Amicus Curiae in Support of Petitioners, *supra* note 8, at 10 (referencing the Model to assert, “States have legal authority to manage fish and wildlife within their borders, except for federally protected species”); see also discussion *supra* Part II.C (providing examples of the Model's role in various cases).

⁸⁶⁹ See, e.g., Kennedy Speech, *supra* note 767, at 1, 6 (invoking the Model, on behalf of the Wyoming Game and Fish Department and AFWA's State-Federal Relations Committee, to criticize management of federal wilderness areas because of restrictions on types of hunter use and access).

⁸⁷⁰ See *supra* notes 784–788 and accompanying text.

⁸⁷¹ ORGAN ET AL., *supra* note 31, at 19.

⁸⁷² *Id.* at 29.

⁸⁷³ Department of the Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24).

requirements of the Administrative Procedure Act⁸⁷⁴ (APA),⁸⁷⁵ and as such does not carry the force of law.⁸⁷⁶ Despite its lack of weight, the Policy—which is not a bona fide regulation—was referenced in several of the cases we examined as part of this research and is frequently cited by agency officials.⁸⁷⁷

Most of the provisions reiterate basic principles of federalism as applied to wildlife management on federal lands with references to the Property, Commerce, Treaty, and Supremacy Clauses of the U.S. Constitution.⁸⁷⁸ The Policy also provides that fish and wildlife “are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.”⁸⁷⁹ It makes clear that “Congress may choose to preempt State management of fish and wildlife on Federal lands,” but then asserts that Congress nonetheless “reaffirmed the basic responsibility and authority of the States to manage fish and resident wildlife on Federal lands.”⁸⁸⁰

The most plausible construction of this language is that the states manage wildlife (including regulating hunting, fishing, and trapping) up to the point where the federal government determines that state-regulated activities conflict with federal law and regulation. This construction comports with our review of the case law in Part III.A, which expresses the vast constitutional powers held by Congress to conserve wildlife on federal lands.

A separate provision of the Department of Interior’s Policy muddies the water, however, by purporting to “reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife.”⁸⁸¹ The word “primary” is not defined, and it is used in an inconsistent fashion throughout the Policy.⁸⁸² Moreover, it is not clear “where” (or when) states have such “primary” authority. In one section, the Policy refers to state wildlife authority as providing a “comprehensive backdrop applicable in the absence of specific, overriding Federal law.”⁸⁸³ When placed in context, however, it becomes clear that this provision is merely another type of savings clause, recognizing state authority and

⁸⁷⁴ 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2012).

⁸⁷⁵ *Id.* § 553.

⁸⁷⁶ *Christensen*, 529 U.S. 576, 587 (2000).

⁸⁷⁷ See, e.g., Final Appropriate Refuge Uses Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 71 Fed. Reg. 36,408, 36,410 (June 26, 2006); N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, 854 F.3d 1236, 1243 (2017).

⁸⁷⁸ 43 C.F.R. § 24.3(a) (2016).

⁸⁷⁹ *Id.* § 24.1(b).

⁸⁸⁰ *Id.* § 24.3(a)–(b).

⁸⁸¹ *Id.* § 24.2(a).

⁸⁸² Compare *id.* (“This policy is intended to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility . . .”), with *id.* § 24.4(c) (“Congress in the Federal Land Policy and Management Act . . . reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands.”).

⁸⁸³ *Id.* § 24.1(a) (emphasis added).

responsibility where appropriate under existing law, and where appropriate to achieve the objective of "improved conservation of fish and wildlife."⁸⁸⁴

The Policy is more problematic with respect to lands managed by BLM, where it asserts, without citing any specific statutory provision, that FLPMA "explicitly recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁸⁸⁵ The problem is that FLPMA did no such thing. The word "primary" is not used in the statute nor is it implied.⁸⁸⁶ And, the regulations cannot "reaffirm" a principle of federalism that does not exist today and did not exist at the time of FLPMA's enactment.⁸⁸⁷ Furthermore, as we discuss in Part III.B.5.c, FLPMA's savings clause does nothing to enlarge or diminish state responsibilities for wildlife management on federal lands, and it explicitly reserves to the Secretary of Interior the authority to prohibit hunting and fishing for reasons of public safety, administration, and compliance with applicable laws.⁸⁸⁸

The Department of Interior's Policy on federal-state relations, particularly for BLM lands, represents an erroneous interpretation of the law. In its entirety, as currently written, the Policy is internally inconsistent, easily misconstrued, and provides little practical guidance because it does not sort through the fundamental tensions involved in managing wildlife on federal lands. To the extent it attempts to provide guidance, it is confusing and, in some passages, plainly contrary to law.⁸⁸⁹ Although it is fair to say that states may manage wildlife on federal lands unless state management strategies or measures conflict with federal prerogatives, neither BLM nor

⁸⁸⁴ *Id.* § 24.2(a).

⁸⁸⁵ *Id.* § 24.4(c).

⁸⁸⁶ Confusing matters even further, in another section of the same provision, the Department of the Interior acknowledges its responsibility for multiple-use management as defined in FLPMA, "including fish and wildlife conservation." *Id.* (emphasis added).

⁸⁸⁷ Much of what eventually became FLPMA can be traced to the work of the Public Lands Law Review Commission whose recommendations were published as *One Third of the Nation's Land* in 1970. See generally PUB. LAND LAW REVIEW COMM'N, *supra* note 776. The Commission's chapter on fish and wildlife management demonstrates what was understood to be the balance of federal-state power prior to FLPMA's passage in 1976. Far from affirming the "primary authority" of the states to manage wildlife on federal lands, the Commission emphasized the extent of federal powers to preempt the states. *Id.* at 158. Referenced within their recommendations pertaining to fish and wildlife is a 1964 opinion by the Solicitor of the Interior stating that "regulation of the wildlife populations on federally owned land is an appropriate and necessary function of the Federal Government when the regulations are designed to protect and conserve the wildlife as well as the land," concluding that "this authority is superior to that of a state." *Id.* (quoting 71 Interior Dec. 469, 473, 476 (1964)).

⁸⁸⁸ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁸⁸⁹ See APA, 5 U.S.C. § 706(2) (2012) (directing courts to set aside agency actions that are "not in accordance with law" or "contrary to constitutional right, power, privilege, or immunity"); *United States v. Mead Corp.*, 533 U.S. 218, 234–35 (2001) (finding that informal agency interpretations are not entitled to *Chevron* deference but only receive the level of deference "proportional to its 'power to persuade'" (quoting *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944))).

the Department of Interior has the authority to rewrite FLPMA,⁸⁹⁰ much less to redraw the constitutional boundaries of federal and state powers that were so clearly addressed in *Kleppe v. New Mexico*.⁸⁹¹ There, the Supreme Court explained why "the complete power" that Congress has over public lands necessarily includes the power to regulate and protect the wildlife living there.⁸⁹² Accordingly, we recommend that the Policy be corrected, this time using APA rulemaking procedures with adequate notice and meaningful opportunities for all interested stakeholders to comment.

D. Failure to Act: The APA, NEPA, and Beyond

As shown in Part III.A, the constitutional authority of federal land agencies to manage wildlife is well settled, and federal land laws and regulations provide the discretion and sometimes the obligation to conserve wildlife on federal lands. One of the most difficult contemporary questions concerns circumstances where federal agencies have refused to take action to protect wildlife on federal lands.

When states are involved, the general questions tend to be: 1) must the state ask the federal agency for permission to undertake its proposed use of federal land, and 2) if so, what if a state does not do so? The answer to the first question depends on whether the federal agency has a legal duty to act. Such duties may be found in the statutory authorities discussed in Part III.B or in regulations furthering the purposes of those authorities. It is important to distinguish those circumstances where the agency has a duty to act from those where the agency has the authority to act but action is discretionary. A failure to engage in a discretionary act is characterized by law as mere "inaction" while a failure to execute a mandatory duty is characterized as a judicially reviewable "failure to act."⁸⁹³ The distinction has legal significance with regard to the second question above.

As explained by the Supreme Court in *Norton v. Southern Utah Wilderness Alliance (SUWA)*,⁸⁹⁴ in order for courts "to avoid judicial entanglement in abstract policy disagreements" there must be a "discrete agency action" that an agency is required to take.⁸⁹⁵ There was no duty for BLM to act to prohibit motorized use in wilderness study areas in *SUWA* because the statutory provision at issue in FLPMA "is mandatory as to the object to be achieved, but it leaves BLM a great deal of discretion in deciding

⁸⁹⁰ See 43 U.S.C. §§ 1702(a), 1702(c) (defining the terms "areas of critical environmental concern" and "multiple use" in ways that limit federal land use).

⁸⁹¹ *Kleppe*, 426 U.S. 529, 539–41 (1976).

⁸⁹² *Id.* at 540–41 (emphasis added); see also *supra* notes 145–150 and accompanying text (discussing *Kleppe* in detail).

⁸⁹³ Under the APA, a reviewing court may "compel agency action unlawfully withheld." 5 U.S.C. § 706(1) (2012). "[A]gency action" is defined as "the whole or a part of an agency rule, order, license, sanction, relief, or the equivalent or denial thereof, or failure to act." *Id.* § 551(13) (emphasis added). For analysis, see generally Julie Lurman, *Subsistence at Risk: Failure to Act and NEPA Compliance in Post-ANILCA Alaska*, 36 ENVTL. L. 289 (2006).

⁸⁹⁴ 542 U.S. 55 (2004).

⁸⁹⁵ *Id.* at 66.

how to achieve it.⁸⁹⁶ Similarly, the Department of the Interior had no duty under FLPMA to intervene in the State of Alaska's aerial wolf control program on federal lands in *Defenders of Wildlife v. Andrus* because the statutory language was discretionary; thus, there was no judicially reviewable "failure to act."⁸⁹⁷

In addition to FLPMA, the plaintiffs in both *SUWA* and *Defenders of Wildlife* alleged violations of NEPA.⁸⁹⁸ The courts determined that where there was simply inaction, NEPA procedures were not required.⁸⁹⁹ Conversely, failure to act when there is a legal obligation to do so may trigger NEPA.⁹⁰⁰ While NEPA itself does not compel any particular federal action, a NEPA analysis is required whenever a federal action is otherwise compelled by law—whether the agency engages in that action or fails to do so.⁹⁰¹ Moreover, "[n]onfederal actors may . . . be enjoined under NEPA if their proposed action cannot proceed without the prior approval of a federal agency."⁹⁰²

As described in Part III.B, the federal agencies have, where necessary, determined through regulations the circumstances where permits or other approvals are required prior to the use and occupancy of federal lands. In general, failure by a federal agency to require the necessary approval represents a "failure to act" and may result in the non-permitted activity being enjoined.⁹⁰³

In *Maughan v. Vilsack*,⁹⁰⁴ a court declined to enjoin the State of Idaho from contracting to kill wolves in a national forest wilderness area.⁹⁰⁵ However, the court cautioned that its decision was only for the purposes of

⁸⁹⁶ *Id.* at 59–61, 66.

⁸⁹⁷ *Def. of Wildlife*, 627 F.2d 1238, 1239–40, 1249–50 (D.C. Cir. 1980) (citing 43 U.S.C. § 1732). Claimants also do not appear to be able to sue a state based on federal inaction. See *Wilderness Soc'y v. Kane County*, 632 F.3d 1162, 1169–71 (10th Cir. 2011) (explaining that environmental groups had no rights in federal lands that would give them standing to challenge defendant county's actions on those lands based on preemption under the Supremacy Clause of the U.S. Constitution).

⁸⁹⁸ *SUWA*, 542 U.S. at 61; *Def. of Wildlife*, 627 F.2d at 1240.

⁸⁹⁹ *SUWA*, 542 U.S. at 73; *Def. of Wildlife*, 627 F.2d at 1245, 1247.

⁹⁰⁰ See 40 C.F.R. § 1508.18 (2016) (defining "actions" subject to NEPA as including "circumstance[s] where the responsible officials fail to act and that failure to act is reviewable" under the APA or otherwise).

⁹⁰¹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); see *Lurman*, *supra* note 893, at 294–95 (explaining that NEPA attaches "if action were mandated (under a separate statute) but that action was not taken . . . this is failure to act").

⁹⁰² *Fund for Animals, Inc. v. Lujan*, 962 F.2d 1391, 1397 (9th Cir. 1992).

⁹⁰³ See *id.* Such injunctions are not limited to NEPA violations. See *Karuk Tribe of Cal. v. U.S. Forest Serv.*, 681 F.3d 1006, 1016, 1030 (9th Cir. 2012) (holding that USFS's approval of Notices of Intent to mine constituted "agency action" under the ESA and thus required consultation); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1283, 1299–1301 (1st Cir. 1996) (expansion of ski resort enjoined where USFS failed to require a National Pollutant Discharge Elimination System permit).

⁹⁰⁴ No. 4:14-CV-0007-EJL, 2014 WL 201702 (D. Idaho Jan. 17, 2014).

⁹⁰⁵ *Id.* at *1, *5 (accepting, for the purpose of the temporary restraining order and injunction analysis, the USFS's conclusion that "the activity is regulated by a State agency in a manner adequate to protect the lands and resources," which is one of the exceptions found in the USFS's special use permit regulations).

a temporary restraining order, and "USFS has not yet reached a determination regarding the [Idaho Fish and Game] program let alone concluded that a special use permit is required."⁹⁰⁶ Until that time, there was no federal action subject to NEPA.⁹⁰⁷ In *Wilderness Watch v. Vilsack*,⁹⁰⁸ the same court enjoined the use of data obtained by the State of Idaho under a special use permit to use helicopters in the same wilderness area.⁹⁰⁹ It concluded that the State "must obtain approval from [USFS] before undertaking [its] project in the [w]ilderness [a]rea," and "that any action taken by [Idaho] without [USFS] approval would be contrary to the Wilderness Act."⁹¹⁰

In *Friends of Columbia Gorge, Inc. v. Elicker*,⁹¹¹ the United States District Court for the District of Oregon construed the USFS special use permit regulations to apply to approval of a reintroduction plan that would use federal land to establish a population of mountain goats in the Columbia Gorge National Scenic Area.⁹¹² For this and other reasons, USFS was required to comply with NEPA.⁹¹³ In Utah, the state released mountain goats on land adjacent to the Manti-La Sal National Forest, which proceeded to occupy a research natural area on the national forest that was designated to protect plant species that would be vulnerable to trampling.⁹¹⁴ These species included three plant species listed as "sensitive" by USFS.⁹¹⁵ The United States District Court for the District of Utah held that "allowing" the mountain goats on national forest land was not a federal agency action, and that the same special use permit regulations did not require such permits

⁹⁰⁶ *Id.* at *5.

⁹⁰⁷ *See id.* at *6 (explaining that USFS's failure to require an EIS was not a final agency action).

⁹⁰⁸ 229 F. Supp. 3d 1170, 1183 (D. Idaho 2017), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹⁰⁹ *Id.* at 1177, 1183.

⁹¹⁰ *Id.* at 1182 (referencing Wilderness Act, 16 U.S.C. § 1133(c) (2012)). The injunction was based in part on a violation of NEPA. *Id.* In Part III.B.7.a.iii, *infra*, we assess other issues posed by this case, in particular, the Wilderness Act's requirement that USFS make a finding that the activity is "necessary to meet minimum requirements for the administration of the area" before issuing its approval. *But cf.* WildEarth Guardians v. U.S. Forest Serv., No. 4:14-cv-00488-REB, 2017 WL 1217099, at *1 & n.2, *5-9 (D. Idaho Mar. 31, 2017) (Predator hunting "derbies" organized by private parties and occurring on national forest lands did not meet any of the regulatory criteria requiring a special use authorization, and did not have effects subject to NEPA. However, the court struck documents submitted by plaintiffs suggesting such permits had been issued by USFS for six other organized hunts. BLM was initially a defendant in this case but the parties reached an agreement to settle those claims, regarding different regulatory language, out of court.).

⁹¹¹ 598 F. Supp. 2d 1136 (D. Or. 2007), *vacated*, No. 05-CV-646-BR, 2011 WL 3205773 (D. Or. July 27, 2011).

⁹¹² *Id.* at 1153, 1159; *see also* 36 C.F.R. § 251.50 (2016) (describing USFS's special use permitting system).

⁹¹³ *Friends of Columbia Gorge*, 598 F. Supp. 2d at 1155.

⁹¹⁴ *Utah Native Plant Soc'y v. U.S. Forest Serv.*, No. 2:16-cv-56-PMW, 2017 WL 822098, at *1-2 (D. Utah Mar. 2, 2017), *appeal filed*, No. 17-4074 (10th Cir. May 4, 2017).

⁹¹⁵ *Id.* at *1.

"every time state-managed wildlife enters federal land."⁹¹⁶ These cases indicate that it is incumbent on the land managers to evaluate any state action against the regulatory criteria for permits so that they can properly authorize (or deny) the use and occupancy of federal lands.

As noted in Part III.B, federal agencies are encouraged to complete MOUs with the states for cooperative management of fish and wildlife resources. It is the purpose of these MOUs to clearly delineate the authorities of the parties and assign responsibilities among them, and this should include identification of actions that would require a permit. It is critical that the assignment of authorities reflect the legal principles described above. Moreover, the MOU process should not be used to relinquish federal authorities without recognizing that such decisions may constitute actions subject to federal procedures required by the ESA or NEPA.⁹¹⁷ The agencies should expect scrutiny of the assignment of blanket authority to states using MOUs.⁹¹⁸ For example, the relinquishment of federal authority to manipulate water levels in a national wildlife refuge was enjoined because it constituted a federal action subject to NEPA.⁹¹⁹ Similarly, an MOU that delegated authority to the state to assert federal reserved water rights in the Black Canyon of the Gunnison violated the federal agency's nondiscretionary duties to protect federal resources.⁹²⁰ Conversely, BLM's decision to relinquish management of elk feeding grounds to the State of Wyoming through an MOU rather than through land use permits was upheld in *Greater Yellowstone Coalition v. Tidwell*⁹²¹ because FLPMA authorized BLM to enter into such agreements, rendering a permit requirement superfluous.⁹²² The court also affirmed the applicability of NEPA to the MOU in lieu of the permit process.⁹²³

⁹¹⁶ *Id.* at *4, *9, *11. However, the court also indicated that USFS would have authority to remove the goats and would "need to take a position" after sufficient study. *Id.* at *7. USFS had earlier told the state it objected to the reintroduction. *Id.* at *1-2. The authority to remove wildlife was established in *Hunt*, 278 U.S. 96, 100 (1928), and *Kleppe*, 426 U.S. 529, 545-46 (1975).

⁹¹⁷ See *Defs. of Wildlife*, 627 F.2d 1238, 1244 (D.C. Cir. 1980) ("[E]xamples of federal 'permission' [requiring compliance with NEPA] were such concrete acts as decisions 'to issue a lease, approve a mining plan, issue a right-of-way permit, or take other action to allow private activity. . .'" (omission in original) (quoting *Kleppe*, 427 U.S. at 399)).

⁹¹⁸ See *Gallatin Wildlife Ass'n v. U.S. Forest Serv.*, No. CV-15-27-BU-BMM, 2016 WL 3282047, at *9-10 (D. Mont. June 14, 2016) (finding NEPA violations in an EIS for a Forest Plan where USFS failed to disclose MOUs with the State of Montana and grazing permittees that acknowledged that the state would allow permittees to kill bighorn sheep to prevent comingling with domestic sheep), *appeal filed*, No. 16-35665 (9th Cir. filed Aug. 19, 2016).

⁹¹⁹ *Bunch v. Hodel*, 642 F. Supp. 363, 365 (W.D. Tenn. 1985); see also *High Country Citizens' All.*, 448 F. Supp. 2d 1235, 1242-43, 1249 (D. Colo. 2006) (holding that the relinquishment of a federal reserved water right was an agency action subject to judicial review).

⁹²⁰ *High Country Citizens' All.*, 448 F. Supp. 2d at 1241-42, 1245, 1253 ("A permanent relinquishment of a water right with a 1933 priority date for such a scientifically, ecologically and historically important national park must be viewed as a major action requiring compliance with NEPA.").

⁹²¹ 572 F.3d 1115 (10th Cir. 2009).

⁹²² *Id.* at 1119, 1127-28.

⁹²³ *Id.* at 1128.

An important take-away point is that MOUs cannot be used to evade legal obligations.⁹²⁴ Neither can they change a regulatory requirement, as that can only be done through APA rulemaking, nor can MOUs be used to alter statutory provisions, as that power is reserved to Congress.⁹²⁵ As a subsidiary point, if a federal agency were to use an MOU to transfer authority to a state to undertake actions that would be subject to federal requirements, such as those required by the ESA or NEPA, those requirements would attach to the MOU decision itself because that decision would constitute "affirmative conduct" necessary before a nonfederal actor could proceed.⁹²⁶

E. The National Wilderness Preservation System

While all agencies have the authority to assert federal supremacy over the management of fish and wildlife on federal lands in order to fulfill their statutory mission, in federal wilderness areas the affirmative obligation to preserve wilderness character—including fish and wildlife species within wilderness areas—is mandated to the federal land-managing agency.⁹²⁷

Courts have pointed out, "the Wilderness Act is as close to an outcome-oriented piece of environmental legislation as exists. Unlike NEPA, ... the Wilderness Act emphasizes outcome (wilderness preservation) over procedure."⁹²⁸ That outcome, as detailed above in Part III.B.7, is one where an area's wilderness character is protected in full; meaning as far as possible, without human manipulation; where otherwise-prohibited uses are limited only to those necessary for the purpose of preserving that area's wilderness character; where all commercial uses are prohibited, except those commercial services necessary for realizing *wilderness* purposes; and where each federal agency recognizes that whatever the original reason for an area's designation, once it is also designated as wilderness, management must conform to the Wilderness Act. Moreover, where subsequent legislation mentions wildlife management, those provisions must be read in tandem with the Wilderness Act, keeping in mind "the elementary rule" of

⁹²⁴ See *id.* at 1125, 1128 (requiring compliance with NEPA when a federal agency enters into an MOU).

⁹²⁵ See, e.g., *High Country Citizens' All.*, 448 F. Supp. 2d at 1249, 1252 ("This Court finds that the effect of the [MOUs] was actually to remove the administration of the Black Canyon resources from the National Park Service in direct contravention of [federal law]."); *Greater Yellowstone Coal.*, 572 F.3d at 1127 (explaining that FLPMA requires BLM to "ensure the uses approved through cooperative agreements are in compliance with other statutes imposing limitations on the uses of federal land and the activities of federal agencies").

⁹²⁶ See *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 54–55 (D.D.C. 2003) (explaining that "whether the federal agency must undertake 'affirmative conduct' before the non-federal actor may act" is a factor in determining whether an action is a "major Federal action").

⁹²⁷ *Wilderness Watch*, 229 F. Supp. 3d 1170, 1181–82 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal.*, CV-06-04-E-BLW, 2006 WL 3396731, at *6 (D. Idaho Nov. 21, 2006))), amended by No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹²⁸ *High Sierra Hikers Ass'n*, 436 F. Supp. 2d 1117, 1138 (E.D. Cal. 2006).

statutory construction that exceptions to the Act's overarching preservation mission are to be construed narrowly.⁹²⁹

We have reviewed dozens of agency-approved or state-proposed wildlife management actions in wilderness areas, and where errors in stewardship have been made we observed certain trends. It has long been noticed that the most common flaw in making a minimum requirements analysis or other evaluation document is that they are often "[w]ritten to support a pre-determined decision" where preserving wilderness character is not the default conclusion.⁹³⁰ But beyond that, we have observed a fundamental misunderstanding of many facets of the law and an apparent willingness to skirt legal obligations so as to accommodate more political desires. Two illustrative examples are analyzed below.

In 2007, FWS and the Arizona Game and Fish Department (AGFD) proposed to build two new wildlife waters in the Kofa Wilderness in Arizona, in addition to the sixty-five waters previously developed, to halt bighorn sheep population decline.⁹³¹ FWS authorized the construction as a project categorically excluded from detailed environmental analysis under NEPA.⁹³² It made a rudimentary minimum requirements analysis⁹³³ and approved the construction.⁹³⁴ The Ninth Circuit found that FWS had not provided a reasoned determination of necessity in employing the prohibited use of an installation.⁹³⁵ Its opinion created a litmus test for a minimum requirements analysis:

[A] *generic* finding of necessity does not suffice; the Service must make a finding that the structures are "necessary" to meet the "*minimum* requirements for the administration of the area" [T]he key question—whether water structures were necessary at all—remains entirely unanswered [T]he Service's own . . . [Investigative Report] identified many different actions [FWS could have taken]. . . . Importantly, in contrast to the creation of new structures within the wilderness, the Wilderness Act does not prohibit any of

⁹²⁹ *Spokane & Inland Empire R.R. Co. v. United States*, 241 U.S. 344, 350 (1916) ("[E]xceptions from a general policy which a law embodies should be strictly construed, that is, should be so interpreted as not to destroy the remedial processes intended to be accomplished by the enactment."); see *Wilderness Watch v. U.S. Forest Serv.*, 143 F. Supp. 2d 1186, 1206 (D. Mont. 2000); see also discussion *supra* Part III.B.7.b (discussing subsequently enacted, site-specific wilderness legislation).

⁹³⁰ WILDERNESS ADVISORY GRP., U.S. FOREST SERV., MINIMUM REQUIREMENTS ANALYSIS: FAQs AND COMMON ERRORS 16 (2015), <https://perma.cc/Q5MG-JNTV>.

⁹³¹ KOFA NAT'L WILDLIFE REFUGE & ARIZ. GAME & FISH DEP'T, INVESTIGATIVE REPORT AND RECOMMENDATIONS FOR THE KOFA BIGHORN SHEEP HERD 8–10, 23 (2007), <https://perma.cc/B362-GJUZ> [hereinafter KOFA INVESTIGATIVE REPORT]; U.S. FISH & WILDLIFE SERV., KOFA NATIONAL WILDLIFE REFUGE & WILDERNESS AND NEW WATER MOUNTAINS WILDERNESS INTERAGENCY MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT 43–44 (1996).

⁹³² KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., CATEGORICAL EXCLUSION: YAQUI AND MCPHERSON TANKS REDEVELOPMENT PROJECTS (2007), <https://perma.cc/6P7L-EJ46> [hereinafter REDEVELOPMENT CX].

⁹³³ *Id.*

⁹³⁴ See *Kofa*, 629 F.3d 1024, 1031 (9th Cir. 2010) (describing the minimal analysis and the construction process).

⁹³⁵ *Id.* at 1037.

those actions. . . . Yet nowhere in the record does the Service explain why those actions, alone or in combination, are insufficient to restore the population of bighorn sheep. . . . The documents as a whole demonstrate that the Service began with the assumption that water structures are necessary and reasoned from that starting point.⁹³⁶

Subsequently, FWS released a formal determination that concluded it was necessary to have built these two more wildlife waters in addition to the sixty-five already developed because the installations need to be no more than three miles apart for "[o]ptimal distribution of water, especially for lactating ewes."⁹³⁷

In the meantime, FWS authorized the killing of certain mountain lions in the Kofa Wilderness to limit predation on bighorns.⁹³⁸ The rationale was that "[a]lthough mountain lions are also a natural wildlife resource, . . . mountain lion predation is likely additive to other sources of mortality and sufficient to prevent [FWS] from attaining bighorn sheep population objectives."⁹³⁹ The explicit bighorn population objectives were "based on . . . the need to maintain a population large enough . . . to support regional and landscape level transplant programs," and to make it easier for hunters to locate "trophy rams."⁹⁴⁰ The minimum requirements analysis correctly identified the No Action alternative as the one that would best protect wilderness character.⁹⁴¹ However, the Preferred Alternative—the removal of "offending" lions—was chosen.⁹⁴² This choice, as with others made in this series of decisions, was based on supporting analyses that were fundamentally flawed.

One of the new tanks (Yaqui) is itself outside the wilderness, and only part of the catchment system is within the wilderness.⁹⁴³ The Yaqui could have been constructed without a catchment system, with water supplied by a tanker on the adjacent road outside the wilderness.⁹⁴⁴ As constructed, the Yaqui tank cannot have been the minimum necessary under any

⁹³⁶ *Id.* at 1037–38 (citation omitted). The court listed the options that should have been analyzed, including eliminating hunting, cancelling the transplant program, and killing predators. *Id.* at 1037.

⁹³⁷ KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., NECESSITY DETERMINATION: CONSTRUCTION OF THE MCPHERSON AND YAQUI WILDLIFE WATER CATCHMENTS 1, 4 (2014), <https://perma.cc/DR8D-G24N> [hereinafter NECESSITY DETERMINATION].

⁹³⁸ See KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., FINAL ENVIRONMENTAL ASSESSMENT: LIMITING MOUNTAIN LION PREDATION ON DESERT BIGHORN SHEEP ON THE KOFA NATIONAL WILDLIFE REFUGE 5 (2009), <https://perma.cc/22WH-ZAFU> [hereinafter LION EA] (analyzing various alternatives for limiting mountain lion predation on desert bighorn sheep, including the removal of certain mountain lions that have "killed two or more desert bighorn sheep within a six-month period").

⁹³⁹ *Id.*

⁹⁴⁰ *Id.* at 7, 10.

⁹⁴¹ *Id.* at 112–13.

⁹⁴² *Id.* at 104, 114.

⁹⁴³ REDEVELOPMENT CX, *supra* note 932, at 3.

⁹⁴⁴ See *id.* ("The Yaqui Tank Redevelopment Project is planned to take place immediately adjacent to the designated road that follows Moonshine Wash and as a result, is nearly all within the 200-foot-wide area that is outside of designated Wilderness.").

circumstance. Yet, FWS claims these two particular installations are among only twenty-four critical for bighorn survival in the Kofa National Wildlife Refuge.⁹⁴⁵ At the least, that would mean all the remaining wildlife water developments in the Kofa Wilderness fail the test of “necessity” by FWS’s own analysis. Therefore, these developments cannot be maintained and should be removed, since their presence manipulates the “community of life,” creates unnatural conditions in the desert environment, and violates the wilderness definition as “undeveloped Federal land retaining its primeval character and influence.”⁹⁴⁶

In addition, killing predators, while not explicitly prohibited by the Wilderness Act, is implicitly prohibited as an action that trammels “the earth and its community of life.”⁹⁴⁷ Perhaps in response to the vastly greater number of pictures of predators and mule deer than of bighorn sheep recorded at the guzzlers,⁹⁴⁸ FWS wrote: “Desert bighorn sheep will likely use the new water sources more frequently as they become familiar with the location of the waters.”⁹⁴⁹ There is no discussion of how the predators and mule deer became familiar with the locations so much faster than the sheep. To decrease predation on sheep, it would be more consistent with the area’s wilderness character to stop providing supplemental water for bighorn predators and their alternate prey that appear to be less well-adapted to the harsh desert environment of the Kofa Wilderness than desert bighorn sheep.⁹⁵⁰

In the end, these errors are dwarfed by the fundamental mistake of skewing management of the Kofa Wilderness to meet a population goal of 800 bighorns—“considered the carrying capacity of the refuge”—with the objective to re-establish them as a “transplant source herd.”⁹⁵¹ To do so, AGFD and FWS determined that they needed to provide water in all areas of suitable sheep habitat, including areas that were otherwise “unavailable” for sheep due to the absence of water sources.⁹⁵² Maximizing production is an

⁹⁴⁵ See Kofa Investigative Report, *supra* note 931, at 32 tbl.2 (listing twenty-four “[c]ritical bighorn sheep waters on the Kofa [National Wildlife Refuge],” including Yaqui and McPherson tanks).

⁹⁴⁶ Wilderness Act, 16 U.S.C. § 1131(c) (2012).

⁹⁴⁷ See KIW, *supra* note 636, at 7 (stating that the untrammelled quality of wilderness “is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness”); see also *supra* notes 638–641 and accompanying text (analyzing the untrammelled nature of wilderness).

⁹⁴⁸ Author Chris Barns, in analyzing the remote camera studies of the two new guzzlers, found that in the first year bighorn were seen utilizing the guzzlers only twice. The three top predators of bighorns (lions, bobcats, and coyotes) were documented at the installations over 500 times; mule deer were photographed over 800 times.

⁹⁴⁹ NECESSITY DETERMINATION, *supra* note 937, at 1.

⁹⁵⁰ See *id.* at 6 (describing how bighorn sheep can survive up to fifteen days without drinking water during the hot summer months); Bill Broyles & Tricia L. Cutler, *Effect of Surface Water on Desert Bighorn Sheep in the Cabeza Prieta National Wildlife Refuge, Southwestern Arizona*, 27 WILDLIFE SOC’Y BULL., 1082, 1085 (1999) (finding that the availability of perennial surface water did not affect bighorn populations on another desert wilderness refuge).

⁹⁵¹ Kofa Investigative Report, *supra* note 931, at 14, 19.

⁹⁵² *Id.* at 9.

agricultural model, not a wilderness model. In nature, not every nook and cranny is filled with a "desirable" species and devoid of "offending" animals. Although FWS claims that its objective is to "provid[e] the public with the opportunity to view wild sheep in their native habitat,"⁹⁵³ native habitat is not one with artificial water provided every three miles in an area cleansed of predators. Policy guidance from FWS is quite clear: "On wilderness areas within the Refuge System, we conserve fish, wildlife, and plants by preserving the wilderness environment."⁹⁵⁴ In the Kofa Wilderness, FWS has failed to do so by taking actions that degrade its untrammelled quality and that are not the minimum necessary, all for non-wilderness purposes.⁹⁵⁵

Sometimes federal agencies try to apply the law but are opposed not only by state agencies but by wilderness-oriented advocacy groups. In 2011, the Nevada Department of Wildlife (NDOW) requested a multi-year authorization from BLM's Ely and Southern Nevada District Offices for using helicopters to access wildlife water developments within designated wilderness areas.⁹⁵⁶ BLM failed to undertake any analysis to determine whether any water installations were necessary in the first place. However, in preparation for their draft Environmental Assessment (EA), BLM conducted a minimum requirements analysis on methods of access, concluding that helicopter access was necessary for fifteen of the twenty big game water developments but that the others could be accessed on foot or by horse.⁹⁵⁷ In the comment period following release of the draft EA, comments from an advocacy group supported helicopter access to all of the installations because it would be more economical for NDOW.⁹⁵⁸ In addition

⁹⁵³ NECESSITY DETERMINATION, *supra* note 937, at 2.

⁹⁵⁴ FWS WILDERNESS POLICY, *supra* note 437, § 2.16(A); *see also id.* § 2.16(B)(3) ("All decisions and actions to modify ecosystems, species population levels, or natural processes must be: (a) Required to respond to a human emergency, or (b) The minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including *Wilderness Act* purposes. In addition, such decisions and actions must: (i) Maintain or restore the biological integrity, diversity, or environmental health of the wilderness area; or (ii) Be necessary for the recovery of threatened or endangered species." (emphasis added)).

⁹⁵⁵ Other agencies have engaged in similar actions based on similarly flawed analyses. *See, e.g.,* U.S. FOREST SERV., PRELIMINARY ENVIRONMENTAL ASSESSMENT FOR AUTHORIZATION OF HELICOPTER LANDINGS IN WILDERNESS 8-9, 16 & tbl.3 (2014) (authorizing up to 450 helicopter landings for capturing bighorn sheep despite almost half of the bighorn habitat being outside wilderness); NAT'L PARK SERV., ISLE ROYALE NATIONAL PARK: DRAFT ENVIRONMENTAL IMPACT STATEMENT TO ADDRESS THE PRESENCE OF WOLVES, at iv, vii (2016), <https://perma.cc/BD8G-CT4G> (identifying a Preferred Alternative that restocks the island with wolves, despite correctly analyzing the No Action Alternative as the one that best preserves wilderness character).

⁹⁵⁶ *See* BUREAU OF LAND MGMT., ENVIRONMENTAL ASSESSMENT: ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA 1-4 (2011), <https://perma.cc/NWH6-9S52>.

⁹⁵⁷ *Id.* app. A. Access to one of the wildlife waters was determined to be as little as 0.2 miles from the boundary on a closed road. *Id.*

⁹⁵⁸ *See* Shaaron Netherton, Friends of Nevada Wilderness, Comment to *Environmental Assessment: Issuance of Authorizations to Nevada Department of Wildlife for Wildlife Water Development Inspection, Maintenance and Repairs within BLM Wilderness Areas in Nevada* (Dec. 30, 2011) (on file with authors) [hereinafter Friends of Nevada Wilderness Comment] ("[I]n these times of extremely tight budgets . . . we believe it is critical that this EA should help

to prioritizing economics over preservation, the letter contained two other fundamental errors. First, it asserted that NDOW “is responsible for the maintenance of these large game guzzlers.”⁹⁵⁹ To the contrary, at some point after wilderness designation, BLM needed to determine whether each of the water installations is “necessary to meet minimum requirements for the administration of the area” as wilderness.⁹⁶⁰ If so, it is BLM’s responsibility to maintain them—though BLM may ask the state to undertake that responsibility—because preserving wilderness character is solely a federal responsibility.⁹⁶¹ If not, no maintenance can be allowed, and eventually the installations should be removed to comply with the Wilderness Act.⁹⁶²

Second, the letter claimed: “It is clear in both the Clark and Lincoln County legislation that Congress intended that helicopter use be allowed.”⁹⁶³ However, Congress used the word “may” in the legislation, demonstrating its intent that helicopter use be considered, not that it be automatically approved.⁹⁶⁴ Senator Harry Reid specifically noted that while helicopter access may be needed for some monitoring and maintenance, “some guzzlers can be easily accessed after a short hike from a road.”⁹⁶⁵

In the end, BLM authorized NDOW helicopter access to all sites, referring to “[a]dditional information . . . obtained during the comment

facilitate cooperation between the BLM and [NDOW] on the issue of inspection and maintenance of wildlife water developments.”). This instance is not the only time this organization has urged BLM to prioritize nonconforming wildlife developments. See e-mail from Shaaron Netherton, Exec. Dir., Friends of Nev. Wilderness, to Neil Kornze, Bureau of Land Mgmt. (Apr. 1, 2014) (on file with authors) (asking that radio collars no longer be defined as an installation so sportsmen could put them on wildlife in wilderness).

⁹⁵⁹ Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁶⁰ See Wilderness Act, 16 U.S.C. § 1133(c) (2012) (requiring BLM to do a minimum requirements analysis).

⁹⁶¹ See discussion *supra* Part III.B.7.

⁹⁶² See 16 U.S.C. § 1133(c) (permitting installations only where they are “necessary to meet the minimum requirements for the administration of the area” as wilderness).

⁹⁶³ Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁶⁴ Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209(c), 118 Stat. 2403, 2412 (“Consistent with section 4(d)(1) of the Wilderness Act . . . the State may continue to use aircraft, including helicopters, to survey, capture, transplant, monitor, and provide water for wildlife populations”); Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(c), 116 Stat. 1994, 2005 (similar); see also Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329(c), 120 Stat. 2922, 3036 (similar). Under the Wilderness Act, preexisting uses of aircraft are “subject to such restrictions as the Secretary . . . deems desirable.” 16 U.S.C. § 1133(d)(1). Those restrictions are set forth in agency policy: “BLM has discretion to either allow or prohibit the continuation of aircraft use where it has already been legally established prior to the designation of a wilderness area. Administrative use of aircraft is normally authorized under section 4(c) of the Wilderness Act, only where it is necessary to meet minimum requirements for the administration of the area for the purpose of the Wilderness Act.” BLM MANUAL, *supra* note 673, § 1.6(C)(2)(b).

⁹⁶⁵ Letter from Harry Reid, U.S. Senator, to Robert A. Abbey, Dir., Bureau of Land Mgmt. (May 27, 2010) (on file with authors).

period" in disregard of the Wilderness Act and BLM's own analysis.⁹⁶⁶ This result degrades wilderness character by allowing prohibited uses that were shown not to be the minimum necessary—due, in part, to a mistaken reading of the extra special language in designating legislation.

As we have shown, the Wilderness Act unequivocally expresses the federal obligation to assert authority over fish and wildlife to assure the interests of all Americans in the preservation of wilderness character. We are troubled by the cases discussed above, and others, that demonstrate a problematic tendency on the part of some federal land agencies to reflexively acquiesce to state interests when contrary to wilderness law. The federal agencies must renew their dedication to preserving wilderness character.

F. Intergovernmental Cooperation

The states and AFWA have repeatedly asserted that there are not enough opportunities for intergovernmental cooperation in wildlife management and that more opportunities need to be created.⁹⁶⁷ Wildlife conservation absolutely requires intergovernmental cooperation and transboundary thinking beyond political jurisdictions. One early example of such cooperation can be found in the Lacey Act,⁹⁶⁸ which, among other things, provides federal penalties for transporting in interstate commerce any wildlife taken in violation of state law.⁹⁶⁹ Another example is provided by the Pittman-Robertson and Dingell-Johnson Acts, discussed in Part II.B, as both provide significant sources of federal funding for state wildlife management.

There is real value in constructive relationships between federal and state agencies, and we strongly encourage their development. To that end, there are three central points to be made:

- 1) Multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but they are not always fully utilized. For instance, the Sikes Act, ESA, FLPMA, NFMA, NWRSLA, and several others contain such opportunities.
- 2) Intergovernmental cooperation must be a mutual and reciprocal obligation in order to live up to the name and to be as effective as possible. Therefore, there ought to be equal opportunity for federal entities to comment on and participate in state wildlife management decision-making processes, and that is not always the case.

⁹⁶⁶ BUREAU OF LAND MGMT., DECISION RECORD FOR THE ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA (2012), <https://perma.cc/7TMU-HPFG>.

⁹⁶⁷ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 22 (suggesting that the cooperative language found in the Sikes Act could be strengthened and extended to all land management agencies).

⁹⁶⁸ Lacey Act Amendments of 1981, 16 U.S.C. §§ 3371–3378 (2012).

⁹⁶⁹ *Id.* § 3373(a).

- 3) Intergovernmental cooperation cannot be a euphemism for the idea that either entity always gets what it wants. It ought to be, and generally is, an opportunity for informing agency decision making in meaningful ways. The law determines which level of government has the final decision-making authority.

1. Existing Opportunities for Intergovernmental Cooperation at the Federal Level

In Part III.B of this Article, it was noted that the authorizing statutes for the various land units already provide multiple opportunities for intergovernmental cooperation at the federal level. For instance, in the NWRSIA and FLPMA's planning and land acquisition programs, substantive opportunities for intergovernmental cooperation are prescribed by statute.⁹⁷⁰ In addition to these opportunities for cooperation are those opportunities provided in other federal statutes and programs, such as NEPA, the Landscape Conservation Cooperative (LCC) network coordinated by FWS, the Joint Ventures program of FWS, and the State Wildlife Grants Program.⁹⁷¹

NEPA presents what is probably the best-known opportunity for intergovernmental cooperation. NEPA declares that it is the policy of the U.S. government to work "in cooperation with State and local governments" to pursue the "conditions under which man and nature can exist in productive harmony."⁹⁷² To carry out the policy of cooperation, NEPA requires the federal agency conducting an Environmental Impact Statement (EIS) to provide early notification to, and solicit the views of, any state entity which may be significantly impacted.⁹⁷³ Any disagreements about

⁹⁷⁰ See, e.g., National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. § 668dd(e)(3) (directing FWS to consult with "adjoining Federal, State, local, and private landowners and affected State conservation agencies" when preparing comprehensive conservation plans); FLPMA, 43 U.S.C. § 1701(a)(2) (2012) ("[T]he national interest will be best realized if the public lands and their resources are periodically and systematically inventoried and their present and future use is projected through a land use planning process coordinated with other Federal and State planning efforts.").

⁹⁷¹ For a review of these and other programs, see Vicky J. Meretsky et al., *A State-Based National Network for Effective Wildlife Conservation*, 62 BIOSCIENCE 970, 970-72 (2012) (describing collaborative conservation programs, including the Joint Ventures program and LCC network). See also NEPA, 42 U.S.C. § 4331(a) (2012) ("[I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."). See generally LANDSCAPE CONSERVATION COOPS., NETWORK STRATEGIC PLAN (2014), <https://perma.cc/4NGE-VU6W> (describing the strategic plan for the LCC network); *Joint Ventures Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/NGY8-AADQ> (last modified Nov. 12, 2015) (providing an overview of the Joint Ventures program); *State Wildlife Grant Program—Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/LKZ9-4QAT> (last updated July 20, 2016) (providing an overview of the State Wildlife Grant Program).

⁹⁷² 42 U.S.C. § 4331(a).

⁹⁷³ *Id.* § 4332(D)(iv).

impacts between federal and state agencies must be enumerated within the EIS.⁹⁷⁴ States may also obtain official cooperating agency status, which requires the lead NEPA agency to “[u]se the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.”⁹⁷⁵ This provides state governments with much greater access to the federal decision-making processes than the general public enjoys.

One example of successful cooperation wrought by NEPA is the EIS process that was initiated following the *Wyoming v. United States* case about the National Elk Refuge.⁹⁷⁶ In the aftermath of that decision FWS and NPS (which manages neighboring Grand Teton National Park) embarked on a joint-EIS process to develop a plan to guide the management of bison and elk across that federal landscape.⁹⁷⁷ Because of the intergovernmental integration and cooperation made possible by that process, the state chose to incorporate some of the recommendations from the EIS in their own Bison Brucellosis Management Action Plan in 2008.⁹⁷⁸

In an even more focused attempt to encourage integrated management, the LCC program was developed in 2010 in an attempt to facilitate collaboration between all levels of government, including federal, state, local, and tribal governments, as well as interested nongovernmental organizations, in order to “tackle large-scale and long-term conservation challenges.”⁹⁷⁹ There are twenty-two LCCs in the network.⁹⁸⁰ Each is self-directed by a voluntary steering committee, though the whole enterprise is coordinated through FWS.⁹⁸¹ The goals of the LCC program are to develop “science-based information about the implications of climate change and other stressors . . . ; [d]evelop shared, landscape-level conservation objectives and . . . strategies . . . ; [f]acilitate [scientific exchange]; [m]onitor and evaluate the effectiveness of LCC . . . strategies . . . ; [and d]evelop . . . linkages” between LCCs.⁹⁸² A 2015 National Academy of Sciences review concluded that the LCC program provided a framework for achieving landscape-level cooperation and “recognized the LCCs’ ability to create opportunities for identifying common conservation goals and leveraging

⁹⁷⁴ *Id.*

⁹⁷⁵ 40 C.F.R. § 1501.6(2) (2016).

⁹⁷⁶ See *supra* notes 151–154 and accompanying text.

⁹⁷⁷ U.S. FISH & WILDLIFE SERV. & NAT’L PARK SERV., FINAL BISON AND ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT 3 (2007), <https://perma.cc/7VUM-BETP>.

⁹⁷⁸ WYO. GAME & FISH DEP’T, JACKSON BISON HERD (B101) BRUCELLOSIS MANAGEMENT ACTION PLAN 8 (2008), <https://perma.cc/293Y-WM6F>.

⁹⁷⁹ *Beyond Boundaries*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/RT6U-R5QN> (last visited Nov. 11, 2017); see Order No. 3289, Ken Salazar, Sec’y of the Interior, Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources 3 (Feb. 22, 2010), <https://perma.cc/T4WQ-LKGL>.

⁹⁸⁰ LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 20.

⁹⁸¹ *Id.*; *Organizational Structure*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/C49A-TNXU> (last visited Nov. 11, 2017); *Landscape Conservation Cooperative Staff*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/E3PU-ZAGA> (last visited Nov. 11, 2017).

⁹⁸² LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 3.

efforts of diverse partners at a much greater scale than any one entity could achieve alone.⁹⁸³

Unfortunately, simply because cooperative processes are in place—through NEPA and many other statutes—does not always ensure that the federal agencies apply them in a way designed to elicit true state and local government cooperation. Bryan and others document several instances where federal processes are merely used as hoops to jump through rather than opportunities for true collaboration.⁹⁸⁴ Federal agencies will need to improve internal culture and education to ensure existing opportunities for collaboration are as successful as possible.

Furthermore, even when state and local governments take advantage of opportunities to participate in federal processes, their intention is not always true cooperation. Bryan and others write:

From the local government perspective, a guarantee of early and meaningful involvement in the federal land planning process is an important factor in determining whether to participate at all. . . . On the federal side, agencies desire local government participants who are well-informed about the federal planning process, do not use the process for political grand-standing, and reciprocate by including federal planners in local land use planning.⁹⁸⁵

For instance, there has been a movement recently among local governments to try to use the coordination clauses in FLPMA and NFMA to force federal agencies to conform their actions to the wishes of local interests.⁹⁸⁶ However, this is not a reasonable interpretation of the statutes, as was demonstrated in Part III.B of this Article. Both laws temper the coordination clauses with additional language that emphasizes that even though coordination is a worthy goal, it cannot come at the expense of federal agencies meeting their statutory obligations.⁹⁸⁷ Local and state governments

⁹⁸³ Press Release, Landscape Conservation Coop. Network, National Academy of Sciences Releases Its Review of the Landscape Conservation Cooperatives (Dec. 3, 2015), <https://perma.cc/PQV9-UYJJ>.

⁹⁸⁴ See Michelle Bryan et al., *Cause for Rebellion? Examining How Federal Land Management Agencies & Local Governments Collaborate on Land Use Planning*, GEO. WASH. J. ENERGY & ENVTL. L., Spring 2015, at 1, 14–16. (“[C]ollaboration must be genuine and not perfunctory to truly be successful in the long term. . . .”).

⁹⁸⁵ *Id.* at 2.

⁹⁸⁶ Joshua Zaffos, *Counties Use a ‘Coordination’ Clause to Fight the Feds*, HIGH COUNTRY NEWS (May 11, 2015), <https://perma.cc/G7TP-62FR>.

⁹⁸⁷ See NFMA, 16 U.S.C. § 1604(e) (2012) (requiring land and resource management plans to comply with the agency’s multiple use and sustained yield mandate); FLPMA, 43 U.S.C. § 1712(c)(9) (2012) (“The Secretary shall . . . [coordinate] to the extent consistent with the laws governing the administration of the public lands . . .”). Even the Public Lands Council, an interest group which represents cattle and sheep producers who hold public grazing permits, has recognized that this is a disingenuous reading:

Unfortunately, some local governments have taken the BLM consistency requirement to mean that by simply handing the BLM their land use plan, the BLM will be forced to comply with it. Not only is this incorrect, it undermines the ongoing negotiation and information sharing process that is at the core of coordination. Experienced

must work to improve their own use of federal processes and to get involved knowledgably with the intention of being good partners.

2. Opportunities to Cooperate at the State Level

If states are truly looking for meaningful cooperation between federal and state entities regarding wildlife management, then significant opportunities for federal input in state decision making must exist as well. State and local governments regulate the uses of private and state lands that are adjacent to federal lands, and that may cause spill-over effects onto federal lands.⁹⁸⁸ For example, the National Parks Conservation Association (NPCA) recently complained that the proposed Greater Yellowstone grizzly bear delisting plan “[f]ails to provide [NPS] a formal seat at the table to work with state agencies on the management of park bears that occasionally move beyond park borders.”⁹⁸⁹ Without formal mechanisms to promote and institutionalize intergovernmental cooperation, those issues will rarely be considered. Federal law, regulation, and policy encourage intergovernmental cooperation, but there does not appear to be a similar emphasis found in state law and regulation. Again, cooperation, to be effective, must be a two-way street.

For example, when it comes to local land use decisions that have obvious impacts on wildlife, there is rarely an opportunity for federal involvement in the decision making. One exception is Oregon, where “local governments are specifically instructed to collaborate with federal agencies in areas such as natural resources, estuaries, and coastal shorelands.”⁹⁹⁰ Oregon might serve as an example of how other states could modify laws and regulations to encourage such cooperation. “[W]estern states could do much to advance the issue of local-federal land use planning by simply noting, in nonadversarial language, the importance of that issue in their enabling legislation.”⁹⁹¹ For true cooperation to be successful, local, state, and federal governments must work as partners.⁹⁹² To that end, states should create similar opportunities for federal agencies to engage in state and local decision making.

coordinators recognize that the BLM has no obligation to adhere to any local plan or policy that is inconsistent with federal laws and regulations.

PUB. LANDS COUNCIL, A BEGINNER'S GUIDE TO COORDINATION 10 (2012), <https://perma.cc/YW3C-B3CE>; see *About PLC*, PUB. LANDS COUNCIL, <https://perma.cc/manage/create> (last visited Nov. 11, 2017).

⁹⁸⁸ See Bryan et al., *supra* note 984, at 1–5 (providing an overview of local and state land use planning).

⁹⁸⁹ Stephanie Adams, *Iconic Grizzlies Deserve a More Thoughtful Plan*, BOZEMAN DAILY CHRON. (Oct. 15, 2016), <https://perma.cc/W6MN-6NGP>.

⁹⁹⁰ Bryan et al., *supra* note 984, at 4.

⁹⁹¹ *Id.* at 5.

⁹⁹² *Id.* at 2.

3. Cooperation Does Not Equal Federal Acquiescence

In none of the cooperation sections reviewed in Part III.B does the statute in question *require* the federal government to follow state preferences. And in all cases, the statutes do not *permit* the federal agency to relinquish its statutory obligations, even in the face of state dissent. Cooperation under these federal statutes is an opportunity for other levels of government to have privileged access to the decision-making process, to ensure that concerns are considered, and available data is exchanged.

Agencies should absolutely determine if it is possible to meet the needs of other governmental entities, but they cannot be expected to jettison their own statutory or constitutional obligations to reach that goal. For instance, in Alaska, where the state determined that the requirements of ANILCA conflicted with the state constitution, the resolution was that the state could not be forced to implement that statute.⁹⁹³ Likewise, if a federal agency determines that a state's request conflicts with its own legal mandates, it too must refuse to acquiesce to them.⁹⁹⁴ However, in the absence of legal conflicts, we encourage state and federal entities to seriously consider, and if possible accommodate, the interests of other governmental entities.

"[W]ildlife move across eco-regions . . . but management approaches change across arbitrary boundaries."⁹⁹⁵ It is crucial, therefore, that all levels of government cooperate and coordinate their efforts as much as is possible given the legal framework in which they operate. As the court in *Wyoming* stated: "Wildlife management policies affecting the interests of multiple sovereigns demand a high degree of intergovernmental cooperation."⁹⁹⁶ A structure for such cooperation is still largely absent from state processes, and while such a structure is already embedded in federal programs, federal agencies could still improve its implementation in order to better fulfill its intent.

V. CONCLUSION

This is a tumultuous time to be writing about public lands, federalism, and wildlife. Each has been impacted by the deep ideological fissures, polarization, and partisanship characterizing modern American politics. Of course, there has always been a tension between federal and state interests in the management of federal lands and resources. Some of the earliest and most precedential disputes in the field initially revolved around wildlife management and the respective powers of federal and state governments. Slowly, over time, the courts answered these questions and made clear the extensive powers of the federal government to manage public lands and the wildlife thereon. These include *Missouri v. Holland* (1920), *Hunt v. United States* (1928), *Kleppe v. New Mexico* (1976), *Hughes v. Oklahoma* (1979),

⁹⁹³ *McDowell*, 785 P.2d 1, 3, 9 (Alaska 1989).

⁹⁹⁴ See discussion *supra* Part III.A.4.

⁹⁹⁵ Bryan et al., *supra* note 984, at 2 (omission in original).

⁹⁹⁶ *Wyoming*, 279 F.3d 1214, 1218 (10th Cir. 2002).

and dozens of other cases at all levels of the judicial system. A consistent pattern of primary federal authority emerges from these cases, but even where the Supreme Court corrected itself in overturning *Geer v. Connecticut*, it did so carefully and constructively, finding in favor of the federal government and interstate commerce but also recognizing the "legitimate state concerns for conservation and protection of wild animals."⁹⁹⁷

A tension between federal and state interests is embedded in federal land and resources law. In each of the statutes reviewed in Part III.B, Congress required these lands and resources to be managed in the national interest and recognized that federal authority is superior to that of the states. At the same time, Congress appreciated the historical and important position of the states in managing wildlife, and these statutes accordingly provide them a meaningful role to play in federal lands planning and management.

While the law is clear, the politics of wildlife management is not. In 1981, George Coggins and Michael Ward reviewed the law of wildlife management on federal lands and concluded that the "jurisdictional imbroglio is more political than legal."⁹⁹⁸ Nothing has changed in this regard. As discussed in Part II, some state interests continue to insist on their "sovereign rights" to manage wildlife on federal lands, notwithstanding the decisions made by the courts and Congress over the years. On the other hand are federal land agencies that are often in self-denial about their responsibilities for wildlife management and conservation. Too often adopting an overly narrow view of their responsibilities, we found federal land agencies applying their authorities in an inconsistent fashion, to the dismay of the states and those outside interests willing to challenge them.

The most unfortunate consequence of the federal-state conflicts reviewed here is that they draw attention away from the practice of wildlife conservation. A more productive way to proceed in the future is by working more constructively within the carefully crafted legal framework provided by the U.S. Constitution and federal land law rather than against it, and by embracing the conservation obligations that are inherent in federal lands and wildlife trust management.

⁹⁹⁷ *Hughes*, 441 U.S. 322, 335-36 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁹⁹⁸ George Cameron Coggins & Michael E. Ward, *The Law of Wildlife Management on the Federal Public Lands*, 60 OR. L. REV. 59, 60, 84 (1981). Coggins and Ward note that, in creating the "delicate allocation of management jurisdiction" in federal land law, "Congress has been extremely solicitous of state sensibilities" and that "[s]ome members of Congress applaud . . . the federal self-denial." *Id.* at 75, 83-84. They conclude that "[t]he main legislative theory seems to be on the order of 'let's just muddle through as best we can and let the courts handle the hard cases.'" *Id.* at 84-85.

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Appendix 8

PERSPECTIVE

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WILDLIFE HEALTH AND PUBLIC TRUST RESPONSIBILITIES FOR WILDLIFE RESOURCES

Daniel J. Decker,¹ Krysten Schuler,² Ann B. Forstchen,³ Margaret A. Wild,⁴ and William F. Siemer^{5,6}

¹ Human Dimensions Research Unit, Department of Natural Resources, 101 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

² Animal Health Diagnostic Center, Cornell University College of Veterinary Medicine, 240 Farrier Road, Ithaca, New York 14853, USA

³ Division of Habitat and Species Conservation, Florida Fish and Wildlife Conservation Commission, St. Petersburg, Florida 33701, USA

⁴ National Park Service, Wildlife Health Branch, Biological Resources Division, 1201 Oakridge Drive, Suite 200, Fort Collins, Colorado 80525, USA

⁵ Human Dimensions Research Unit, Department of Natural Resources, G18 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

⁶ Corresponding author (email: wfs1@cornell.edu)

ABSTRACT: A significant development in wildlife management is the mounting concern of wildlife professionals and the public about wildlife health and diseases. Concurrently, the wildlife profession is reexamining implications of managing wildlife populations as a public trust and the concomitant obligation to ensure the quality (i.e., health) and sustainability of wildlife. It is an opportune time to emphasize the importance of wildlife health, specifically to advocate for comprehensive and consistent integration of wildlife health in wildlife management. We summarize application of public trust ideas in wildlife population management in the US. We argue that wildlife health is essential to fulfilling public trust administration responsibilities with respect to wildlife, due to the central responsibility of trustees for ensuring the well-being of wildlife species (i.e., the core resources of the trust). Because both health of wildlife and risk perceptions regarding threats posed by wildlife disease to humans and domestic animals are issues of growing concern, managing wildlife disease and risk communication vis-à-vis wildlife health is critical to wildlife trust administration. We conclude that wildlife health professionals play a critical role in protecting the wildlife trust and that current conditions provide opportunities for important contributions by wildlife health professionals in wildlife management.

Key words: Public trust, risk communication, wildlife health, wildlife trust administration.

INTRODUCTION

In light of the attention currently being paid to wildlife diseases, it seems evident that wildlife health would be a vitally important aspect of wildlife population management (Buttke et al. 2015), but this was not always the case. For most of the 20th century, disease normally was not considered to be significant in wildlife management because it was believed that disease did not have population-level effects. This conventional perspective has been nullified (Wobeser 2006), and mounting examples to the contrary have emerged: white-nose syndrome in bats, chytrid fungus in amphibians, chronic wasting disease in cervids, mycoplasmal conjunctivitis in songbirds, West Nile virus in corvids, viral hemorrhagic septicemia in fish, etc. Most wildlife managers now realize that wildlife

diseases demand specific consideration. This situation undoubtedly will continue given the trends in many of the main drivers of the disease surge: climate change, increasing human population encroachment into natural areas, global travel, and introduction of exotic animals, contaminants, and pathogens into native habitats in the US (Binder et al. 1999; Daszak and Cunningham 2000; Jones et al. 2008, 2013).

Although disease is a large component of wildlife health management activity, the concept of wildlife health we use herein is broader, consistent with that proposed by Craig Stephen (2014, pp. 429–430):

A modern definition of wildlife health should emphasize that 1) health is the result of interacting biologic, social, and environmental determinants that interact to affect capacity to cope with change; 2)

health cannot be measured solely by what is absent but rather by characteristics of the animals and their ecosystem that affect their vulnerability and resilience; and 3) wildlife health is not a biologic state but rather a dynamic social construct based on human expectations and knowledge.

This definition reflects a sociocultural-ecological-systems perspective increasingly embraced in contemporary wildlife resource^a management.

Here we describe the role of wildlife health management from the standpoint of fulfilling public trust responsibilities of government. We assert that condition or health of wildlife matters fundamentally in wildlife trust administration. Trust administration responsibilities arise from the legal understanding that wildlife are a valued public resource to be managed by government for the benefit of the general public. The public entrusts protection and management of wildlife resources to state and federal agencies (Organ et al. 2014). Wildlife health and mitigation of wildlife disease are part of the administration of this public trust and deserve attention from the responsible agencies (Decker et al. in press). Our underlying premise is that wildlife health professionals should be cognizant of the argument for wildlife health being essential in wildlife trust administration. It is an opportune time to articulate the role of wildlife health in wildlife management because of the salience of wildlife health and disease^b in the public mind and professional wildlife managers' conservation agenda.

We briefly summarize current thinking about public trust ideas for wildlife management in the US (e.g., Public Trust Doctrine). We then share a definition of wildlife

management that emphasizes a focus on benefits and consequences associated with human-wildlife coexistence (Riley et al. 2002; Decker et al. 2012a, 2013b, 2014). We assert that both health of wildlife and risk perceptions of humans regarding threats posed by wildlife disease to themselves, their families, and domestic animals are issues of growing concern for conservation. We argue that managing risk communication vis-à-vis wildlife health and wildlife disease is a critical aspect of administration of wildlife as a public trust resource. We conclude that current attention to public trust obligations of wildlife agencies provides an opportunity to communicate the state of health of wildlife and their ecosystems as an essential component of conservation and the pivotal role of wildlife health professionals in wildlife management.

MAJOR CONSIDERATIONS

Public trust thinking—The foundation of wildlife management

Society's expression of the fundamental value of natural resources such as wildlife is reflected in common law, referred to as the Public Trust Doctrine (Sax 1970). According to prevailing interpretations of this legal doctrine (e.g., Horner 2000; Batcheller et al. 2010), wildlife in the US are managed by state (primarily) and federal governments as public trust resources for the benefit of current and future generations (Organ and Batcheller 2009). State and federal laws further clarify trust responsibilities of government for wildlife resources (Musgrave and Stein 1993; Bean and Rowland 1997).

The wildlife management community (public and private practitioners, academics, and wildlife agencies) in the US has been examining what it means to manage wildlife as a public trust resource in the 21st century; agencies have been reaffirming their commitments and obligations (Batcheller et al. 2010; Decker et al. 2013a). The attention to public trust thinking (i.e., longstanding ideas about public ownership of natural resources that include but are broader than those normally articulated as the Public Trust Doctrine; Hare

^a The concept of *wildlife resources* includes habitat as well as the wildlife species using that habitat.

^b Although we emphasize wildlife health, we do not mean to imply that all aspects of disease are deleterious; the value of natural disease in population, multispecies, and ecosystems dynamics and the importance of disease in ecological and evolutionary processes have been well established (Vander Wal et al. 2014). Understanding and protecting these processes when natural are also a responsibility of wildlife management.

and Blossey 2014) is important during this time when transformation of state wildlife agencies from a focus on a narrow set of stakeholder interests to more inclusive public interests has been encouraged (Jacobson and Decker 2008; Jacobson et al. 2010; AFWA 2016). Public trust thinking can have a steadying effect as wildlife agencies deal with the uncertainties associated with change; that is, specific agency objectives and processes may be adjusted, but the higher-order purposes of conservation and deeper philosophy of the government-citizen relationship expressed in public trust thinking endure. Principles for governance of wildlife based on public trust thinking and norms of good governance have been proposed recently with the thought that these principles can guide agencies, their partners, specific stakeholders, and citizen beneficiaries in general to effect wildlife management consistent with public trust ideals (Decker et al. 2016).

Principles of trusteeship (e.g., Organ et al. 2014) and descriptions of the roles of various participants in the administration of public wildlife resources (Smith 2011) have emphasized that a responsibility of special concern to trust administrators is assurance of intergenerational fairness (i.e., keeping options open for future generations). Scott (1999) asserts that the Public Trust Doctrine obligates the present generation to regularly review current scientific knowledge in relation to threats to or enhancement of “natural capital” for future generations. We interpret this as the mandate to protect and enhance wildlife populations (including their health) and the complex environments in which they live.

Attention to the condition of the wildlife resources within the public wildlife trust was recently highlighted by Organ et al. (2014). They articulate three key functions that public wildlife managers fulfill under Public Trust Doctrine: sustaining trust assets, developing trust assets, and distributing trust benefits. For the first function, “sustaining trust assets—protective custody,” Organ et al. (2014, p. 411) assert the following:

At minimum, the core function of wildlife trust administration is protection of the

corpus of the trust (i.e., the wildlife resource). One reason for the centrality of this function is that in the absence of a resource of value, there is no need for a trust. Protection of the corpus in wildlife conservation does not simply involve being an attentive custodian of the trust for the current generation of citizens; an intergenerational responsibility in perpetuity is expected. Emerging from this situation, discussions about wildlife trust administration usually refer to applying the precautionary principle (Kriebel et al. 2001). As we have alluded to previously, functionally this results in risk aversion. This means risks need to be identified, better yet anticipated, so trust managers can mitigate negative effects to the extent possible and adjust and bound beneficiaries' expectations of benefits they will receive.

In the context of wildlife health and disease management, this suggests that risk to the wildlife resource be minimized and protective measures taken even if some cause-and-effect relationships impacting health are not fully understood.

Wildlife management defined

The scope of wildlife management in the US has evolved with respect to the breadth of species managed, the diversity of stakeholder interests served, the enormity of the threats compared to the opportunities for conservation, and the magnitude of positive and negative impacts experienced by human communities interacting with wildlife. One contemporary definition of wildlife management reflects public trust thinking by adopting the position that wildlife management is motivated by society's desire for valued outcomes or benefits that can be produced from managing public wildlife resources (Decker et al. 2012a). Expectations for such outcomes give rise to management typically aimed at 1) sustaining biodiversity and related ecological services, 2) providing renewable use and enjoyment of wildlife, and 3) minimizing negative consequences of human-

wildlife interactions on both humans and wildlife (Decker et al. in press).

Human experiences with wildlife arise from many kinds of interactions between people and wildlife and among people because of wildlife. Experiences with wildlife can be of many kinds (direct or vicarious), vary in intensity and duration, and occur across different scales (temporal, geospatial, jurisdictional) and at multiple levels (local, regional, statewide, multi-state, continental, etc.). Outcomes or effects of wildlife experiences can be positive or negative and may take many forms (e.g., economic benefits or costs, threats to or enhancement of human health and safety, ecological services provided by wildlife and their habitats, and physical, mental, and social benefits produced by recreational enjoyment of wildlife). From this perspective, wildlife management can be defined as the guidance of decision-making processes and implementation of practices that influence interactions between people, wildlife, and wildlife habitats, and among people about wildlife, to benefit wildlife and add value to people's lives (adapted from Decker et al. 2012a).

This definition of wildlife management is consistent with the Public Trust Doctrine, whereby wildlife management agencies are expected to deliver benefits for society, that is, to produce impacts valued by the public (Decker et al. 2014). Although tradeoffs producing winners and losers are often inevitable in wildlife management, in aggregate, management actions are expected to result in higher net positive outcomes for society than would occur in the absence of management intervention. Consequently, in practice this is operationalized as two broad categories of actions: those that create positive effects (e.g., improving health of wildlife populations) and those that reduce or eliminate negative effects (e.g., avoid anthropogenic disease transmission to unaffected populations of wildlife). Thus, wildlife managers attempt to enhance, regulate, or prohibit various experiences that people might have with wildlife for the purpose of influencing the nature and magnitude of positive and negative outcomes. Depending on the

need, management actions are aimed at individual wild animals, wildlife populations, wildlife habitats, domestic animals, and people. Accordingly, wildlife management programs often focus on protection or manipulation of wildlife populations and habitats, as well as on regulation of wildlife use (e.g., hunting, trapping) and other human-wildlife interactions (e.g., feeding or viewing wildlife). However, wildlife management is evolving to include a broader array of activities, including increasing efforts to improve wildlife health.

Wildlife health and disease management in a public trust context

Wildlife health and disease management is an important aspect of responsible public wildlife trust administration because wildlife disease and poor wildlife health can increase mortality and decrease reproduction, thereby diminishing wildlife managers' effectiveness in sustaining or restoring wildlife resources. When poor wildlife health impedes fulfillment of public trust responsibilities to current and future generations, wildlife managers typically address two challenges: 1) *health risks* posed to wildlife populations or humans and domestic animals and 2) *public perceptions of risks* posed to wildlife, humans, and domestic animals. Addressing public risk perceptions can be just as consequential for wildlife trust administration as addressing direct effects of disease on wildlife populations. For example, if people cease participation in wildlife-dependent recreation out of excessive concern about risks of contracting disease from wildlife, the benefits of the public wildlife resource are lessened. Even decisions about whether or not and how to manage wildlife risks are affected by risk perceptions. For example, conflict over management actions taken to manage risk of brucellosis transfer from bison (*Bison bison*) to livestock can be rooted in differences in risk perception between stakeholders (Bidwell 2009).

Management for wildlife health therefore contributes in at least two ways to wildlife resource management as a public trust activity: 1) preserving the quality and quantity

of the trust assets (wildlife resources) for future generations (keeping options open for future benefits) and 2) delivering benefits from trust management, including reduction of negative impacts associated with wildlife (perceived or real risk of disease transmission).

These elements of public trust administration are consistent with the core philosophy of animal health professionals. The philosophical connectivity of wildlife health to wildlife conservation is made explicit in the strategic plan of the American Association of Wildlife Veterinarians, which identifies objectives that include enhancing the contribution of veterinary medicine to the welfare of the wildlife resource, promoting animal management and preventative medicine as it relates to free-ranging species, and recognizing disease syndromes in their broadest sense as potentially influenced by habitat conditions (AAWV 2007). This ideology, encompassing the well-being of populations and communities, is in the tradition of “One Health” (Zinsstag et al. 2011) rather than the traditional role of providing individualized health care to domestic animals.

Many state and federal agencies, the entities primarily responsible for wildlife trust administration, have added wildlife health expertise to their staff. Most have access to wildlife veterinarians and have established relationships with veterinary diagnostic laboratories (Siemer et al. 2012). These agencies are incorporating wildlife health and disease more explicitly in their scope of effort. For example, the Florida Fish and Wildlife Conservation Commission (FWC) has a mission that reflects public trust thinking: “managing fish and wildlife resources for their long-term well-being and the benefit of people” (FWC 2016, p. 1). Some FWC activities include surveillance, detection, and monitoring of disease and other factors that impact wildlife health (e.g., water quality and quantity, habitat changes, harmful algal blooms), as well as an understanding of disease impacts on wildlife populations and potential subsequent impacts on ecosystem health and public health. The National Park Service, with its

mission to preserve natural and cultural resources unimpaired for current and future generations, approaches wildlife health differently through its Wildlife Health Program. The National Park Service does not specifically manage for the health of individual species but instead seeks to maintain healthy ecosystems (National Park Service 2006). Consistent with the future generational outlook of public trust administration, both of these wildlife health programs are concerned about the long-term impacts of introduced pathogens and nonnative species on native wildlife populations and ecosystems.

Managing wildlife health can be the most cost-effective method to prevent disease outbreaks, aligning with expectations for efficient use of funding for wildlife trust administration. Eradicating an already-invaded pathogen of wildlife is likely infeasible and extremely costly (Wobeser 2002; Horan and Fenichel 2007). For instance, multiple agencies in Wisconsin together spent over \$32 million during the first five years of the chronic wasting disease (CWD) outbreak in that state’s wild white-tailed deer (*Odocoileus virginianus*) herd with the Wisconsin Department of Natural Resources contributing 83% of these funds (Stuiber et al. 2006). The response to this single outbreak in an isolated portion of the state caused redirection of limited financial and personnel resources from other wildlife and environmental programs. Despite these efforts, CWD increased in prevalence and geographic distribution (WDNR 2016), and opposition to further CWD management grew (Vaske et al. 2004).

Broad recognition of wildlife health concerns and public expectations of wildlife management: Risk perception and communication

Growing concern about effects of wildlife health and disease in wildlife conservation is not limited to conservation insiders. Wildlife disease is a well-established category of concern in wildlife management (Riley et al. 2002) and has become more prevalent in studies of human-wildlife interactions. Generally, concern deepens as perceived risks to self, significant others, and domestic animals

heighten. Studies documenting such concern have been conducted with different kinds of stakeholders (e.g., hunters, farmers, urban residents) in a variety of disease transmission contexts (Dorn and Mertig 2005; Vaske et al. 2009; Vaske 2010).

Thus, wildlife disease presents two different, serious challenges to management of wildlife as public trust resources. The most obvious is the direct effect of diseases on wildlife populations. Disease outbreaks strain efforts to maintain the quality and sustainability of the basic trust assets: wildlife populations and habitats. The second challenge, the effects of risk perception among members of the public, may be less obvious. Social amplification of risk (Kasperson and Kasperson 1996) can occur as individuals, organizations, and government agencies communicate with the public about disease issues that affect livestock production and wildlife-related recreation or tourism (Bidwell 2009). Social amplification of risk, per se, is not a bad thing. In the event of a true risk, amplification (replication or expanding the range of the message) is important. Over-inflated risk perceptions, however, can lead to exaggerated public concerns and over-reaction and therefore have potential to interfere with wildlife trust administration.

Public perception of wildlife health is affected by first-hand observations and second-hand reports of wildlife condition. Observation of sick animals and massive die-offs sway public perception and often elicit a visceral response followed by increased public expectations of "it's the wildlife agency's responsibility to keep wildlife alive and healthy." In some cases, such as very small populations (e.g., endangered species or isolated populations), health concerns are of a genetic nature, with some of the manifestations of genetic problems quite visible to the public (e.g., the kinked tail of the Florida panther [*Puma concolor coryi*]; Hedrick 1995; Land and Lacy 2000).

Exaggerated risk perceptions about wildlife health and wildlife disease, especially when they involve zoonotic agents, can diminish public receipt of benefits of wildlife by decreasing enjoyment of wildlife presence in

the environment. If the public benefits of wildlife diminish, then essentially the value of the wildlife trust diminishes, which is antithetical to expectations of wildlife trust administration. Examples abound. Hunter reluctance to handle and consume deer in areas where CWD has been detected (Gigliotti 2004; Brown et al. 2006) could markedly reduce benefits derived from hunting, especially as prevalence of infected animals increases (Vaske 2010). A 2004 survey revealed that a majority of respondents from states with high incidence of reported cases of Lyme disease had reduced their use of wooded and grassy areas as a means to reduce their exposure to tick bites (Herrington 2004); parents restricting opportunities for their children to experience the outdoors because of perceived risks of wildlife-associated disease obviates benefits of wildlife inhabiting nearby natural areas and may reduce families' appreciation of such areas. Family concerns about exposure of beloved companion animals to Lyme disease or other wildlife-associated diseases may have similar effects. Concerns about spread of disease from wildlife to other domesticated animals, for example, farmer concerns about transmission of bovine tuberculosis from elk (*Cervus elaphus*) in a national park to adjacent livestock (Brook and McLachlan 2006), also augurs poorly for strong public support of wildlife conservation. Some wildlife professionals have speculated that the cumulative effect of risk perceptions could be lack of support for conservation (e.g., resistance to habitat preservation adjacent to human residential areas; intolerance of wildlife in human neighborhoods; opposition to restoration of species known to be associated with diseases of concern) and intolerance of wildlife (Decker et al. 2012b). These responses deplete the yield of current benefits from public wildlife resources and fundamentally threaten the sustainability of such resources, which in turn threatens options for future generations.

Communication challenges

When wildlife disease is considered a major risk by the public, and negative impacts

manifest as outlined earlier, wildlife managers will often find that the usual tools for influencing size and distribution of a wildlife population are inappropriate, insufficient, or unacceptable. Furthermore, misguided public calls for reducing negative impacts by depleting the wildlife resource may be contradictory to public trust administration obligations (e.g., to future generations). Often the response of wildlife management agencies to inflated risk perceptions among lay people has been to simply provide the public with more information. Such responses are based on a cognitive deficit (or knowledge gap) model (Hansen et al. 2003). A cognitive deficit approach assumes that giving people information about an issue will lead to increases in knowledge, leading to change in attitudes and beliefs, which in turn will motivate behavior changes desired by the communicator. Unfortunately, research and practical experience across a range of issues demonstrate that mere exposure to facts is unlikely to cause much societal change in beliefs, attitudes, and behaviors (Stern 1999; Kollmuss and Agyman 2002; Brown 2009). To be effective, risk communication strategies need to consider the dynamic system of social, psychological, and situational factors that can mediate attitude, belief, and behavior change (Hansen et al. 2003).

Moreover, communication about wildlife health and disease is difficult from the perspective of maintaining public support for wildlife conservation (Decker et al. 2010, 2011, 2012b; Evensen et al. 2012). For example, if people need to modify behaviors to reduce risk associated with wildlife disease, how do wildlife managers inform and motivate them in a way that results in protective behaviors but avoids public backlash against wildlife? It seems timely to be expanding wildlife health professionals' roles in educating and working with human health professionals on coordinated public communication, particularly when the message may be coming primarily from the public health arena.

The complicated nature of zoonotic and some nonzoonotic disease events in wildlife can make communicating with the public challenging (Rickard et al. 2013). These

situations require concise communication strategies and familiarity with effective social messaging, yet agency capacity for dealing with risk communication about wildlife diseases is limited (Siemer et al. 2012). Fortunately, communication researchers (e.g., Roh et al. 2015, Lu et al. 2016) recently have shown that carefully crafted messages regarding wildlife disease can increase conservation intent and avoid negative reaction to wildlife disease risk communication. Message testing may be required to accomplish this positive outcome, but the potential to obviate backlash against conservation of wildlife and their habitats argues strongly in favor of the investment. Therefore, effective risk communication is a valuable tool for discharging public trust responsibility and should be in the wildlife resource manager's toolkit.

CONCLUSIONS

Wildlife health professionals can play important, often pivotal, roles in wildlife management, conservation, and public health messaging concerning zoonotic diseases in wildlife. The confluence of several trends may together set the course for wildlife health considerations in wildlife management for decades to come. Those trends are 1) broadening concept of wildlife health to be more than absence of disease, 2) activism among wildlife health professionals to become more mainstream in wildlife management, 3) incidence of novel pathogens causing unprecedented mortality and threatening persistence of numerous wildlife species, 4) emergence of zoonotic disease originating in wildlife populations, 5) rising public expectations that wildlife management will include attention to wildlife-associated disease, 6) growing concern about decline in wildlife-focused/nature-based outdoor activity, and 7) revival of public trust thinking in state and federal wildlife management agencies.

Some things must change to take advantage of what wildlife health professionals can bring to public wildlife trust administration. For example, historically most wildlife health

activities were reactive rather than proactive. However, it is generally easier to prevent new diseases than control or eradicate existing ones. To protect wildlife assets effectively, we need to focus effort on avoiding potential health risks of all kinds rather than on mitigating them reactively (often at great expense and with poor results). Traditional human and domestic animal disease solutions, such as vaccination and biosecurity, are costly and often not practical for wildlife (Wobeser 2002). Attempts to control or eradicate disease through culling require careful analysis to ensure that the response is not more harmful to the wildlife resource than is the disease and thus contrary to public trust obligations. Conversely, redirecting energies to wildlife and ecosystem health and disease prevention is consistent with effective wildlife trust administration. Ironically, however, the exertions of wildlife health professionals to participate more fully in mainstream wildlife management have not emerged from a prevention perspective. They are fueled by wildlife conservationists' and public wildlife managers' concern about the increasing rate of zoonotic disease and their growing recognition that public perceptions of wildlife health and disease are adversely affecting people's behavior and creating expectations for management attention that may not be beneficial to wildlife or humans.

The paradigm shift from fixing wildlife disease to producing wildlife health is in an early stage. This change is occurring simultaneously with attentiveness of wildlife agencies to public trust principles (Decker et al. 2016), where preserving the integrity of the core assets of the wildlife trust and production of multiple benefits from it are imperatives. This confluence presents an opportunity for wildlife health professionals to provide expertise and guidance that will firmly embed wildlife health as a key component of sound wildlife trust administration and an imperative in wildlife management.

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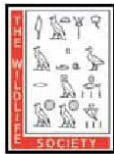
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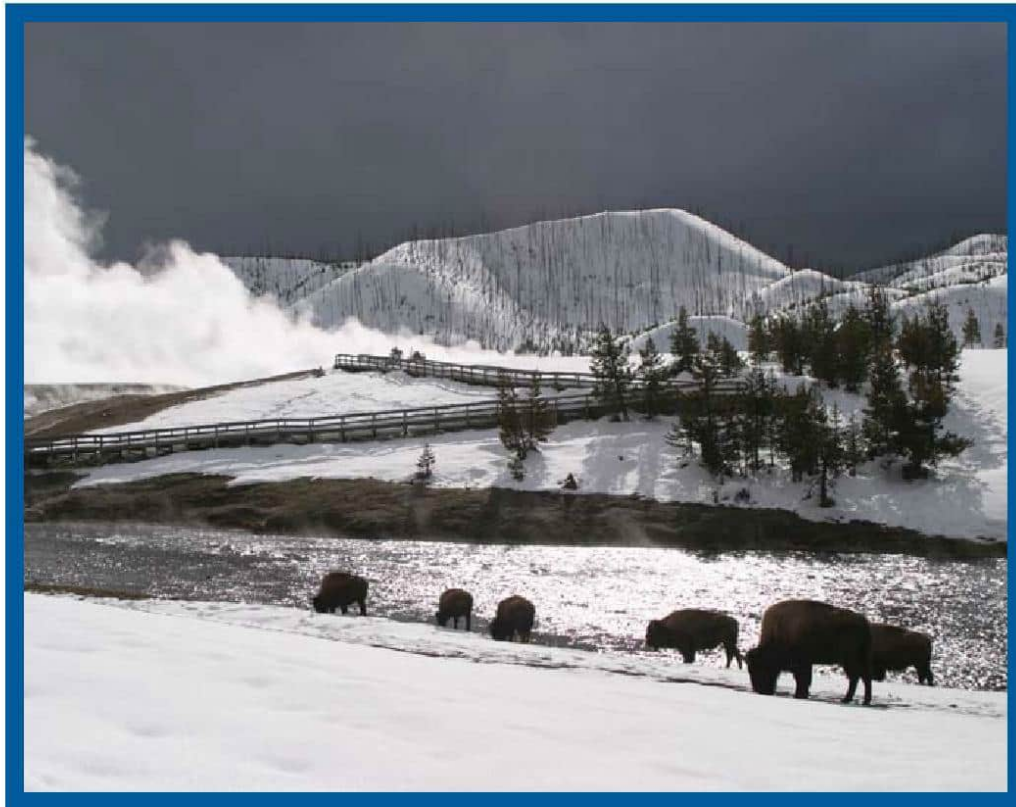
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Appendix 9



The Wildlife Society



The Public Trust Doctrine

Implications for Wildlife Management and
Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

Technical Review 10-01
September 2010

“Defenders of the short-sighted men who in their greed and selfishness will, if permitted, rob our country of half its charm by their reckless extermination of all useful and beautiful wild things sometimes seek to champion them by saying that “the game belongs to the people.” So it does; and not merely to the people now alive, but to the unborn people. The “greatest good for the greatest number” applies to the number within the womb of time, compared to which those now alive form but an insignificant fraction. Our duty to the whole, including the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose, and method.”

Theodore Roosevelt (1916)

Armed for a hunt, Theodore Roosevelt
makes ready to ride, circa 1900.



Credit: Underwood and Underwood/Library of Congress

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Wildlife Society
Association of Fish and Wildlife Agencies
Western Association of Fish and Wildlife Agencies
Wildlife Management Institute

Technical Review Committee on the Public Trust Doctrine

Gordon R. Batcheller (Chair)

New York State Division of Fish, Wildlife
and Marine Resources
625 Broadway
Albany, NY 12233-4754

M. Carol Bamberg

General Counsel
Association of Fish and Wildlife Agencies
444 North Capitol Street, N.W.
Suite 725
Washington, D.C. 20001

Laura Bies

The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

Thomas Decker

Vermont Fish and Wildlife Department
103 South Main Street
Waterbury, VT 05671-0501

Steven Dyke

North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095



The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

David Guynn

Department of Forestry and Natural Resources
260 Lehotsky Hall
Clemson University
Clemson, SC 29634-0317

Michael McEnroe

North Dakota Chapter of The Wildlife Society
7455 Brook Loop
Bismarck, ND 58503

Michael O'Brien

Nova Scotia Department of Natural Resources
136 Exhibition Street
Kentville, NS B4N 4E5

John F. Organ *

U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

Shawn J. Riley

Department of Fisheries and Wildlife
2D Natural Resources Building
Michigan State University
East Lansing, MI 48824

Gary Roehm

18425 Lost Knife Circle #203
Gaithersburg, MD 20886

* The findings and conclusions in this article are those of the author and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

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Front cover illustration: Bison roam the winter snows near Midway Geyser Basin in Yellowstone National Park

Cover photo courtesy of Stephen Hoerold/iStockphoto

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Foreword

Presidents of The Wildlife Society (TWS) occasionally appoint *ad hoc* committees to study and report on selected conservation issues. The reports ordinarily appear as technical reviews or position statements. Technical reviews present technical information and the views of the appointed committee members, but not necessarily the views of their employers.

This technical review focuses on the legal underpinnings and application of the Public Trust Doctrine as it pertains to wildlife management in the United States and Canada. The review was a collaborative effort by TWS, the Association of Fish and Wildlife Agencies (AFWA), the Western Association of Fish and Wildlife Agencies (WAFWA), and the Wildlife Management Institute (WMI).

Acknowledgments

In July 2006, the North Dakota Game and Fish Department hosted the annual meeting of the Western Association of Fish and Wildlife Agencies in Bismarck, North Dakota. The two-day plenary session, "Keeping the Public's Wildlife Public," focused on the Public Trust Doctrine and the implications for the North American Model of Wildlife Conservation. WAFWA subsequently adopted a resolution in 2006 agreeing to develop a strategic plan for strengthening the Public Trust Doctrine among member states and provinces, and to facilitate a comprehensive review of the status of the Doctrine in cooperation with AFWA, TWS, and WMI. In March 2007, a memorandum of understanding was signed by the cooperating entities to develop this technical review.

The Committee expresses its sincere appreciation and recognition to the North Dakota Game and Fish Department and WAFWA for serving as the catalyst to begin the work of evaluating the status of the Public Trust Doctrine in the U.S. and Canada. The Committee also expresses its gratitude to AFWA, TWS, and WMI for their support and encouragement. In particular, the Committee appreciates the legal resources provided by TWS and AFWA necessary to the completion of this technical review.

Meeting facilities and logistic support were kindly provided by Michigan State University, the U.S. Fish and Wildlife Service in Bismarck, and the North Dakota Game and Fish Department.

The Committee appreciates the support and constructive review by members of TWS Council, and particularly by members of the Technical Review subcommittee—John McDonald, Thomas Ryder, Bruce Thompson, and Don Yasuda—who provided oversight of the work of the Committee.

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SYNOPSIS

The Public Trust Doctrine (PTD), with its origin in Roman civil law, is an essential element of North American wildlife law. The Doctrine establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public. Fundamental to the concept is the notion that natural resources are deemed universally important in the lives of people, and that the public should have an opportunity to access these resources for purposes that traditionally include fishing, hunting, trapping, and travel routes (e.g., the use of rivers for navigation and commerce).

The PTD is also recognized as an essential foundation of what has been termed the "North American Model of Wildlife Conservation" (the Model; Geist 1995). This model is viewed as an important construct of law, policy, program framework, and scientific investigation that has led to the protection, conservation, and restoration of wildlife populations in the U.S. and Canada (Geist *et al.* 2001). The underpinnings of the PTD and the future relevance and successful application of the Model may be at risk due to recent changes in society, government policies, and case law (Organ and Mahoney 2006).

Several significant threats have been identified that directly or indirectly erode or challenge the PTD in North America (e.g., Geist and Organ 2004). These threats undermine existing state, provincial, and federal laws, as well as governmental policies and programs. Moreover, they inhibit sound conservation practices for fish and wildlife resources. Approaches to wildlife conservation that for many decades have afforded protection and ensured the sustainability and conservation of wildlife populations are dependent on the legal underpinnings of the PTD. The degree and magnitude of the threats are not universal, though the following issues have been recognized as significant challenges: inappropriately claiming ownership of wildlife as private property; unregulated commercial sale of live wildlife; prohibitions on access to and use of wildlife; personal liability issues; and a value system oriented toward animal rights (Organ and

THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION

The North American Model of Wildlife Conservation has seven distinctive components (Geist *et al.*, 2001):

1. Wildlife as a public trust resource.
2. Elimination of markets for wildlife.
3. Allocation of wildlife by law.
4. Wildlife can only be killed for a legitimate purpose.
5. Wildlife is considered an international resource.
6. Science is the proper tool for discharge of wildlife policy.
7. Democracy of hunting.

Mahoney 2006, Organ and Batcheller 2009). These threats in various ways are potentially harmful to the long-standing tenet that wildlife is a public trust resource.

Concerns regarding these threats and their overall effects led to this technical review, which includes an assessment of the current status of state and provincial statutes and case law related to the PTD. This review examines the benefits of the PTD and also outlines the role of government agencies and their stakeholders in maintaining public trust resources and the rights, privileges, and benefits that the PTD bestows upon the public. Recommendations are set forth with the objective of enhancing the PTD. Securing the PTD is seen as a significant action relevant to the continued protection, conservation, and public use of wildlife resources in North America.

INTRODUCTION

Wildlife professionals have used the Model to describe the system of conservation and natural resource management that has developed over the past two centuries in the U.S. and Canada

(Geist 1995). The PTD—as it relates to water resources, submerged lands, and by extension to fish, wildlife, and other natural resources—provides the cornerstone upon which the highly successful Model was built.

In support of the Model, the North Dakota Chapter of TWS requested that TWS adopt the seven principles of the Model as a basis for guiding and providing input on wildlife management policy, work to enshrine the Model into international treaty law between Canada and the U.S., develop education and information strategies in support of the Model, and seek the support of other conservation organizations to pursue similar actions.

Following the 2006 WAFWA annual conference in North Dakota, a resolution was adopted to encourage the development of a strategic plan to strengthen application of the PTD among member states and provinces and to facilitate a legal analysis, in cooperation with AFWA, WMI, and TWS, of the current status of the Doctrine in member states and provinces.

In March 2007, TWS approved a position statement on the Model, as well as a proposal to prepare a technical review of the PTD in collaboration with WAFWA, AFWA, and WMI. The purpose of this technical review was to: (1) synthesize and interpret existing materials on the PTD as it relates to wildlife management and conservation; (2) review the status and scope of state and provincial legislation as it relates to the PTD; and, (3) identify components that should be included in state or provincial statute, state or provincial wildlife agency charter, or other authorizations and executive proclamations to ensure a legally defensible PTD. Questions that guided the technical review committee focused on legal “ownership” of wildlife, origins of state or provincial laws addressing issues of wildlife management and conservation, clarity of agency authority to manage wildlife, legal tenets that provide evidence the PTD is in place, variability among laws or protection among jurisdictions or among various wildlife species, and competing agency authorities (i.e., among state wildlife and agriculture departments, or between state and federal agencies).

AN OVERVIEW OF THE PUBLIC TRUST DOCTRINE

The Trust Defined and Why it Matters

Simply defined, a trust is a collection of assets committed or entrusted to one to be managed or cared for in the interest of another. The party to whom the trust assets are committed is commonly referred to as the trustee, whereas the party for whom the assets are being managed is referred to as the beneficiary of the trust. Accordingly, the PTD holds that publicly owned wildlife resources are entrusted to the government (as trustee of these resources) to be managed on behalf of the public, the beneficiaries. Consequently, governmental institutions do not own trust resources; rather, they are owned by the public and are entrusted in the care of government to be safeguarded for the public's long-term benefit.

The PTD has been described by some as the cornerstone of the Model (Geist *et al.* 2001, Geist and Organ 2004, and Prukop and Regan 2005). This viewpoint holds that the PTD establishes the core principles central to the Model—the notion that wildlife is a public resource, managed for the common good, and held in custodianship by a cadre of trained professionals who serve as trustees (Brulle 2000) and are held accountable by the beneficiaries, the public.

Alternative models have developed in other countries and are frequently based on privately owned fish, wildlife, and habitat managed for personal or corporate gain. In such cases, the general public may receive little or no apparent benefit from wildlife resources. A number of undesirable outcomes may result from a system of wildlife management not anchored on a PTD foundation including:

- (a) a diminished connection or indifference toward wildlife resources stemming from a disassociation with nature, which means wildlife may become irrelevant to the general public thereby reducing public support for conservation.
- (b) wildlife resources that are viewed as an artifact of the past, separated from modern life, to be seen and appreciated yet

FISHERIES AND THE PUBLIC TRUST DOCTRINE

Navigation, access to public water, and indeed the privilege to fish (*Martin v. Waddell*, 1842) have all been a part of the Public Trust Doctrine. Fisheries conservation and wildlife conservation are intertwined institutionally throughout North America. The technical review committee chose to focus on wildlife conservation and exclude specific reference to fisheries for a number of reasons:

- Fisheries conservation and wildlife conservation arose from different origins.
- Historically, wildlife conservation is largely attuned to restoration, while fisheries conservation is primarily attuned to propagation.
- Commercial harvest is integral to fisheries conservation, while its elimination has been a cornerstone of wildlife conservation.
- Institutionally, federal (U.S.) fisheries oversight is split between the Interior and Commerce Departments, while federal trust authority for wildlife is primarily contained within the Department of Interior.

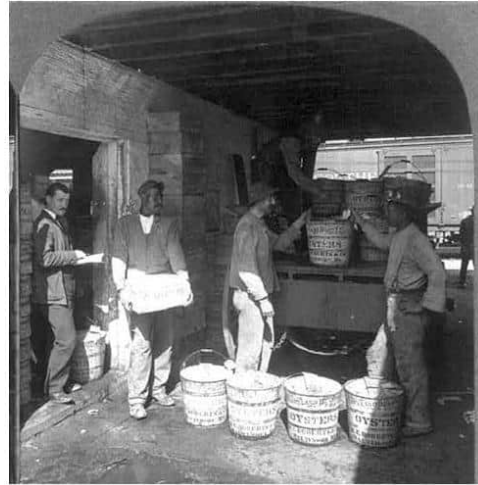
These and other factors cloud the linkage between wildlife and fisheries and the resultant 'noise' would hinder addressing public trust applications for both within the same document.

with a lack of understanding and acceptance of sustainable use, and

- (c) wildlife resources viewed as a liability or threat to be minimized to the extent possible rather than an asset to be conserved and managed for the benefit of current and future generations.

History of the Public Trust Doctrine

The roots of the PTD can be traced to early Greek and Roman civil law. By the sixth century Roman civil law, The Justinian Institutes,



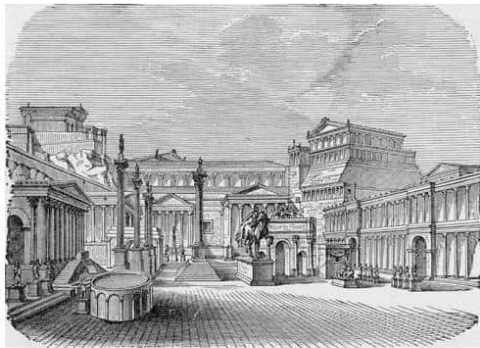
Credit: Library of Congress

Workers in Baltimore prepare oysters for shipping in 1905. Oyster harvest was at the center of the 1842 U.S. Supreme Court decision in *Martin v. Waddell*, which established a central tenet of the Public Trust Doctrine—public ownership of public resources.

the legal texts of the time, stated: *"By the law of nature these things are common to all mankind: the air, running water, the sea, and consequently the shores of the sea"* (Koehl 2006). Thus, common property could be owned by no one, affording all citizens access to it. Roman civil law was reaffirmed by the English Magna Carta in 1215 AD, and redefined by English common law in 1641. English disfavor for "ownerless property" caused them to express the Roman concept in a less assertive way by assigning ownership of common property to the king, not for his private use, but as a trustee of these properties for the benefit of the people (Horner 2000, Henquinet and Dobson 2006, Organ 2006). In earlier times this arrangement resulted in the dispersion of privileges taken or allowed by royalty (Blumm and Ritchie 2005). Regarding waters, this introduced the concept of common easements for public navigation and fishing with an understanding that the Crown owned submerged lands and shorelines in trust for the people (Henquinet and Dobson 2006).

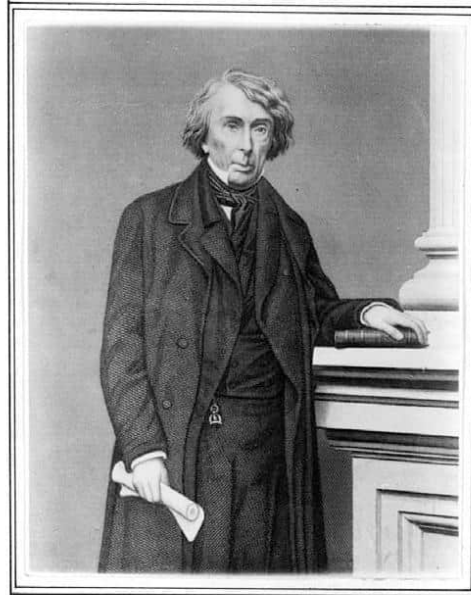
In the U.S., English common law was applied to the 13 colonies, and eventually redefined and assigned to the states by the courts following America's independence (Henquinet and Dobson 2006). In doing so the American courts abolished the English system of royal prerogatives and reestablished or restored and strengthened the full public trust concept (Blumm and Ritchie 2005). In 1821 the New Jersey Supreme Court, in deciding *Arnold v. Mundy*, corrected England's diversions from Roman civil law, which were only partially restored by the Magna Carta, by stating that the ownership of water and underlying lands transferred to New Jersey's citizens upon statehood, thus returning public trust law closer to the original Roman concept (Henquinet and Dobson 2006).

The first federal court decision affirming the PTD occurred in 1842 when the U.S. Supreme Court in *Martin v. Waddell* found that the public held a common right to fish in navigable and tidal waters of New Jersey because they and their underlying lands were owned by the state for the common use by the people. Subsequent court findings reaffirmed such public ownership including cases addressing the Equal Footings Doctrine (*Shively v. Bowlby* 1894), which described rights of states newly admitted into the Union (Henquinet and Dobson 2006).



Credit: Eon Images

The Roman Forum still stands as a symbol of the empire that established the broad principles of a "public trust" nearly two millennia ago, ensuring public access to common property.



Credit: Library of Congress

In 1842, U.S. Supreme Court Chief Justice Roger B. Taney cited the Magna Carta in *Martin v. Waddell*, the ruling that established the basis for the Public Trust Doctrine in the United States.

Traditional public interests protected by the PTD were navigation, commerce, and fishing. Subsequent court cases mainly addressed these three interests during the 20th Century. However, *Geer v. Connecticut* (1896) included "wild fowling" within a state's trustee responsibilities. Although partially reversed in *Hughes v. Oklahoma* (1979), state statutes and state courts continue to assert state trusteeship of wildlife. Recent case law has markedly expanded the application of the Doctrine. For example, the California Supreme Court in *Marks v. Whitney* (1971) opined that considering the changing needs of the public, a state is not bound to protect just the traditional interests addressed by early case law. Rather, that court found that ecological protection was a public interest afforded oversight by the Doctrine (Henquinet and Dobson 2006). Other recent case law has expanded the relevance of the Doctrine to

include such diverse topics as wildlife habitat; the open seas; environmental protection from development, pollution, and invasive species; recreational activities such as swimming, parks, and historic monuments; public health; bathing; flood prevention; aesthetic values such as open and scenic beauty; diversion of water for domestic, industrial, and agricultural purposes; religious and cultural interests; and even the electromagnetic spectrum (Cottriel 1996, Steneljem 2005, Henquinet and Dobson 2006, Organ 2006, and Simmons 2007).

In Canada, as a part of the British Commonwealth of which the reigning British monarch is the symbolic head of state, common or public property is referred to as assets of the "Crown." Most of the provincial statutes relating to public lands and wildlife describe ownership as "vested in His/Her Majesty in the right of the Province," which in modern times implies held in trust for the benefit of the people. For example, the Nova Scotia Wildlife Act states the following in reference to ownership of wildlife: "... the property in all wildlife situate within the Province, while in a state of nature, is hereby declared to be vested in Her Majesty in right of the Province and no person shall acquire any right or property therein otherwise than in accordance with this Act and the regulations."

In contrast, after review of the basis and application of the PTD in Canada, Henquinet and Dobson (2006) concluded that only a rudimentary PTD, related to the public's right to navigate and fish in navigable waters, existed in Canada. Those authors indicated few instances of case law in Canada that dealt with public trust issues, and virtually no articulation of a PTD.

The Yukon and Northwest Territories have incorporated the concept of public trust into statutes related to natural resources. Section 6 of the Northwest Territories Environmental Rights Act (1990) states the need "to protect the integrity, biological diversity, and productivity of the ecosystems in the Northwest Territories" and the "right to protect the environment and the public trust." The Environment Act of the Yukon, passed in 1991, recognizes that the government is a "trustee of the public trust to

protect the natural environment from actual or likely impairment." At this time the concept of public trust established in these statutes has not been tested in court.

Although Canadian courts obviously are not bound by U.S. case law, it may be considered in their deliberations. Koehl (2006) summarized recent favorable comments in regard to the principle of the PTD in a judgment by the Supreme Court of Canada. The reference to the PTD was particularly interesting in that previous Canadian references were in cases dealing with water resources and the cited case dealt with forests (damage caused by a fire negligently started by a logging company). The author suggested that discussion of the PTD in the case allowed for optimism that Canada's courts may expand application to other natural resources. Until there is a broader acceptance of a doctrinal concept in Canada similar to the PTD applied in the U.S., the actions of natural resource managers will be driven more by a desire to implement "wise policy" to protect the public interest than by a legal obligation imposed by a public trust.

Collectively, case law and history illustrate the flexibility of the PTD to meet the contemporary needs of the public. The PTD is neither inflexible nor static (Steneljem 2005). Flexibility is considered one of the strengths of the Doctrine, and is a prerequisite of its continued effectiveness for future generations (Annear 2002, Steneljem 2005, Henquinet and Dobson 2006). Sax (1970) described capability to respond to contemporary concerns as one of the three factors the PTD must achieve to remain effective. The other two factors he cited include the general public's understanding that it describes a legal right, and that it be enforceable against the government. For a more complete discussion of the history of the PTD, refer to Sax (1970), Cottriel (1996), Horner (2000), Grant (2001), Blumm and Ritchie (2005), Henquinet and Dobson (2006), Organ (2006), and Simmons (2007).

Relationship to the North American Model

Maintaining the elements of the PTD must be ensured to maintain the integrity of the Model



Credit: SUNY-ESF Archives / Franklin Moon Library

As governor of New York in 1928, Franklin Delano Roosevelt visits the New York College of Forestry, where a cadre of wildlife scientists gained training to protect forest resources for future generations.

(Geist and Organ 2004). Pioneer conservationists developed the model of conservation practiced on the North American continent during the 19th and early 20th centuries. This Model is globally and historically unique and thus far has demonstrated success in contributing to the conservation of wildlife in the U.S. and Canada. The Model evolved in response to the continental demise of once abundant wildlife resources due to unregulated economic markets that placed value only on harvested wildlife. It asserts that wildlife is a public resource, and therefore should be managed by governmental trustees as a public trust for the benefit of all people.

If the public's ownership of wildlife, or the value they place in it, is compromised, the Model could be jeopardized. Threats to the PTD (e.g., inappropriate or unsustainable commercialization and privatization of wildlife) exist and are increasing. If these threats prevail, the trust (wildlife populations or their habitats, water quantity and quality) could become mismanaged, or the public may lose access to these resources resulting in their value to the public becoming diminished. Lack of awareness and understanding of the benefits and responsibilities of the Doctrine leading to social and legal indifference by the trustee (government) or the

beneficiary (the public itself) could therefore create grave consequences for conservation.

Other threats (e.g., animal-rights values) claim a social or moral consciousness asserting that non-human animals are sentient (have the ability to suffer) and therefore, like humans, may not be owned. This concept is in direct conflict with the central premise of the PTD, which holds that wild animals are a publicly owned resource that can be renewably and sustainably managed.

The Role of the Trustee

Within a trust relationship the trustee manages assets that belong to others. The trustee therefore must be accountable to the beneficiaries of the trust. The PTD requires accountability of government for its actions in managing publicly owned assets. The public, as beneficiary of the trust, has legal rights to enforce accountability upon its government, typically through litigation and less commonly via elections or ballot initiatives.

These critical elements of the Doctrine were made clear in 1892 by the landmark U.S. Supreme Court case *Illinois Central Railroad Co. v. Illinois*. The court supported the Illinois Legislature in rescinding a prior grant by the

THE ROLE OF FEDERAL AGENCIES IN THE PUBLIC TRUST DOCTRINE

Federal natural resource agencies, including the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, Bureau of Land Management, Canadian Wildlife Service, Parks Canada, and others have public trust roles and responsibilities. The U.S. Constitution provides for the federal government to act as trustee when wildlife interests come under the purview of any of three clauses: the Property Clause, the Commerce Clause, or the Supremacy Clause (Bean and Rowland 1997). The Migratory Bird Treaty Act and Endangered Species Act are grounded in the Supremacy Clause (federal treaty-making power), and the Lacey Act is grounded in the Commerce Clause. However, the charge to this technical review committee was to assess the adequacy and variability of state- and provincial-based legal authorities and to develop recommendations for strengthening the PTD at this level. Therefore, we do not address federal implications in this paper.

state to the railroad of submerged land in Lake Michigan along virtually the entire shoreline of Chicago. The court, in acknowledging the public ownership of submerged lands in navigable waters and the state's role in holding these lands in trust for the public, found that the state was not empowered to relinquish the trust's assets. Such a grant would have substantially impaired the public's rights and exceeded the state's authority as trustee of the land (Sax 1970, Horner 2000, Henquinet and Dobson 2006, Simmons 2007).

This important case had several meaningful contributions to the development of the PTD. It expanded the application of the Doctrine to navigable waters not influenced by tides, and it clearly defined the role and responsibility of the governmental trustee. The court found the state could no more abdicate its trust over property than it could its police powers in the administration of government and the preservation of the peace (Sax 1970, Horner 2000, Stenehjem 2005).

The Role of the Beneficiaries

The public is the beneficiary of the trust for whom assets are managed. Trustee accountability for those assets is necessary for the PTD to be effective, and will be best served with an informed and engaged public. Public input into decision-making processes will help assure trustee understanding of and responsiveness to contemporary needs, as well as public understanding of competing demands on trust resources. Courts in California, Connecticut, Indiana, and Minnesota have explicitly granted the public legal standing under the PTD, albeit without explicitly referencing wildlife resources. (Case law that addresses wildlife in the context of the PTD are summarized beginning on page 21.)

THREATS TO THE PUBLIC TRUST DOCTRINE

Privatization and commercialization of wildlife

There is widespread and frequent use of the terms "privatization" and "commercialization" when discussing fish and wildlife resources. They often mean distinctly different things to some people, whereas others have difficulty distinguishing the difference among the two. Therefore, it is helpful to offer an important distinction to help frame this discussion.

In some states and provinces it is lawful to own domesticated native or exotic animals whose ancestry is of a recent wild origin (e.g., game farms that propagate elk, white-tailed deer, upland game birds, falconry, alligator farms, and fur farms). Management practices that characterize these operations include genetic husbandry (e.g., raising game species with "trophy" antlers and the sale of genetic material to game farms), marketing meat and parts (e.g., antlers), and hunts within fenced enclosures. The legal status of captive animals held under these conditions varies among state and provincial agencies, including whether they remain "trust resources" or private property. This raises an important legal question: Is a wild animal enclosed within a large fenced area and ostensibly "free roaming" the property of the private landowner or part of the public trust? Is there a distinction between the status of a wild animal

that happens to be enclosed by a fence, and an animal deliberately placed within an enclosure? These are central legal issues associated with the PTD and wildlife conservation in North America, but they have not yet been conclusively addressed in case law.

Although the captive wildlife industry is regulated to varying degrees by state agricultural or wildlife agencies, there are several potential problems, including the transmission of diseases to free-ranging populations (Lanka *et al.* 1990; Demarais *et al.* 2002). Some states now require double-fencing or other assurances that captive animals may not escape to the wild, but a uniform approach has not been adopted. Captive operations can have problems with animals escaping into the wild, wild animals entering private enclosures, or both (Fischer and Davidson 2005). This lack of separation among captive and wild individuals has serious negative ramifications to the general health and well-being of wild populations, particularly with respect to maintaining genetic purity and spreading disease (Geist 1995; Demarais *et al.* 2002).

In those instances where wild animals are found and reported inside high fenced op-

erations, the animal is frequently euthanized as most regulatory entities will not allow its release to the wild because of disease concerns. In some instances the operator may release the animal back into the wild without reporting it to avoid attention by the regulating agency, or may simply illegally incorporate the animal into its business venture. In each of these instances, the wildlife ceases to belong to the public. With the confirmation of chronic wasting disease in 16 states and two provinces (Chronic Wasting Disease Alliance 2009), many wildlife jurisdictions require or advocate for the use of double perimeter fences to avoid nose to nose contact among wild ungulate populations on the outside and captive populations inside. Where states or provinces assign primary regulatory jurisdiction to their agricultural agencies, their respective wildlife agencies may not have sufficient authority to initiate safeguards and protective measures on the captive wildlife industry to protect free-ranging wildlife maintained in the public trust (Lien 2002).

Generally, commercialization places monetary value on wildlife and their parts, and as a result provides an incentive or reward for their use. Placing monetary value on dead or live wildlife has the potential to threaten the public ownership of wildlife resources by raising the incentive for privatization. This may apply to the illegal trafficking of live wildlife by collectors (e.g., the exotic pet trade), or the illegal sale of wildlife parts (e.g., migratory bird feathers, sturgeon roe). Illegal taking of wildlife is a theft from the public trust thus violating the PTD. The Lacey Act (1900) was adopted by the U.S. Congress in response to the threat to wildlife populations caused by commercial exploitation—primarily the millinery trade's unregulated and unsustainable demand for the feathers of herons, egrets, and other water birds.

It is widely recognized that the unregulated commercial use of wildlife is often unsustainable. However, in most jurisdictions some commercialization of wildlife is allowed under highly regulated legal regimes. In North America it is generally accepted that wildlife belongs to the public until it is lawfully taken, at which point it becomes the private property of the tak-



Credit: North Dakota Game and Fish Department

A fenced enclosure on a game farm near Turtle Lake, North Dakota prevents white-tailed deer from leaving the owner's property. Keeping deer and other wildlife captive can lead to disease transmission and, on a broader scale, threatens a key tenet of the Public Trust Doctrine: that wildlife should not be privately owned and should be accessible to all.



Credit New York State Department of Environmental Conservation

Fur traders scout pelts at an auction in Herkimer County, New York—part of the legal market for wildlife products. Lawful trapping, guided by oversight from wildlife professionals, is consistent with the North American Model of Wildlife Conservation.

er. “Lawfully taken” is a critical distinction in the legal analysis, as are other regulations that may apply. Once deemed private property, the disposal of dead wildlife and its parts is subject to the regulation of the appropriate jurisdiction. For example, it is common for the non-edible parts of lawfully taken, non-migratory wildlife species to be legally sold, traded, or bartered. The sale of heads, hides, horns, or antlers of lawfully taken wildlife is legal in many states and provinces. Trapping is an important wildlife management tool in most of North America, and the pelts of furbearing animals lawfully taken during regulated trapping seasons are an important form of legal commerce. However, most jurisdictions do not allow the sale of legally taken live game species or edible portions of legally taken game. There is also growing recognition that some taxa, such as reptiles, are heavily exploited for commercial reasons and additional regulation of commercial activities is needed.

In some cases there may be little distinction between privatization of wildlife and its commercialization. Commerce in captive (privately owned) wildlife species may threaten the public trust in several ways. The markets created from this industry may provide incentive to some people to illegally exploit those markets with publicly owned wildlife or their parts. These

incentives can promote unethical practices or even illegal harvest of wildlife to supply the markets created by the commerce associated with privately-owned wildlife. Moreover, the commercialization and privatization of wildlife contradicts the very premise of a “public” resource and would render the PTD and the Model moot.

Access to Wildlife

Although there are differences among states and provinces, the public is having an increasingly difficult time gaining entry to hunt or trap on private property or reach tracts of public land (Responsive Management/National Shooting Sports Foundation 2008). Recently the sporting press recognized the issue of private land access to public land, and in one article suggested purchasing “gateway properties” that border public land to gain nearly “exclusive access” (Howlett 2008). The amounts of fees being paid vary widely and depend on the type and duration of the hunt. This is particularly disconcerting because a large segment of the hunting public either cannot afford additional user fees or is philosophically opposed to paying a trespass or access fee to hunt (Duda *et al.* 1998). As a result, some members of the public unable or unwilling to pay access or trespass fees have become solely dependent on public lands. Others may stop hunting due to the frustration of not having a place to hunt or because of overcrowding on public land. If the hunting public becomes disenchanted with either the quality of the hunt or having to pay too high a price to hunt, they may quit hunting (Responsive Management/National Shooting Sports Foundation 2008), and consequently could also stop supporting wildlife conservation efforts. Over time, access for other uses of wildlife (e.g., observation) may also be compromised. Collectively and cumulatively, the loss of access to wildlife for a diversity of uses is likely to erode support for public custodianship of wildlife resources, a central premise of the PTD.

The relationship between public access and private property can extend to public lands where private ownership patterns may legally preclude

access to public lands. "Gateway properties" that occur at the boundaries of public lands can legally preclude access to public lands. In some cases these private properties may entirely surround public lands. Checkerboard land patterns of alternating sections (square miles) of public and private lands may legally limit access to very large expanses of public land. Public access agreements to these areas, negotiated between the private landowner and state or federal fish and wildlife agencies, are often the most effective means to provide public access to wildlife occurring on these lands. Concern by private landowners for mistreatment of their private lands by the public and the cost associated with acceptable access agreements may provide barriers to public access that are often unsolvable. Private ownership patterns that reduce or eliminate reasonable access to public lands may also render wildlife inaccessible to a majority of people.

In several states, guides and outfitters are increasingly using bait to lure big game animals from public land (e.g., national wildlife refuges, national grasslands, national parks, and state wildlife management areas) to private lands managed for fee hunting. This practice redistributes or stockpiles public wildlife to areas that are not open to public hunting or inaccessible to hunters not willing to pay to hunt on private land. In an impact similar to fencing, these actions jeopardize the democracy of hunting, a central tenet to the Model (for a review of these issues see Dunkley and Cattet 2003; Ermer et al. 2005).

Public Indifference

The strength of the PTD is the value that the public assigns to the trust's assets. If the public grows indifferent to wildlife, or worse, adopts a negative perspective, the Doctrine will have greatly diminished value. Historically, this has tended to occur in situations where wildlife resources were owned by an aristocracy and public access was prohibited (Manning 1993). In this context, where the general public had no ownership of wildlife or a right to make use of it, citizens were indifferent to its protection. In extreme cases they coveted wildlife as

just another possession of the privileged class, resulting in widespread poaching (Geist 1985). Changing perspectives may occur to some degree as the general public finds wildlife of little value to them if they are precluded from its use by high cost or lack of access. Should the management of the trust's assets disenfranchise people, their interest in conserving these assets may wane. As they sense less personal ownership or value, less utility or inequitable access to their assets, their proprietorship may decrease.

Public antipathy towards wildlife may increase when people experience property damage (e.g., deer-vehicle collisions, crop depredation) or the competition it creates for their livelihood (e.g., wildlife depredations on crops or forage). Still others may fear wildlife as a danger to their personal safety (e.g., hazards from bears, wolves, cougars, or coyotes). Another component leading to negative opinions toward wildlife and trustees is opportunity for participation (or lack thereof) in wildlife management decisions. When those decisions are viewed as being made mostly by agencies in consultation with limited constituents (e.g., farmers and hunters), the remainder of the stakeholders (usually a majority) may feel disenfranchised. If the beneficiaries of the trust cease to value the trust assets, the trust becomes vulnerable to those who wish to take it from



Credit: Eric Nuse/Vermont Fish and Wildlife Department

For these hunters in Vermont, and for many outdoor enthusiasts, a successful hunt is one way to feel a sense of value about wildlife and other public trust resources.

them. Indifference by the public for their wildlife resources makes the trust's assets valueless, eliminating the need for trusteeship. Therefore, the trustee has an important role in ensuring that the beneficiaries' interest in the trust's assets is maintained.

Lack of Understanding of Natural Systems

Dissociation of people from nature has been identified as a growing trend with potentially profound implications for how future generations of North Americans may value wildlife (Louv 2008; Shepard 1982). For example, the estimated number of "avid wildlife observers" declined 16 percent between 1991 and 2006 (11,927,000 vs. 9,970,000 avid participants, respectively) and they are growing older (USFWS 2009). Similarly, the number of "wildlife watchers" also declined over this same period, dropping from 76,111,000 in 1991 to 71,132,000 in 2006, a 7 percent decline.

The extent to which these trends may mitigate the growing dissociation from nature is unknown. We know little about the attitudes, values, and knowledge of wildlife-watchers (avid or casual), or to what extent they are aware of their rights under the public trust and whether trustee actions fulfill their interests. Of potential risk is a waning of interest in and awareness of local populations of wildlife to the point where advocacy for their conservation and protection of their habitats is minimal. Participation in consumptive activities may continue to decline, and opposition to those activities may increase, threatening the primary funding base for management of all trust wildlife, not just game species (Organ and Fritzell 2000). In addition to threats to funding, foundational elements of the public trust could be threatened with increasing social antipathy toward consumptive uses of wildlife. Sax (1970) stressed that a fundamental responsibility of trustees is to maintain trust resources for particular uses, including traditional uses and natural uses peculiar to a resource. Harvest (i.e., angling, hunting, trapping) has been suggested as an example of a traditional and natural use (Organ and Batcheller 2009).

Interagency Disputes over Jurisdiction

Conflicting missions and values between different state agencies may complicate the conservation and management of wildlife, and consequently threaten the fulfillment of public trust obligations. Legislative mandates that transfer a portion of wildlife management responsibilities (e.g., predator and other wildlife conflict management, game and fur farming, wildlife disease management, and human health protection) from state/provincial wildlife agencies to the state/provincial/federal agricultural, health or other departments or municipal governments may threaten the PTD depending on how these agencies manage the public trust resources. For example, predators managed solely by a state agricultural agency to reduce damage to livestock may not have the necessary conservation protections afforded with management by a fish and wildlife agency charged with providing conservation benefits to a broad array of stakeholders.

In 1996, Colorado enacted a law defining "depredating animal" and giving the Colorado Department of Agriculture "exclusive jurisdiction over the control of depredating animals," including game species, for the express purpose of reducing economic losses to agriculture. However, under existing statutes, the Colorado Division continues to be liable for damage claims resulting from damage caused by wildlife. Moreover, an agricultural agency may not value scientifically-based management of these resources if the sole focus is on the protection of agricultural interests. In situations where certain wildlife management responsibilities have been fully or partially legislatively re-assigned, the resulting management may not be in the best interest of the beneficiaries, or may advantage a particular segment to the detriment of the greater public trust. In such situations, the Doctrine may be compromised.

Animal Rights

Animal rights is a philosophical movement, with specific views on the relationship of humans to other forms of animal life. A basic tenet

of animal rights philosophy is that animals, including wildlife, are sentient and therefore should not be viewed as property. According to Gary L. Francione (Francione 1996), "...animal rights theory is not 'utopian'; it contains a nascent blueprint for the incremental eradication of the property status of animals." Public trust law is based on the premise that certain things are public property (Sax 1970). If the animal rights philosophy was to become law (whether adopted by legislative bodies or by referenda), wildlife would no longer be property, and would therefore fall out of the public trust.

CURRENT STATUS OF THE PUBLIC TRUST DOCTRINE IN STATE AND PROVINCIAL LAW

An analysis of each jurisdiction's statutory and constitutional law provides a measure of the strength of the PTD in the U.S. and Canada. The following parameters were evaluated to provide an assessment of the status of the PTD in North America:

1. **Inclusive definition of fish and wildlife.** Does the jurisdiction have a clear and inclusive definition of fish and wildlife that provides for adequate identification and protection of the trust resources? Inclusiveness means that the definition should address the status of vertebrates and invertebrates living in a wild state and in captivity, and address all life stages of those species.
2. **Clear statement of public ownership of wildlife.** Is it clear that fish and wildlife are owned by the public or by the people of the state or province, or in some cases by the state or province itself? This statement of ownership should include all fish and wildlife in the jurisdiction; resident or migratory, native or introduced. Ideally this statement will make clear that the governments manage fish and wildlife in trust for the people.
3. **A clear delegation of management responsibility to the trustees for the beneficiaries.** Is the responsibility of the trustees to manage fish and wildlife for the

RULES AND REGULATIONS NOT ANALYZED

Our review of the status of the Public Trust Doctrine in the United States relied on a review of state constitutions, statutory law, and case laws. Administrative rules and regulations were not included. Rules and regulations are promulgated by agencies, under statutory authority. While they have the force of law, rules and regulations are more likely to change frequently and thus are not an ideal vehicle for jurisdictions to use to codify the PTD. Because of this, and also due to the chance that any review of rules and regulations would be outdated before it could be published, our review of the current status of the PTD of the states and provinces did not include administrative rules and regulations.

public clearly and completely delegated to one or more governmental agencies, or to an individual within an agency, with the legal authority to manage fish and wildlife in the jurisdiction for the benefit of the public?

4. **A mission and purpose of the trustees that serves the interest of the beneficiaries.** The mission and purpose of the agency must serve the interests of all of the beneficiaries. The trustee cannot manage trust assets in an inequitable manner nor can it gift assets for private benefit. For example, if a public asset such as predators were assigned to a state or provincial agency as trustee, and the agency's role is described as managing predator populations in a self-sustaining manner for the benefit of future generations, the purpose of the PTD would be served. On the contrary, the purpose of the PTD would not be served if the purpose of the agency is described solely as preventing economic impact to agricultural producers.
5. **Accountability for the trustees' actions, decisions, and policies.** There should be a clear mechanism to evaluate the performance of trustees, and for public beneficiaries to hold them accountable for their actions. The actions of the trustees are

Criteria	States					Provinces				
	Constitution		Statute		Not Found	Constitution		Statute		Not Found
	+	-	+	-		+	-	+	-	
Inclusive definition of wildlife	0	0	38	10	2	0	0	13	0	0
Clear statement of public ownership of wildlife	1	0	38	3	10	0	0	7	0	6
Clear delegation of management responsibility	2	0	48	0	0	0	0	13	0	0
Mission and purpose appropriate to PTD	2	0	44	4	0	0	0	7	0	6
Accountability of trustees	2	1	38	11	0	0	0	13	0	0

Table 1: Number of States or Provinces meeting Public Trust Doctrine criteria through constitutional or statutory language (entities where criteria are addressed in both documents are counted twice). **Language is rated either satisfactory (+) or deficient (-).**

transparent and clearly described, thereby facilitating evaluation and accounting. Examples of accountability mechanisms include requirements for public participation and the full disclosure of accomplishments and failures.

Each jurisdiction's wildlife legislation and its constitutional provisions were examined with these five factors in mind to determine whether or not wildlife had been recognized as a public trust resource in the state or province. Each state and province's legislative and constitutional provisions were evaluated using the five criteria (see Table 1).

Jurisdictional case laws and their inclusion of wildlife are another component of determining the strength of the PTD. In addition to the summary of case law that follows, a table was developed to better distill how wildlife, and the PTD in general, have been treated in each state (see Table 2).

In Canada the PTD has not taken root in statutory or case law on the same level as in the

U.S. Although each province has adopted an inclusive definition of wildlife, not every province has created a clear statement of public ownership of wildlife. Seven of the provinces do have language that vests some type of public ownership over wildlife. As described in the following summary of PTD case law, Canada has almost no case law dealing with the PTD, therefore the provinces were not included in the case law analysis.

Findings: Public Trust Doctrine and Wildlife Legal Summary

In the U.S., the PTD in its traditional form is firmly rooted in statutory and case law. The PTD has traditionally been used to protect the public's right to use navigable waterways and to protect each jurisdiction's sovereign ownership of those waterways to hold in trust for the public's use. In recent times, a movement has taken place in both statutory and case law to extend the PTD to other natural resources. Some of these resources include beaches, parks, and

Criteria	Yes	No	Not Treated
PTD Recognized as valid legal doctrine	41	1	8
PTD discussed in relation to wildlife	15	3	32
PTD extended to resources other than navigable waterways	21	6	23
Court grants standing under PTD	4	6	40

Table 2: Number of States addressing the Public Trust Doctrine in State case law.

wildlife habitat areas apart from wildlife itself. Case law has been slow to recognize extension of the Doctrine, whereas statutory law has quickly evolved to place more natural resources within the realm of PTD protection.

Few states have case law recognizing wildlife as a public trust resource. Many states and provinces have already adopted statutes that either explicitly or implicitly confer upon wildlife status as a public trust resource. Indeed, bringing wildlife into the PTD through statutory measures appears to be the best way to accomplish the goal of extending the Doctrine in this area.

State Statutes

State statutory law is the main legal vehicle for giving public trust status to wildlife. In many states, the statutory provisions do this in an indirect manner through implicit trust language. For example, New Hampshire's statute states that: "It shall be the policy of the state to maintain and manage [wildlife] resources for future generations" (N.H. Rev. Stat. §212-B:2). While not a direct statement identifying wildlife as a trust resource, the language definitely has the aim of preserving wildlife for the public interest. Similarly, North Carolina's statute reads: "The enjoyment of the wildlife resources of the State belongs to all of the people of the state" (N.C. Gen. Stat. §113-133.1).

Georgia has strong statutory language, explicitly granting wildlife public trust resource status. The statute provides that: "Wildlife is held in trust by the state for the benefit of its citizens and shall not be reduced to private ownership except as specifically provided for in this title" (Ga. Code §27-1-3). Ohio and West Virginia have similar statutes, with Ohio holding title to all wild animals "in trust for the benefit of all the people" (Ohio Rev. Code §1531.02), and West Virginia holding title to all wild animals "as trustee for the people" (W. Va. Code §20-2-3). These three states provide clear statutory language that identifies wildlife as a public trust resource.

Kentucky has broad language, both in protection of wildlife and in furtherance of the public interest. The statute provides that state policy is "to protect and conserve the wildlife of the Commonwealth to insure a permanent and continued supply of the wildlife resources of this state for the purpose of furnishing sport and recreation for the present and future residents of this state" (Key. Rev. Stat. §150.015). This language serves the dual purpose of protecting wildlife while coincidentally insuring that the public will still enjoy the right to engage in activities such as hunting and fishing.

As of early 2010, 33 states have adopted the Wildlife Violator Compact, which includes in Sec. 11: "The participating states find that wildlife resources are managed in trust by the respective states for the benefit of all their residents and visitors." This language implies the existence of the PTD in those states, which is important because many states that did not previously have strong implicit or explicit trust language in their statutes have adopted the Compact. (Eight other states are currently considering adoption of the Compact.)

Clear "ownership" language pertaining to wildlife is important to firmly establish wildlife as a public trust resource. Forty-one states currently claim some type of ownership of their wildlife. The language varies between claiming ownership by the state and ownership by the people of the state. While the distinction may seem superfluous because of our states' republican form of government, a statute that places ownership in the "people" is a stronger indication that wildlife is a public trust resource. An example is North Carolina: "The marine and estuarine and wildlife resources of the State belong to the people of the State as a whole...The enjoyment of the wildlife resources of the State belongs to all of the people of the State" (N.C. Gen. Stat. §113-133.1). This type of language better imbues the purpose of confirming wildlife to be a public trust resource rather than language that merely states, for example, that: "All wildlife found in this state is the property of the state." Language clearly placing ownership of wildlife in the people residing in a state is important because of the

need to establish standing to enforce the PTD in individuals, rather than state governmental agencies.

Case Law

Nearly every state recognizes some form of the PTD in its common (case) law, however few states specifically address wildlife in case law. Typically, it is in the traditional form of state sovereignty over the navigable waterways of the state. Any extension of the Doctrine appears to have encompassed a limited number of resources such as beach access and parkland. Most cases that discuss the PTD relate it to the right of commerce and fishing in the state's navigable waterways.

Few states have case law that explicitly discusses the PTD in relation to wildlife, and even fewer discuss it in terms that may extend the PTD to wildlife itself. In Alaska, the case of *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988) spelled out perhaps the clearest recognition of wildlife as a trust resource by relying on the state's Constitution. The court in *Owsichuk* held that a common use clause in the Constitution of Alaska was intended to engraft certain trust principles, guaranteeing public access to the fish, wildlife, and water resources of the state.

In Illinois, *Wade v. Kramer* (1984) made it clear that it was "undoubtedly true that the State has a type of guardianship or trust over wildlife in the state." This ruling came well before Illinois had adopted the Wildlife Violator Compact. Because the ruling came before the Compact was adopted, it is clear that common law in Illinois fully recognizes wildlife as a trust resource.

A recent case from California involving the impacts of wind farms on bird mortality (*Center for Biological Diversity v. FPL Group, Inc.*) included an explanation of how wildlife falls under the umbrella of the Public Trust Doctrine by citing a California Supreme Court case stating that public trust duties for birds and wildlife are primarily derived from statute (*Environmental Protection and Information Center v. California Dept. of Forestry & Fire Protection*). Common law recognition of wildlife as a public

trust resource is important in states where it is not statutorily recognized, as was the case in Illinois before it adopted the Wildlife Violator Compact. When the PTD is codified through the state's statutes, however, common law recognition becomes less important. Once adopted by statute in a state, the only course for the state's courts to take would be to overturn the statute if found invalid or to modify its meaning through judicial interpretation.

State Constitutions

Inclusion in a state's constitution provides a strong foundation for the PTD. However, few states have constitutional provisions clearly articulating the PTD.

Alaska's Constitution, Article 8, §3, states that: "Wherever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use." This was held to mean that the state "intended to engraft certain trust principles guaranteeing access to the fish, wildlife, and water resources of the state," according to the Alaska Supreme Court in *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988). Louisiana's Constitution sets out the requirement that the state is "to protect,



Credit: © 2005 David Monniaux/Wikimedia Commons

Policymakers at the California State Legislature and at other state legislatures around the nation can pass laws regulating sustainable use of natural resources and other key elements of the Public Trust Doctrine.

conserve, and replenish all natural resources, including the wildlife and fish of the state, for the benefit of its people."

A constitutional provision is a legally robust means to establish wildlife as a public trust resource, though changing a state constitution is obviously a long and difficult process. Also, amending a state constitution is not ironclad as problems of enforceability and standing could arise if challenged in court.

Canada

Just over half of the provinces and territories have incorporated language on the public ownership of wildlife in their statutes. Nonetheless, this is an indication of the intent to treat wildlife as a public trust resource. Case law is at this point non-existent as to any explicit mention of the "public trust." The case of *Green v. Ontario* (1973) purports to apply a statutory form of the PTD, but it is nothing like the common law PTD that has developed in the U.S. Certainly there are no cases that compel provinces or territories to hold certain natural resources in "trust" for the people. The rights of the citizens in Canada that could be analogous to the rights enjoyed in the U.S. under the PTD are the right to navigate and fish. However, the Canadian Parliament retains the primary authority to modify these rights.

Need for Stronger Statutes

The PTD is both a common law principle, primarily associated with waters and their resources (e.g., commercially valuable fish species), and one based on statutes defining public trust duties and responsibilities. In the United States, the PTD in its traditional form is firmly established in both state common law and statutory law. However, the extension of the PTD to specifically cover wildlife is not well-established. In Canada, the legal underpinnings of the PTD, especially as it applies to wildlife, are even weaker, resting mainly on provincial codifications of wildlife ownership. A model

broad-based statutory framework that could be put in place throughout the states and provinces would have to address some key issues.

First, three conditions must be met for the PTD to be an effective tool: (1) it must contain some concept of a legal right in the general public; (2) it must be enforceable against the trustee (government); and (3) it must be capable of interpretation consistent with contemporary concerns (Smith 1980).

Second, any model statutory language must be carefully drafted to avoid the PTD being used negatively to eliminate the traditional recreational/sporting benefit of wildlife. As noted earlier, traditional and natural uses peculiar to a resource must be provided for as part of the public trust (Sax 1970), and hunting has been identified as such a use (Organ and Batcheller 2009). Additionally, funding for management of wildlife as a trust resource comes primarily from consumptive user fees. Keeping these issues in mind while using language from existing statutes, a successful model statutory framework could be developed to extend the PTD to wildlife as a public trust resource in each state and province.

THE BENEFITS OF STRENGTHENING THE PUBLIC TRUST DOCTRINE

The PTD is a long-time cornerstone of the most successful model of wildlife management and it has fostered the public's interest in conserving wildlife resources in North America. With few exceptions, however, it rarely is supported by state or provincial constitutional law, and inconsistently by statute. This presents a degree of insecurity to its consistent application, now and in the future.

The PTD is largely supported in case law but with less clarity than statutory law. Case law often is less precise and subject to greater, often inconsistent, interpretation. Courts of equal authority, representing different jurisdictions, may arrive at opposite conclusions.

Statutory and constitutional law is made by elected representatives of the people (e.g.,

Congress, Parliament, and Legislatures) or by the direct will of the people (i.e., ballot initiative or referendum), but case law, by design, lacks a public participation component.

As case law regarding the PTD continues to evolve and its scope of application continues to expand, new interpretations will be created that may revise current understanding, making current “protections” afforded by the Doctrine potentially uncertain in the future. Managing diverse public assets may cause conflicts for the trustees and the beneficiaries. For example, property protection through flood control may cause conflict with environmental quality or the welfare of fish and wildlife. In such situations, trustees may have to assume the authority to decide preference of one over another. These decisions likely are to be challenged through litigation. Courts eventually may redefine the Doctrine by assigning priority of trust assets for use by competing interests. Current uses may be viewed by some as privileges rather than rights. In turn, privileges may be viewed as increasingly unacceptable uses of public trust assets as has emerged in the case of commercial fishing versus the survival of fish stocks (Henquinet and Dobson 2006).



Credit: New York State Archives

Surrounded by their harvest of rabbit and deer, two hunters pose for the New York State Conservation Commission, circa 1920. A strong Public Trust Doctrine can help ensure that public agencies remain the stewards of natural resources.

The benefits of strengthening the PTD for the benefit of wildlife resources are clear. Codifying the Doctrine in statute, or amending state constitutions to include it may secure its future, clarify its purpose, and ensure that its principles are more consistently applied and less subject to interpretation.

RECOMMENDATIONS

The following recommendations are intended to help trustees of the public's wildlife ensure that the PTD extends to wildlife and the public's access to wildlife in their state or province and continues to do so in the future. They also serve to inform key stakeholders and other beneficiaries of key strategies for strengthening the PTD.

Statutory Changes

State and provincial wildlife agencies should review their constitutional or statutory authorities that address the principles of the PTD, and where absent or inadequate, strengthen their authority with new legislation. Although amending the state or provincial constitution to include the Doctrine would provide the strongest legal protection, we recognized that changing a constitution is a long and difficult process. Therefore, we recommend that states and provinces enshrine the PTD as it applies to wildlife in state/provincial law. In particular, those states that have adopted the Wildlife Violator Compact, which implicitly recognizes the PTD, should move to formally codify the PTD in their states.

We offer language containing several key elements to provide guidance to states and provinces seeking to protect the PTD.

Model Statutory language:

1. The state declares that wildlife is held in trust by the state for the benefit of its citizens:
 - a) to protect and conserve the wildlife of this state or province;

- b) to ensure the permanent and continued abundance of the wildlife resources of this state or province;
 - c) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - d) to ensure that wildlife resources will not be reduced to private ownership except as specifically provided for in law.
2. Individuals have an equitable right of access to wildlife as a public trust resource:
- a) to ensure a permanent and continued abundance of wildlife resources of this state or province;
 - b) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - c) to ensure that wildlife resources will not be reduced to private ownership, except as specifically provided in law.

This language makes it clear that wildlife is held in trust for the people of the state or province, will not be squandered or mismanaged by the state or province as trustee, and allows for balance between conservation and recreation. The language also prohibits government from transferring wildlife resources to private ownership, except as provided by law. The "except as specifically provided for in this title" language gives jurisdictions some leeway to provide for preserve and management areas.

Administrative Law (Rules and Regulations)

While administrative rules were not summarized and included in this review, these rules and regulations promulgated by agencies or regulatory boards have the force of law. These rules (along with administrative policy and standard operating procedures) are an important instrument to further codify and provide consistent and frequent reinforcement of public trust Doctrine tenets related to wildlife resources. These rules (and challenges to them) also represent a venue by which future case law will be established, potentially strengthening the Public Trust Doctrine.

Outreach and Education

Increased awareness of the PTD and its importance among the public, and wildlife professionals and wildlife students in particular, can be facilitated through fostering educational opportunities. The Western Association of Fish and Wildlife Agencies is developing an outreach plan to explain the PTD and the Model to a target audience including high school students (T. Gray, 2009, pers. comm., Arizona Game and Fish Department). When completed, piloted, and finalized, this curriculum will also be available for adoption by other state agencies. Additionally, the Conservation Leaders for Tomorrow program (www.clft.org) features a lesson on the North American Model, including the PTD. The Wildlife Society and state agencies should further promote outreach efforts on the Model and the PTD.

CONCLUSIONS

The Public Trust Doctrine is a crucial element of the Model. Geist and Organ (2004) identified emerging threats that challenge the PTD in North America, thereby jeopardizing the legal underpinnings for wildlife conservation. In particular, a trend towards the commercialization and privatization of wildlife challenges the notion of trust species held in custodianship by competent authorities (both state, federal, and provincial agencies) for broad public benefits. A corollary to this threat is the loss of public access to wildlife via highly controlled land access systems managed by private individuals.

Central to protecting the PTD is assuring that legal institutions are in place within each competent authority to clearly establish the PTD's applicability to wildlife. While a number of jurisdictions address the notion of public ownership of wildlife (and the associated trust responsibilities of those jurisdictions), the need for a broad-based statutory framework was confirmed as needed to unequivocally bring wildlife conservation programs within the PTD framework. To this end, model statutory authority is offered as a template to strengthen the PTD throughout North America.

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The Wildlife Society

5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814-2144
301-897-9770
301-530-2471 Fax
TWS@wildlife.org



Association of Fish and Wildlife Agencies

444 North Capitol Street, NW
Suite 725
Washington, DC 20001
202-624-7890
202-624-7891 Fax
info@fishwildlife.org



Western Association of Fish and Wildlife Agencies

522 Notre Dame Court
Cheyenne, WY 82009
307-638-1470
307-638-1470 Fax
larry.kruckenberg@wgf.state.wy.us



Wildlife Management Institute

1440 Upper Bermudian Road
Gardners, PA 17324
717-677-4480
swilliams@wildlifemgt.org

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November 1, 2016

Patricia O'Connor, Supervisor
Bridger-Teton National Forest
Box 1888
Jackson, WY 83001

Re: Dell Creek and Forest Park elk feedgrounds on the Bridger-Teton National Forest

Dear Supervisor O'Connor:

We understand the Bridger-Teton National Forest may soon be issuing Special Use Permits to continue elk feeding at the Dell Creek, Forest Park, and/or other feedgrounds. Please consider these comments, submitted on behalf of the Sierra Club Wyoming Chapter and Western Watersheds Project, and place them in the project file for these permits. Please also place the referenced attachments in their entirety in the project file.

The Sierra Club is a national non-profit conservation organization founded in 1892 with more than 3,000 members and supporters in Wyoming and 2.4 million members and supporters nationwide. Its mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

Western Watersheds is a non-profit conservation organization founded in 1993 with the mission of protecting and restoring western watersheds and wildlife through education, public policy initiatives, and litigation. Headquartered in Hailey, Idaho, Western Watersheds Project has 2,000 members and field offices in Idaho, Montana, Oregon, Wyoming, Arizona and California.

We have several concerns about permitting and operating elk feedgrounds on the Bridger-Teton National Forest (BTNF). Some of our concerns are whether some elk feedgrounds have undergone lawful analysis under the National Environmental Policy Act (NEPA), and

whether the BTNF has followed its own regulatory requirements in permitting elk feedgrounds. Other concerns deal with follow up actions committed to by the BTNF in the Alkali Creek elk feedground December 2015 Final Record of Decision.

We understand that old Special Use Permits (SUP) issued by the Bridger-Teton National Forest allowing the Wyoming Game and Fish Department to undertake operations at Dell Creek elk feedground and Forest Park elk feedground have expired or will expire on December 31, 2016.

The Special-Use Permit for Dell Creek Elk Feedground from the U.S. Department of Agriculture Forest Service dated 08/02/96 (BTNF 1996) lists the “Expir. Date” as 12/31/16 at the top of the first page. However, on page 2 of the Permit it states that “This permit will expire at midnight on 12/31/2015.”

The Amendment for Special Use Authorization dated 9/6/13, and the U.S. Department of Agriculture Forest Service Special Use Permit for Forest Park elk feedground dated June 15, 1998 (BTNF 1998) shows on the first page of the Special Use Permit that the “Term Date” is “Dec. 31, 2016.”

Thus both SUPs will either expire on December 31, 2016 or the Dell Creek SUP already expired last December 31, 2015, and the Forest Park SUP will expire at the end of this year. Among other requests listed at the end of this letter, we request that the BTNF explain to us what is the correct date of expiration for the Dell Creek Elk Feedground Special-Use Permit. And, if the SUP for Dell Creek Elk Feedground has already expired, the BTNF needs to explain if elk feeding activities occurred after the expiration of the Permit, and what plans there are, if any, for continuing elk feeding at the Dell Creek site in the future. As your agency has acknowledged, under 36 CFR 251.50, an authorization is required for this use of National Forest System lands. We are concerned that the BTNF may have violated their own regulations in allowing elk feeding to continue without the necessary permit in place.

The BTNF must comply with the National Environmental Policy Act (NEPA)

If the Bridger-Teton National Forest intends to allow the Wyoming Game and Fish Department to conduct winter feeding of hay to elk at either or both the Forest Park and Dell Creek sites beyond the expiration dates of the existing (or recently expired) permits, the BTNF must comply with the NEPA and conduct a thorough environmental analyses of the proposed actions. We remind you that in prior litigation on these feedgrounds, the Tenth Circuit Court of Appeals noted that while the Forest Service did not need to conduct *supplemental* analysis on the Forest Park and Dell Creek feedgrounds, the Forest Service’s *approval and issuance of feedground permits* were a major federal action under NEPA. *GYC v. Tidwell*, 572 F.3d 1115 (10th Cir. 2009).

Thus, an EIS is necessary at this permit issuance stage to identify significant problems, develop adequate alternatives, describe mitigations and achieve solutions in an appropriate timeframe for longstanding problems.

The BTNF may not merely issue one-year permits to continue elk feedgrounds with no or minimal NEPA because the BTNF is required by NEPA to take a “hard look” at the disease impacts of authorizing elk feedgrounds and conducting elk feedground operations on USFS lands.

The BTNF has never conducted an environmental analysis under NEPA for Dell Creek elk feedground; whereas the circa 1980 EA for Forest Park is some 36 years old and could not have

considered the serious disease implications of elk feeding with the advance of Chronic Wasting Disease (CWD) across Wyoming in these intervening years.

An agency may avoid an EIS only if the action will have no significant impact. 40 C.F.R. § 1508.9(a), 1508.13. The NEPA regulations list ten factors that help determine whether an agency action “may” cause significant impacts and therefore require an EIS. 40 C.F.R. § 1508.27(b). The factors include: effects that are “highly uncertain or involve unique or unknown risks” or “likely to be highly controversial,” *id.* § 1508.27(b)(5), (4); “[u]nique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, [] wetlands, [] or ecologically critical areas,” *id.* § 1508.27(b)(3); “[t]he degree to which the action . . . may cause loss or destruction of significant scientific, cultural, or historic resources,” *id.* § 1508.27(b) (8); and the presence of cumulative impacts, *id.* § 1508.27(b)(7). The presence of even just “one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances.” *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 865 (9th Cir. 2005).

Numerous factors are triggered here, as explained in more detail below and in the attached scientific articles. The inherent and unavoidable concentration of elk during artificial winter feeding increases the risk of CWD and is a significant effect on the environment; winter feeding of elk also increases the prevalence of brucellosis and other diseases in the herd. This makes winter elk feeding highly controversial and with effects that have unique risks to the entire Greater Yellowstone ecosystem’s elk population. The Greater Yellowstone ecosystem is certainly an ecologically critical area; and the action may cause the loss or destruction of its significant wildlife resources. The disease spread furthered by these feedgrounds will cause significant cumulative impacts to ripple across the ecosystem, such as on all species that rely upon elk as a food source. These risks are not speculative, but real and imminent, in light of the fact that a mule deer infected with CWD was **found only 18 miles from the Forest Park feedground in 2016**. Because elk feedgrounds have a significant effect on the environment, the BTNF may not avoid the hard look required by NEPA by invoking a “categorical exclusion” and issuing a Decision Memo. In addition, the BTNF may not avoid or escape their NEPA obligations by failing to address their own permitting requirements.

Changed conditions and newer scientific findings

The BTNF should be aware of the changed conditions and newer scientific findings during the years since Forest Park and Dell Creek were last permitted in 1998 and 1996 respectively. See in particular BTNF employee Tyler Johnson’s June 2014 Chronic Wasting Disease Literature Review Technical Report, Appendix 7 to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015.

Some of the many important findings described in that June 2014 review by Johnson include:

“Owing to highly efficient direct transmission of CWD among cervids the number,

duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD.” p.5

“Cross et al. 2013 demonstrated that in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed.” p.6

“(E)lk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area.” p.6

“Studies on naturally occurring populations of elk have shown that mortality from chronic wasting disease *by itself* can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello et al. 2014 emphasis in original).” p.7

“(S)tudies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National forest and nearby areas.” p.7

“Free-ranging elk herds in Wyoming (Cross et al. 2013, Williams et al. 2014) and Canada (Vander Wal et al. 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km2 Elk density at the average state feedground in Wyoming is 1976.6 elk/km2, based on the reported average of 600 elk on 75 acres.” p.8

The current BTNF Supervisor, Patricia O’Connor, has also recently acknowledged that elk feedgrounds should cease on USFS lands.

“The continued westward expansion of chronic wasting disease detected during the 2015 hunting season punctuates the need for exploring opportunities for change. In making this decision, I am recommending that the WGFC/WGFD transition away from the need for supplemental feeding for elk. Use at Alkali Creek feedground is not intended to be permitted in perpetuity. My staff will prepare a report annually that identifies changing conditions and recommends any needed adjustment in feedground management.” (O’Connor 2015:5 in Final Record of Decision for the Alkali Creek elk feedground SEIS)

“I clearly understand and acknowledge that the Commission’s action of feeding results in artificially high concentrations of elk during winter and early spring which increases disease transmission (Johnson, 2014; Appendix 7; and Appendix 3 in the 2015 Final SEIS).” (Id.:6)

“When chronic wasting disease becomes established on the Bridger-Teton National Forest, there is a moderate to strong likelihood that the population limiting effects of chronic wasting disease to elk, mule deer, and moose may be hastened by supplemental feeding.” (Id.:6)

“The 2008 special use permit issued to the Commission for use of National Forest System land for elk management activities at Dog Creek, Fall Creek, Fish Creek, Muddy Creek and Upper Green River Feedgrounds will be amended to add authorization for use at Alkali Creek Feedground. However, this amendment will not occur until the WGFD Chronic Wasting Disease Management Plan update is completed and a review by the Forest Supervisor finds that the plan adequately addresses risks and management options for feedgrounds on National Forest System lands. If the plan is not completed prior to initiation of feeding for the winter of 2015-2016, a one year temporary permit will be issued.” (O’Connor 2015:4 in Final Record of Decision for the Alkali Creek elk feedground SEIS) Additionally, the Final ROD for Alkali Creek feedground requires the WGFD to, “Annually report chronic wasting disease mitigation actions that have been taken with regards to feedground management on National Forest System lands in western Wyoming.” (Id.)

“(C)hronic wasting disease mitigations will require an even greater collaborative interagency effort to manage.” (Id.:7)

In addition, one or both of these elk feedgrounds are also located in known Canada lynx habitat (USFWS 2014, BTNF 2016a), grizzly bear occupied and Demographic Monitoring Area (WGFD 2016), wolverine dispersal corridors (BTNF 2016b), and known gray wolf habitat (USFWS, et al. 2015). Canada lynx, grizzly bears and gray wolves are protected under the Endangered Species Act, and the wolverine is being considered for ESA protection by the US Fish and Wildlife Service. Since the promulgation of elk feedgrounds by the BTNF affects the health of prey species such as deer, moose and elk, elk feedgrounds have the potential to adversely affect all of these protected carnivores. This needs to be evaluated in an EIS. Due to these impacts on ESA-listed species, the Forest Service also needs to consult under the ESA on any permit renewal, even a temporary one.

CWD exists in western Wyoming in the elk feedgrounds region

It is indisputable that CWD is now in western Wyoming in the region where the WGFD and the US Fish and Wildlife Service feed some 22,000 densely concentrated elk at 23 locations each winter. A moose tested positive for CWD in Star Valley in 2008 (Moose Hunt Area 23). Three doe mule deer tested positive for CWD in Green River, Wyoming, in late 2012 (Deer Hunt Area 132). A dead doe mule deer positive for CWD was discovered in Star Valley early summer of 2016 (Deer Hunt Area 145). A buck mule deer harvested by a hunter near Dubois, Wyoming, tested positive for CWD (Deer Hunt Area 128). All these CWD endemic areas are either west of the Continental Divide in Wyoming, or adjacent to the Continental Divide; all are near- or are connected via cervid migrations to- elk feedgrounds.

Forest Park elk feedground in the Greys River drainage is only **13 miles** from where the CWD-infected moose was found in 2008, and only **18 miles** from where the CWD-infected mule deer was found in 2016. It is actually located within a CWD endemic area as determined by the Wyoming Game and Fish Department. Dell Creek elk feedground near Bondurant, Wyoming, is along the migratory path of mule deer from the lower Green River Basin; CWD was found in mule deer in the town of Green River in 2012. Dell Creek feedground is bracketed by CWD endemic areas 31 miles to the northeast (Deer Hunt Area 128), and 26 miles to the southwest (Deer Hunt Area 145), respectively. Elk, deer and moose are known to share habitats throughout this

region; it is virtually assured that elk, deer and moose move from CWD endemic areas to currently non-endemic areas every year. The risk is significant that elk that attend both Forest Park and Dell Creek will be or already are exposed to CWD.

Given the proximity of the disease, the catastrophic risk of intraspecific and cross-species infection to herds of elk, deer and moose from CWD, the persistence of the infectious prions in soil and plants, and the known harmful effects of concentrating hundreds and thousands of elk for months each winter in the face of this infectious and fatal disease, the BTNF must consider and thoroughly analyze alternatives to elk feedgrounds. Merely “monitoring” elk feedgrounds for symptomatic elk or other cervids is not sufficient and does virtually nothing to mitigate the risk to elk, nor does removing symptomatic elk or other cervids. In addition to the expeditious and complete phase out of elk feedgrounds, the BTNF must require appropriate disposal of the carcasses of CWD-infected elk or other cervids discovered and/or removed by the WGFD or anyone. Additionally, the BTNF must not allow hay harvested from CWD endemic areas to come onto BTNF lands. The BTNF may not permit elk feedgrounds without conducting a thorough Environmental Impact Statement.

Conclusion

We request from the Bridger-Teton National Forest:

1. A letter explaining the discrepancy among the dates in the Dell Creek SUP, and what is the correct date of expiration of the Special Use Permit for Dell Creek elk feedground. If Dell Creek elk feedground SUP expired at the end of 2015, and no one-year permit was issued and elk feedground operations were conducted regardless, we request an explanation of what elk feedground operations if any were conducted thus far in 2016 absent the SUP.
2. A detailed description of the efforts the BTNF has undertaken to assure that hay potentially containing infectious CWD prions harvested from CWD endemic areas is not transported to and placed on elk feedgrounds on BTNF lands to supply elk with feed during the winter.
3. A detailed description of the methods of disposal of portions or entire carcasses of CWD infected wildlife found by agency personnel on USFS lands in Wyoming.
4. A detailed description of the collaborative discussions and actions undertaken by both the WGFD and the BTNF to implement the April 2016 WGFD CWD Management Plan.

We look forward to your response to these requests in writing within twenty working days from the receipt of this letter. Note: In addition to this letter, we intend to submit a Freedom of Information Act request for copies of relevant existing documents held by the Bridger-Teton National Forest.

Sincerely,

Lloyd Dorsey, Conservation Director
Sierra Club Wyoming Chapter

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POB 12047 Jackson, WY 83002
307-690-1967
lloyd.dorsey@sierraclub.org

Jonathan Ratner, Director
Western Watersheds Project – Wyoming Office
PO Box 1160
Pinedale, WY 82941
Wyoming@WesternWatersheds.org

Attachments: Note, these documents are believed to be in the possession of the Bridger-Teton National Forest in Jackson, Wyoming. Therefore, in the interest of conserving paper and costs, we will submit only the first pages of the documents or specific maps as indicated by the list below. We also provide the URL for the documents. In the emailed version of this letter, we will submit some documents attached to the email, or we will submit the link to where the document is already archived on the BTNF website or elsewhere.

1. Bridger-Teton National Forest. 1996. Special Use Permit Issue Date 08/02/96 for Dell Creek Elk Feedground.
2. Bridger-Teton National Forest. 1998. Special Use Permit Issue Date June 15, 1998 for Forest Park Feedground.
3. Bridger-Teton National Forest. 2016a. Oil and Gas Leasing in Portions of the Wyoming Range in the Bridger Teton National Forest DSEIS. Jackson, WY. Figure A-9a. Northern Rockies lynx planning area occupied lynx habitat and lynx core habitat map. P. 12 Appendix A. Jackson, WY. At: <http://www.fs.usda.gov/project/?project=48737>
4. Bridger-Teton National Forest. 2016b. Oil and Gas Leasing in Portions of the Wyoming Range in the Bridger Teton National Forest DSEIS. Jackson, WY. Figure A-21. Wolverine dispersal corridors. Map, p. 25 Appendix A. Jackson, WY. At: <http://www.fs.usda.gov/project/?project=48737>
5. Johnson, Tyler. June 2014 Chronic Wasting Disease Literature Review Technical Report, Appendix 7 to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015. Entire Appendix 7 at: <http://www.fs.usda.gov/project/?project=39126>
6. O'Connor, Patricia M.. December 2015. Final Record of Decision Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System

land for their Winter Elk Management Activities at Alkali Creek Feedground. Final Record of Decision at: <http://www.fs.usda.gov/project/?project=39126>

7. US Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Contiguous United States Distinct

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Population Segment of the Canada lynx and Revised Distinct Population Segment Boundary. FR Doc. 2014-21013 Filed 09/11/2014 publication date 09/12/2014. Map p. 54846. At: https://www.fws.gov/policy/frsystem/title.cfm?title=Endangered%20and%20Threatened%20Wildlife%20and%20Plants&doc_type=final&date=14

8. US Fish and Wildlife Service, National Park Service, Wyoming Game and Fish Department, Wind River Indian Reservation, and USDA Wildlife Services. 2015. Wyoming Wolf Recovery 2015 Annual Report. Map p. WY-3. At: [https://www.fws.gov/mountainprairie/es/species/mammals/wolf/2016/WY_Annual_Report-2015%20Final%20\(1\).pdf](https://www.fws.gov/mountainprairie/es/species/mammals/wolf/2016/WY_Annual_Report-2015%20Final%20(1).pdf)

9. Wyoming Game and Fish Department. 2016. Wyoming Grizzly Bear Management Plan. Figure 1. Boundary Mapping (Map of grizzly bear Primary Conservation Area, Demographic Monitoring Area, 2014 Grizzly Bear Distribution, etc.) P. vi. Cheyenne, WY. At: <https://wgfd.wyo.gov/WGFD/media/content/PDF/Wildlife/Large%20Carnivore/GBMgmt-Plan-Approved-5-11-2016.pdf>

Western State Management of Wintering Elk

Document prepared for "Elk Feedgrounds: A Challenge We Can Take On" public collaborative process.

Ben Wise, Jackson Region Wildlife Disease Biologist

Wyoming Game and Fish Department

December 2021



Photo by Mark Gocke



Introduction:

Elk management in the western United States is complex and highly variable from state to state. Elk are managed by the respective state in which they reside, and individual state wildlife management agencies have developed policies for elk management that help meet individual state goals. State wildlife management agencies must weigh a variety of complex issues in developing and implementing elk management policy. There is often a multitude of biological, social, and political factors that influence elk populations and how elk are managed. Wintering elk populations pose a number of issues ranging from landowner tolerance, disease management, habitat availability, winter severity, and public demand for wildlife that have to be taken into consideration when developing management plans. One of the management tools that has been implemented throughout the western United States over the last century to mitigate issues related to wintering elk populations is supplemental feeding. The states that have implemented supplemental wildlife feeding programs did so in an effort to mitigate for loss of native winter ranges, disease management, damage/conflict, and loss of habitat connectivity due to expanding development (i.e., highways, subdivisions, rural and residential development, etc.). This document was created as a reference on elk management policy, including winter feeding policy in seven states; Wyoming, Montana, Idaho, Colorado, Utah, Oregon, and Washington (Table 1). **The information was compiled directly from respective state wildlife management agency publications, including State Wildlife Management Plan, Elk Management Plan, Habitat Management Plan, and Damage Management Plan publications, as well as any relevant state statutes and regulations.** This document should only be used as a reference, and additional questions about state wildlife management should be directed to the respective state wildlife management agency.

Table 1. Supplemental Winter Elk Feeding by State (as well as approximate numbers for reference)

State	Supplemental Winter Elk Feeding	Approximate number of Elk Fed/winter	Total Elk Population
<i>Wyoming</i>	YES	22,000-24,000	110,000 (2020)
<i>Idaho</i>	EMERGENCY	150-300	120,000 (2020)
<i>Montana</i>	NO	0	170,000 (2020)
<i>Colorado</i>	EMERGENCY	0	287,000 (2018)
<i>Utah</i>	YES	500-600	81,000 (2020)
<i>Oregon</i>	YES	1,200-8,000	126,000 (2019) *71,000 Rocky Mtn *55,000 Roosevelt
<i>Washington</i>	YES	Up to 4,300	60,000 (2020) *45,000 Rocky Mtn *15,000 Roosevelt

Wyoming

Elk Management:

- The Wyoming Game and Fish Department's (WGFD) management goals and objectives (e.g., bull-to-cow ratios, herd objectives, and hunting seasons) are set through a public review process that requires public input and a final departmental recommendation to be approved by the Wyoming Game and Fish Commission (Commission).
- Elk management in Wyoming is conducted on a regional basis by area managers and varies considerably throughout the state.
- Objectives are evaluated every five years to determine if any population objective changes are warranted. Any objective changes are approved by the Commission.
- Populations are managed to ensure healthy, sustainable populations of wildlife persist as well as allowing for sustainable harvest of wildlife by the public.
- Herd unit management objectives can be based on one (or more) of the following techniques;
 - A.) Post-season population objectives
 - B.) Mid-winter trend count objectives
 - C.) Landowner and hunter satisfaction objectives
- Population Management Strategies:
 - A.) Recreational - Hunting seasons are designed to maintain an adequate number of breeding animals in the population. The Recreational Management Strategy generally results in increased recreational opportunities for sportsmen.
 - B.) Special - Hunting seasons are designed to maintain higher post-season male ratios in pronghorn, mule deer, and elk herds, and older age class animals in bighorn sheep and moose herds. The Special Management Strategy results in a greater opportunity to harvest an older aged or larger male animal.
 - C.) Private Lands - The Private Land Management Strategy is used in areas where hunting access is very difficult. Local managers focus on building landowner relationships to facilitate access and hunter management.

Damage Prevention/Mitigation

- The WGFD is responsible for damage investigations, mitigation, and monetary payments regarding big game, trophy game, and game bird damages in accordance with statute (Wyoming Statute 23-1-901) and Commission regulations (chapter 28). In accordance with the law, landowners can submit a claim to the WGFD for compensation from wildlife damages.
- Measures used by WGFD personnel to prevent wildlife damage include scare devices, harassment techniques, repellents, fencing, trapping, issuing of "kill" permits, and modifying hunting seasons. In evaluating damage to estimate monetary losses, techniques used include animal counts and associated consumption rate and/or AUM conversation, fecal analysis, enclosures, production records, and necropsies.
- Common law in America, which has been continually reinforced in the United States courts, holds that the people of the state own the wildlife. No individual holds an absolute property right to wildlife regardless of the status of the land on which the animal is found. Since wildlife belongs to everyone, the courts contend that everyone must share in its keep. As a result, courts have ruled the states are immune from liability for damage caused by wild animals, unless the state assumes that responsibility. Wyoming has assumed limited liability through legislation for some species of wildlife and under specific circumstances.

- Wyoming Statute W.S. § 23-2-101(e) provides a funding source for the payment of big or trophy game animal and game bird damage claims. That source of funding is generated from a nonresident application fee of \$15 and a resident application fee of \$5 for any limited quota big or trophy game license issued through a drawing or for a wild bison license. The statute provides for 25% of the fees collected from license applications to be set aside to establish and maintain a fund of \$500,000 to compensate landowners or lessees for property damaged by big or trophy game animals and game birds.
- Wildlife damage management is a major component of the WGFD's Wildlife Management Program. Considerable efforts are made to prevent damage, including hazing, providing materials for stored crop stackyard fences, relocating trophy game animals, increasing harvest, depredation seasons, and, as a last resort, "kill" permits.
- A landowner may submit a verified claim requesting compensation for damage. Claimants must meet all statutory and regulatory requirements in notifying WGFD personnel and filing the claim. WGFD personnel investigate the claim and verify the claimed damage using guidelines established by the WGFD in The Handbook of Wildlife Depredation Techniques. Claimants who do not wish to accept the WGFD's offer of payment may appeal the claim to the Commission. If the claimant wishes to appeal the decision of the Commission, the claim may be taken to a three member arbitration board. If there is a "mistake of law" due to arbitrators exceeding their powers, the claim can be heard by the appropriate District Court.
- In accordance with Chapter 28, a claimant shall not be eligible to receive an award for damage caused by big game animals, trophy game animals, or game birds unless hunting for the species for which damage compensation is claimed has been permitted during authorized hunting seasons on the land for which the verified claim has been filed. For an award to be allowed, the claimant shall permit hunting during authorized hunting seasons if the species of big game animals, trophy game animals, or game birds for which the verified claim was filed were present on the claimant's privately owned or leased land and adjoining Federal or State land during authorized hunting seasons delineated in subsection (C) (1). If the species of big game animals, trophy game animals, or game birds for which the verified claim has been filed were not present on the claimant's privately owned or leased land and adjoining Federal or State land during the authorized hunting seasons as delineated in subsection (C) (1), for an award to be allowed the claimant shall permit hunting during authorized hunting seasons delineated in (C) (2) and (C) (3) if requested by the WGFD. The claimant shall permit hunting during authorized hunting seasons delineated in (C) (2) and (C) (3) without access fees to hunters or the WGFD.
 - A.) For a claimant to be eligible to receive an award for damage compensation on leased private land, the landowner of the leased private land shall not, in any manner, restrict hunting access for the species for which damage compensation is claimed on the land for which the verified claim has been filed, or any adjoining Federal or State land.
 - B.) The claimant shall not, in any manner, restrict hunting access to their privately owned land, leased private land or any adjoining Federal or State land within the hunt area for which the damage occurred in accordance with this section.
 - C.) Authorized hunting seasons include:
 - 1.) Hunting seasons as established by Commission rule and regulation;
 - 2.) Depredation prevention hunting seasons as approved by a District Wyoming Game and Fish Commissioner and the Chief Game Warden; or,
 - 3.) Lethal taking of wildlife through a kill permit as approved by a District Wyoming Game and Fish Commissioner and the Chief Game Warden
- The WGFD shall determine if hunting was permitted during authorized hunting seasons for the species of big game animals, trophy game animals, or game birds for which the verified claim

has been filed. For an award to be allowed, the WGFD shall have to determine the claimant allowed sufficient numbers of hunters to access his privately owned or leased land and adjoining Federal or State land to harvest more than the number of big game animals, trophy game animals or game birds recruited in the preceding 12 months into the segment of the population responsible for doing damage. The claimant shall contact the game warden to whom he reported the damage to determine how many big game animals, trophy game animals, or game birds meets the requirement of more than the number of big game animals, trophy game animals or game birds recruited in the preceding 12 months into the segment of the population responsible for doing damage. An award may be allowed if the WGFD determines a reduction in big game animals, trophy game animals or game birds affects the WGFD's ability to sustain the population at the objective the Commission has established for the herd unit.

Winter Wildlife Feeding Policy and Operations:

- Supplemental Feeding of Elk/Wild Bison - The Commission is granted statutory authority to provide for the feeding of game animals, birds, and fish of Wyoming when conditions warrant such feeding as necessary. The purpose of this policy is to define the role of the WGFD in support of the Commission's efforts to fulfill its responsibilities with respect to feeding wildlife
- Under most conditions, the Commission discourages the private, intentional feeding of big and trophy game animals (WS 23-3-309). In order to maintain established elk herd unit population objectives in the Jackson/Pinedale regions, the Commission directs the WGFD to provide supplemental feed for elk as provided in this policy.
 - WS 23-3-309. Intentional feeding of elk; penalty.
 - A.) No person shall intentionally attract or feed any elk by depositing, placing, distributing, or scattering feed that results in commingling with livestock.
 - B.) Nothing in this section shall prohibit:
 - 1.) Any normal or accepted agricultural management practice;
 - 2.) Any elk feeding program authorized or conducted by the WGFD;
 - 3.) Any legal form of baiting elk as authorized by commission rule and regulation;
 - 4.) Any feeding of elk for the purpose of reducing the opportunity for contact with livestock when undertaken with prior notice to the WGFD;
 - 5.) Any feeding of elk outside a brucellosis surveillance area designated pursuant to Wyoming livestock board rules and regulations.
 - C.) A first violation of this section constitutes a low misdemeanor punishable as provided in W.S. § 23-6-202(a) (v). A second or subsequent violation of this section constitutes a high misdemeanor punishable as provided in W.S. § 23-6-202(a)(ii).
- The Commission recognizes the importance of supplying supplemental feed to elk at the 22 existing WGFD feedgrounds and the National Elk Refuge. The Commission also recognizes that without such feeding, the elk populations would have decreased significantly to levels that could be supported by the limited native range forage.
- The Commission directs the WGFD to provide adequate supplemental feed to support healthy and productive elk at the 22 WGFD feedgrounds and work cooperatively with the U.S. Fish and Wildlife Service to provide adequate feed to support healthy and productive wintering elk/wild bison on the National Elk Refuge. It is recognized that the Commission approved herd unit

population objectives exceed established total feedground quotas for each herd unit due to the presence of some elk wintering on native range. Recognizing that elk population objectives for each herd unit exceed the number of elk to be maintained on feedgrounds and the unpredictability of elk distribution considering habitat conditions, weather, and other factors that may influence the distribution of elk on WGFD operated feedgrounds, the Commission directs the WGFD to strive to manage feedgrounds for the total feedground elk quotas for each elk herd unit as listed in Table 2.

Table 2. Herd Unit Feedground Quotas.

<i>Herd Unit</i>	<i>Quota</i>	<i>Elk Feedground</i>	<i>Quota Distribution</i>
<i>Afton</i>	1,750	Greys River	1,000
		Forest Park	750
<i>Piney</i>	2,150	Bench Corral	250
		Finnegan	400
		Franz	450
		Jewett	650
		North Piney	400
<i>Fall Creek</i>	3,950	Camp Creek	900
		Horse Creek	1,250
		Dog Creek	800
		South Park	1,000
<i>Green River</i>	1,975	Black Butte	500
		Green River Lakes	675
		Soda Lake	800
<i>Hoback</i>	1,000	Dell Creek	400
		McNeel	600
<i>Jackson</i>	2,450	Alkali	800
		Fish Creek	1,000
		Patrol Cabin	650
<i>Pinedale</i>	1,800	Fall Creek	700
		Muddy Creek	600
		Scab Creek	500

- The number of elk on the National Elk Refuge is to be maintained in accordance with a mutually agreed upon number established cooperatively by the Commission through the WGFD and the U.S. Fish and Wildlife Service.
- The Commission directs the WGFD to not develop and operate any additional feedgrounds without pre-approval by the Commission while in session, except when an emergency occurs. When an emergency is identified, temporary feeding operations may be conducted when agreed upon by the WGFD Director and the District Commissioner(s) where the emergency feeding is requested/warranted. The commission recognizes there may be

situations where emergency feeding of wildlife shall be necessary. To the extent that any action taken pursuant to the above-mentioned responsibilities may be more specifically addressed in another Commission policy, the more specific policy should control.

- Feedground Operations: - In 1912, federal legislation was appropriated to purchase hay and feed elk on the present day National Elk Refuge. In 1929, the WGFD initiated operation of three supplemental elk feedgrounds in the Greys River, Gros Ventre River, and Green River drainages in an effort to prevent large-scale die-offs of elk during severe winters.
- Wyoming's first damage law was enacted in 1939, imposing limited liability on the Commission to pay for damages to crops caused by big game animals. This legislation created a significant financial burden to the Commission and largely contributed to the establishment of Wyoming's elk feedgrounds. Wildlife managers found it was easier and less expensive to feed elk in key problem areas rather than continually try to keep elk out of haystacks.
- Elk were fed at many different locations during the 30-plus years following the creation of the damage law, primarily to prevent damage to stored and fed hay and growing crops. Many sites were temporary, and only small amounts of hay, or cake, were fed. The WGFD has fed elk in at least 51 different locations since 1948. Many of the present feeding sites were started in the late 1940s and early 1950s, and by the early 1960s the present elk feedground system was mostly in place, with the last feedground started in 1979 (Forest Park).
- Currently, the WGFD manages 22 state-operated elk feedgrounds. The 22 state feedgrounds are located in Teton, Lincoln, and Sublette counties on BLM, Forest Service, state, and private landholdings. Annually, the average number of elk fed on all 22 state feedgrounds (not including the National Elk Refuge) since 1975 is approximately 13,788 elk. The highest number recorded was in 2005-06, when the WGFD fed a total of 17,140 elk. Conversely, the lowest number of elk fed since 1975 occurred during the winter of 1976-77, when only 4,964 elk were fed. The number of elk fed on the refuge has ranged from 0 to 10,736, and since 1970 have averaged 7,035.
- Elk are typically fed with a team of draft horses and a sleigh, although tractors are used at a few feedgrounds. Elk are fed seven days a week, with most feedgrounds starting in late November and ending in mid-April. Small square bales of grass or alfalfa hay are generally used, except where mechanized equipment is used, and large, square bales can be fed. Feeders try to disperse elk as much as possible and feed on clean snow each day if possible.
- The WGFD purchases between 5,000-9,000 tons of hay annually, with an average of 6,550 tons. Certified weed-free hay is used at feedgrounds on Commission-owned lands, as well as those on U.S. Forest Service and BLM lands. Most hay is purchased from Teton, Lincoln, and Sublette county ranches, with some hay coming from WGFD -owned lands in Fremont County. The WGFD contracts the hauling and stacking of hay, which typically takes about four months to complete. Each feedground has sheds where hay is stored.
- Elk feeders are contracted seasonally by the WGFD and may feed at one or more feedgrounds. Elk are generally fed between eight and ten pounds of hay/head/day. Since 1975, the feeding season has ranged from 64 to 152 days, depending on the severity of the winter and feedground location, with the average length of the feeding season being 122 days. This equates to approximately 0.5 ton of hay per elk each year. Over the last 12 years, there has been a general decline in the number of days fed and the number of elk fed days (a metric that incorporates elk abundance) on most feedgrounds following increased efforts to shorten feeding season length combined with generally milder winters.

- In July 2021, the Wyoming Legislature passed Wyoming Statute 23-1-305 - Closure of elk feedgrounds; alternative feeding sites; reporting requirements. This statute codified the following requirements for the closure of any permanent feedground in Wyoming.
 - Requires that any permanent elk feedground closure by the Commission will require an order by the Governor
 - Commission shall consult with the Wyoming Livestock Board on recommended elk feedground closure
 - At least one public meeting in an area where elk feedground closure would occur
 - Commission is authorized to contract/lease private lands for feedgrounds for the purpose of relocating feedgrounds that could be closed
 - Does not prevent the WGFD from operating current elk feedgrounds, start/ending feeding dates, and emergency elk feeding operations

Idaho

Elk Management:

- Population monitoring is the backbone of Idaho Department of Fish and Game (IDFG) elk management program. Monitoring provides wildlife managers with information to evaluate management goals and allows informed decision-making. Monitoring should include an estimate of population size, as well demographic information such as age and sex ratios. Aerial surveys should be conducted frequently enough to establish population trends and timely enough to enable managers to influence these trends.
 - A.) Statewide Elk Management Direction - The IDFG has developed statewide objectives based on elk hunter survey results, recent aerial surveys, current elk population status, and the potential for herd growth in some areas. Idaho Department of Fish & Game Idaho Elk Management Plan proposed statewide elk management objectives include:
 - 1.) Continue to offer general-season elk hunting opportunities by managing elk and predator populations and improving elk habitat
 - 2.) Enhance mature bull hunting opportunity
 - 3.) Aid elk hunters in selecting hunting areas that align with their desired hunting experience
 - 4.) Maintain the "A-B" elk tag structure, with adjustments to meet the needs and interests of today's hunters
 - 5.) Implement measures to reduce elk-caused crop and property damage
 - 6.) Improve public involvement in elk management decision-making
 - 7.) Reduce the potential for disease to impact elk or livestock
 - 8.) Increase public knowledge and understanding of elk biology, management, and hunting
 - B.) Elk Zone Management Direction
 - 1.) The IDFG will continue to manage elk using the zone management system. The zone system allows herd management based on local habitat, weather, and herd movements while providing a variety of hunting opportunities.
 - 2.) The number of elk that can be supported in any given management zone is influenced by many factors, including weather, habitat quality, predation, hunter harvest, and the need to minimize elk-based crop and property damage (agricultural impacts). One or more of these "limiting" factors can often prevent an elk herd from growing further or limit the ability of wildlife managers to maintain current elk herd numbers.
 - 3.) For each proposed elk zone, IDFG staff identified the limiting factors using flight surveys, elk population trends over ten or more years, changes to available habitat, reported agricultural impacts (crop and property damage), known or suspected causes of elk mortality, assessments of predator populations and predation impacts, and other data and elk management experience. The severity of each identified limiting factor was classified as low, moderate, or high. Limiting factors common to most Idaho elk populations are agricultural impacts (crop and property damage), predation, and habitat. The severity of these limiting factors varies across Idaho and even within zones.
 - 4.) IDFG staff proposed 10-year management direction and population objectives for each elk zone and objectives and strategies to maintain or improve elk herd performance and provide greater hunter satisfaction. Finally,

using public input, IDFG staff refined the management direction, objectives, and strategies for each zone.

Damage Prevention/Mitigation:

- Preventing crop and property damage (depredation) is a priority management objective for IDFG, and our response to depredation complaints is directed by Idaho Code 36-1108. Each region's Landowner-Sportsmen Coordinator has the responsibility to assist landowners in minimizing or eliminating depredations. Typical strategies to reduce depredations include hazing, permanent fencing, depredation hunts, kill permits, continued use agreements targeted general or controlled hunts and perpetual easements.

Winter Wildlife Feeding Policy and Operations:

- The Idaho Fish and Game Commission recognizes that big game populations should be maintained under natural conditions and by naturally available forage. Winter forage is the major limiting factor that determines the size of the big game populations, and it must be maintained if these animals are to prosper and propagate. The IDFG will work with appropriate land management agencies in an effort to maintain winter ranges in a condition suitable to meet big game management objectives, including the restoration of ranges damaged from such long-term impacts as disease, weed infestation, and/or overgrazing. These restorations could include temporary solutions for short-term impacts caused by fire and/or drought. In order to maintain these winter ranges, big game numbers must be controlled through adequate harvest. We, therefore, do not sanction any widespread supplemental winter feeding programs.
 - A.) Big game animals, especially elk, when concentrated by supplemental feeding, are very susceptible to infectious disease, which can be transmitted to livestock and to other big game animals. Every effort should be made to lessen this threat.
 - B.) We are aware that big game harvests and weather vary from year to year throughout the state. In most years, snow depths, temperatures, and animal body condition do not create adverse conditions for wintering animals. However, there are times when unusual weather patterns may create critical periods of stress when winter forage becomes limited, unavailable, or animals are forced into areas involving public safety. We recognize that we cannot manage game populations for these extreme weather conditions—nor should we.
 - C.) The IDFG is authorized to feed big game only if the following conditions exist:
 - 1.) To prevent damage to private property or for public safety when other methods of preventing damage and providing safety measures are determined to be impractical, inappropriate, or ineffective, and the amount of damage or cost of protection is expected to exceed the cost of feeding.
 - 2.) To prevent excessive mortality of big game populations in drainages that would affect the recovery of the herd. Some mortality should be expected, especially from the young and old segments of the population.
 - D.) It is the responsibility of all field personnel to advise the Regional Supervisor of weather, animal conditions and numbers, and public input on situations that meet the feeding criteria outlined above. If the Regional Supervisor, in consultation with the regional winter feeding advisory committee, determines that the criteria has been met and that an emergency exists, he/she will inform the Wildlife Bureau of his/her decision, and the Wildlife Bureau will notify the Director's Office, Enforcement Bureau, and the

Communications Bureau. The regional big game operational plan will then be implemented.

- IDFG maintains a nearly-annual elk feeding operation (Bullwhacker) in the Warm Springs Creek area, west of Ketchum. The intent of this site is to prevent elk from attempting to overwinter within Ketchum, which historically was winter habitat.
- IDFG has also decommissioned four winter feeding operations in Northeast Idaho (Rainey Creek, Victor, Teepee Creek, and Conant Creek) at the recommendation of the Idaho Governor's Wildlife Brucellosis Taskforce in an effort to reduce disease transmission risk.

Montana

Elk Management:

- In practice, Montana Fish, Wildlife and Parks (FWP) elk number objectives have been or will be established using the following considerations.
 - A.) The history of long-term trend counts and discussions with landowners on many areas indicate to biologists at what count level and under what conditions agricultural damage complaints become more frequent or excessive. Objectives for number of elk counted will be established below levels of excessive damage problems. For other areas, especially on public lands in northwestern Montana, elk numbers are below levels sustained in the past.
 - B.) Input from sportspersons, public land managers, and the general public will also be considered.
 - C.) Increasingly, in problem areas, Community Working Groups are formed to help all stakeholders come to consensus about objectives for elk numbers and potential solutions to elk management problems in the area.
 - D.) FWP has come to recognize that in some areas and for some elk populations, demand for antlerless harvest with current regulations is less than is necessary to reduce the elk population from current levels to the objective. A substantially more liberal regulation package than traditionally used may be necessary to reduce the elk populations to objective levels. Once objective levels are met, regulations can be modified to maintain stable populations under average environmental conditions. These objective levels may be lower than ecological potential and driven more by sociological tolerance.
 - E.) Elk populations in portions of some Elk Management Units (EMU) may be almost entirely inaccessible to hunters during the general hunting season or accessible to only a few hunters. To avoid over-harvest of accessible elk on public lands or private lands open to hunting, the inaccessible elk may not be included in objective numbers. Trend count number objectives may include only elk normally accessible to general hunting (if they are a distinct segment), though hunter access negotiations will continue. Elk occupying these "refuges" may be counted separately where practical (if they are a distinct segment) and sub-objectives established that could be operative if access negotiations are successful. If significant harvest of these "refuge" elk is possible with special management at some times and locations, they should be included in objective levels.

Damage Prevention/Mitigation:

- The general hunting season is FWP's primary tool for regulating wildlife populations. However, hunter access, weather, and other factors can reduce the effectiveness of the general season harvest in controlling wildlife populations in any year or series of years. Some areas may experience chronic wildlife damage to agricultural products regardless of elk population levels, but damage complaints may increase in other areas when elk populations have increased over several years.
- Two Montana Supreme Court decisions have ruled that private landowners are expected to accommodate a certain amount of wildlife use of their private lands. However, if a combination of circumstances result in wildlife use of private land at "unreasonable levels" that cause

problems for landowners, the state, with some exceptions, assumes responsibility to help eliminate, prevent or resolve these problems. By law (87-1-225 MCA) FWP is required to respond to all big game damage complaints. MCA 87-1-225 states:

- A.) Subject to the provisions of subsection (2), a landowner is eligible for game damage assistance under subsection (3) if he;
 - 1.) Allows public hunting during established hunting seasons; or
 - 2.) Does not significantly reduce public hunting through imposed restrictions.
- B.) FWP may provide game damage assistance when public hunting on a landowner's property has been denied because of unique or special circumstances that have rendered public hunting inappropriate.
- C.) Within 48 hours after receiving a request of complaint from any landholder or person in possession and having charge of any land in the state that wild animals of the state, protected by the fish and game laws and regulations, are doing damage to the property of crops thereon, the FWP shall investigate and arrange to study the situation with respect to damage and depredation. The FWP may then decide to open a special season on the game or, if the special season method is not feasible, the FWP may destroy the animals causing the damage. The FWP may authorize and grant the holders of said property permission to kill or destroy a specific number of animals causing the damage. No wild ferocious animal damaging property or endangering life shall be covered by this section.
- D.) FWP Game Damage Policy states that the following definitions (A) and (B) shall be used to determine game damage assistance eligibility
 - 1.) "Allows public hunting" is defined as "allows hunting without charge or consideration and without restrictions (as defined in (B)) to members of the general public during established seasons. For purposes of game damage assistance eligibility, hunting must be allowed for the species for which the complaint has been made.
 - 2.) "Does not significantly reduce public hunting through imposed restrictions" is defined as "does not impose restrictions which prevent the general public hunter harvest of the species for which the complaint is made. Such restrictions may include:
 - i.) Species of animals hunters are allowed to hunt;
 - ii.) Portion of land open to hunting;
 - iii.) Time period during which land is open to hunting;
 - iv.) Fees charged; or
 - v.) Other restrictions which render harvestable animals inaccessible.
- E.) FWP Damage Policy further indicates that field personnel should respond quickly and effectively to game damage situations, employing game damage abatement activities on a progressive scale of intensity, from the least dangerous or harmful to the wildlife doing the damage up to and including lethal methods such as damage hunts and kill permits. Generally speaking, the progressive steps for the use of game damage techniques are:
 - 1.) Dispersal through the use of noisemakers and repellants, or other activities agreed upon which would serve to haze animals away from an area;
 - 2.) Physical barriers such as snow fence, mesh wire, panels, permanent stackyards or electric fence used to protect harvested, stored crops; fence barriers will not be provided for protection of unharvested crops standing in the field.

- 3.) Damage hunts during the periods of August 15th to the opening of fall Commission –established seasons and from the close of fall Commission-established seasons through February 15th ;
- 4.) Kill permits used by landowners or, in rare instances, FWP personnel.

Winter Wildlife Feeding Policy and Operations:

- ELK FEEDING POLICY

- A.) Past experience in Montana and elsewhere has shown that artificial feeding of game animals is not a sound game management program - neither economically nor biologically. It is expensive, is not good for the animals, and not good for the range upon which these animals are dependent. It can only be justified under extreme winter conditions which indicate a winter loss of major proportions is imminent. Therefore, when it has been determined that extreme winter conditions exist on FWP owned lands, an emergency feeding program may be undertaken and the following regulations shall be policy:
 - 1.) Invite local sportsman's groups to participate in the program;
 - 2.) Feed only hay of high quality free from all forms of pollution;
 - 3.) Feed hay in sufficient quantity so that at least some hay is left uneaten; (this normally means about 12 pounds per animal per day) ;
 - 4.) Feed will be scattered over large areas in an attempt to maintain a normal distribution;
 - 5.) FWP will determine feeding areas and only those areas will be utilized; these are wild animals and consideration must be given to the establishment of feeding areas located specifically to avoid harassment.
- B.) In the Gallatin River drainage the elk feeding policy for the FWP is as follows:
 - 1.) For the area in the vicinity of the northwest corner of Yellowstone National Park: encompassed by the drainages of Buffalo Horn Creek, Cinnamon Creek, Wilson Creek, Teepee Creek, Lodgepole Creek, Sawmill Creek, Monument Creek, Sage Creek, and the portion of Taylor Creek below the Taylor Narrows, there will be no feeding, whether hay or other food supplements, of elk.
 - 2.) For the remainder of that portion of the Upper Gallatin Canyon where elk feeding is not excluded by the provisions of subsection (2) (a) , the following guidelines are the elk feeding policy of the FWP.
- C.) Purpose. The purpose of this plan is to establish criteria for the monitoring and evaluation of winter conditions for a portion of the Upper Gallatin elk herd in order to avoid catastrophic losses during a severe winter.
 - 1.) The FWP is responsible for managing the wildlife on national forest lands in Montana. The forest service, however, has responsibility for the management of wildlife habitat, necessitating the two agencies work closely together in game management within the boundaries of the national forest. Yellowstone national park contains a portion of the Upper Gallatin elk habitat. The three agencies therefore coordinate their responsibilities under a cooperative agreement for the management of the Upper Gallatin elk herd.
 - 2.) In any winter, regardless of severity, natural elk mortality will vary from 1% to 10%. Nature has the ability to recover losses rapidly. The ratio of calves to adult cows may vary from 25% to 60% in a given year. Elk herds have the

potential of doubling their size within two years. Nevertheless, a loss in excess of 15% of the total herd could be considered catastrophic, necessitating feeding or other emergency measures.

- D.) Objective. The objective of this plan is to establish guidelines for evaluating winter conditions affecting Upper Gallatin elk and the condition of the elk themselves. An additional objective of this plan is to establish guidelines for feeding, should the need arise, that will minimize damage to soil, vegetation, and water while providing for the needs of elk through a crisis period. It is hoped that elk feeding when needed can be achieved through the cooperative efforts of concerned citizens working with the FWP and the forest service.
- E.) Background. Research has shown that once animals are suffering from severe malnutrition, feeding may do no good. Also, once animals have become weak from use of reserve body fat, the animals may not be able to adjust to a change of diet. If feeding is to be done then, it must begin before the animals' condition is so poor that they do not respond. A decision to feed must also recognize the following adverse impact on the environment and the animals:
 - 1.) Making healthy animals dependent on artificial feed when they would be better off foraging;
 - 2.) Stopping or interrupting natural migration habits;
 - 3.) Tending to deplete emergency food reserves in the vicinity of feed grounds; (research has shown that elk will severely browse conifers and shrubs in the immediate vicinity of the feed ground regardless of the amount of hay put out) ;
 - 4.) Concentrating animals when their resistance is down, increasing the risk of the spread of any disease or virus present;
 - 5.) Decreasing water quality by concentrating animals near open water;
 - 6.) Allowing genetically inferior animals to survive, thus interfering with the natural selection process;
 - 7.) Changing social behavior patterns may cause problems; for example, if bulls are attracted into cow groups, increased stress may be placed on weaker or smaller animals through fighting and jostling.
- F.) Even though late winter storms can be quite severe, usually after a couple of days the snow melts and food becomes available again. Those animals which are too weak to wait out a few days will not be helped by feeding.
 - 1.) As a general rule, artificial feeding will not be started after April 1. To avoid losses from a late spring storm, such as occurred in April, 1975, managers will need to make a thorough analysis of the available feed and animal condition prior to April 1.
- G.) Criteria for evaluating winter conditions for the Upper Gallatin elk herd. The FWP will set up monitoring stations at Taylor Fork and Porcupine to monitor snow depth, icing, and crusting. The following criteria will indicate that feeding may be necessary:
 - 1.) Snow depth 20 inches or more with crusts and/or ice forming;
 - 2.) Weak adult cows forced to bottom lands along streams and Highway 191;
 - 3.) Adult cows foraging during middle of daylight hours;
 - 4.) Adult cows not seeking cover after feeding;
 - 5.) Emergency food sources not available;
 - 6.) Groups of adult cows (not isolated animals) generally in poor condition;
 - 7.) Signs of malnutrition in road-kills of adult cows (bone marrow pink, jelly-like, lack of body fat, especially around kidneys) ;

- 8.) Adult cows weak and moving with difficulty through snow cover;
 - 9.) Weather outlook for cooler than normal with above normal precipitation forecast.
- Note: Since some calf losses are not preventable but are expected most years and since this plan is designed to prevent catastrophic reductions in the elk herd, the criteria for feeding is based on factors affecting the reproductive base (adult cows) only.
- H.) Procedure: In the event hay feeding becomes necessary, the following procedure will be followed:
 - 1.) Every effort will be made to avoid concentrating animals; hay will be fed where the elk are found, scattered over a wide area and in small amounts;
 - 2.) Approximately 3 to 7 pounds of hay per animal is sufficient per feeding;
 - 3.) Hay will be fed from sleigh or snow machine;
 - 4.) Distribute feed away from streams and highway and emergency food sources, such as willow and dogwood;
 - 5.) Scatter feed at the break (or toe) of the slope;
 - 6.) Only "certified weed-free" grass hay will be used;
 - 7.) Hay will be furnished or approved by the FWP;
 - 8.) All feeding will be monitored and supervised by the FWP with assistance of the forest service; the results of any feeding program should be carefully documented for future reference;
 - 9.) Feeding will stop when natural feed becomes available or when elk stop using hay, whichever comes first;
 - 10.) The FWP will obtain a forest service permit for feeding on national forest land.
- I.) Responsibility and coordination. The FWP will be responsible for making the final decision on whether or not to feed hay to elk, and will supervise the procurement and distribution of hay.
 - 1.) The forest service will make the final decision on whether to allow the placing of hay on national forest land for feeding of elk. The location of feeding areas on national forest land must receive prior approval from the forest service. Feeding will not take place inside Yellowstone National Park.
 - 2.) The forest service and FWP will jointly monitor snow, weather, and animal conditions, with the FWP having the primary responsibility for monitoring.
 - 3.) If conditions indicate that feeding may be necessary, a thorough analysis of snow and animal conditions will be made by FWP and forest service personnel. Porcupine and Taylor Fork Creek above the narrows will be checked as a minimum. A joint meeting will be held and the FWP will decide whether or not to feed and where feeding will be most effective.
 - 4.) Proposed national forest feeding sites will be approved at that time.
 - 5.) The FWP then may invite private ranchers and organizations to participate and establish a schedule for monitoring the feeding and recording results. Forest service personnel may participate in monitoring the feeding operation.
- J.) The elk herds in the Gallatin drainage provide a peculiar problem for management in this state as they move over their normal winter range.
- FWP sporadically utilized emergency feeding as a tool to reduce overwinter mortality in the upper Gallatin River Valley until 1975. Changes in hunting season structure and herd objectives were implemented in an effort to reduce overall elk numbers as well as reduce the chance for

catastrophic starvation events during hard winters. Supplemental winter elk feeding has not occurred in Montana since.

Colorado

Elk Management:

- Big game populations in Colorado are managed Colorado Parks and Wildlife (CPW) on the basis of Herd Management Plans (HMPs) for specific herds in defined areas called Data Analysis Units (DAUs) that represent the annual ranges of relatively discrete populations. These DAUs are divided into Game Management Units (GMUs) to better manage harvest and hunter numbers within each herd.
- Herd Management Plans establish objectives for post-hunt population size and sex ratios, and are locally developed with public input. Draft plans are presented to the Parks and Wildlife Commission, with opportunities for public comment, revised if necessary, and then approved by the Commission the following meeting. License quotas approved by the Commission each year are used to move populations toward herd management plan objectives using hunter harvest. Population objectives for each herd are expressed as a range of values to provide greater management flexibility and more realistically reflect confidence in the population estimates. Target population objectives are used to indicate the desired population size within the objective range for a given year.

Damage Prevention/Mitigation:

- Colorado's game damage program is authorized in Title 33, Article 3 of Colorado Revised Statutes. Since its original inception over 90 years ago, the program's goal of mitigating and compensating agricultural producers for damage suffered by big game wildlife has changed very little. Over the years, the program has been refined most notably through the integration of the prevention materials program. The game damage program is funded entirely by license revenues through an annual appropriation from the Game Cash fund. This appropriation funds the two key program components; damage compensation and damage prevention materials. Resources are utilized among each program component based on annual needs.
- The compensation component of the game damage program provides reimbursement for qualifying agricultural claimants suffering eligible losses caused by big game wildlife.
- The damage prevention materials program became an integrated component of the game damage program over 20 years ago. The prevention materials component provides both permanent and temporary materials to landowners to eliminate or minimize damage caused by big game wildlife. Apiary fencing, orchard fencing and stackyard fencing comprise the majority of the requests for materials.
- CPW also issues permits to kill specified numbers of wildlife causing excessive damage to property by request of the property owner.

Winter Wildlife Feeding Policy and Operations:

- Emergency feeding of big game ungulates may be used as a last resort to reduce unusually severe winter-related mortality in cases where the anticipated winter-related mortality exceeds thirty percent (30%) of the adult female segment of a major big game population. Where available, managers should make use of existing on-the-ground ungulate monitoring activities and data to guide decisions on emergency feeding. Compared to small game, big game populations recover more slowly from significant winter mortality. Therefore, consideration

should also be given to the effects of mortality on population recovery and associated impacts to local economies, license numbers, etc.

- The decision to feed in a severe winter is complex and will be made considering both biological and social factors. Based on the experience from previous feeding actions, significant mortality of deer, particularly fawns, should be expected regardless of effort. In addition, at least one year of suppressed recruitment likely will occur. The decision of where and when to feed will be made by the Director after considering site-specific information (quantified to the extent possible) about the anticipated costs of feeding versus the consequences of not feeding. If feeding occurs, it is recommended to use weed-free hay (for elk) or commercial pellet products formulated for use in wild ungulates.
- The Colorado Parks and Wildlife Commission recognizes the additional and unique threat created by congregating animals into feeding areas where chronic wasting disease (CWD) exposed animals may be present. Therefore, notwithstanding any other provision in this policy, emergency winter feeding shall not occur in any GMU where CWD has been found in wild ungulate populations without prior approval of the Commission. In addition, managers should carefully consider whether winter feeding in a particular area might increase the risk of establishing CWD in an area where it is not known to occur. Baiting is defined as the use of feed to move or redistribute animals with no intent to support or maintain animal condition.
- Baiting of big game ungulates may be used to prevent or reduce damage to private property when other preventative measures have been ruled impracticable, inappropriate or ineffective. Furthermore, when considering whether or not to bait, the cost of baiting relative to the estimated cost of damage to private property should be evaluated. Baiting may also be used to address the loss of animals unusually congregating near highways and railroad tracks (often as a result of severe winter weather). These situations create a public hazard and can cause significant localized big game mortality. If baiting occurs, it is recommended to use weed-free hay or commercial pellet products specifically formulated for use in wild ungulates. The decision of where and when to bait will be made by the Director (or the Director's designee).

Utah

Elk Management:

- Utah Division of Wildlife Resources (UDWR) Elk Population Objectives
 - A.) Set population objectives and manage elk populations at appropriate spatial scales that account for migration patterns.
 - B.) Establish local advisory committees to review individual herd unit management plans when considering a change (increase or decrease) in the herd size objective.
 - 1.) Committees will be established following approval of the statewide elk plan.
 - 2.) Committees will consist of the UDWR unit biologist and regional wildlife manager as facilitators, two local sportsman's representatives, and one representative from each of the following (if applicable): Farm Bureau, Cattlemen's Association, Wool Growers Association, Bureau of Land Management, USDA Forest Service, local elected official, Regional Advisory Council (RAC) member, Cooperative Wildlife Management Unit (CWMU) Association, Sportsmen for Fish and Wildlife, Mule Deer Foundation, Rocky Mountain Elk Foundation, tribal representative, local landowner or land owner association representative and other affected stakeholders. Recommendations from these committees will be reviewed by UDWR and presented to the Regional Advisory Councils and Wildlife Board for public input and approval.
 - 3.) Committees shall be provided with the results of habitat projects completed in the previous five years, planned projects for the next three years, UDWR range trend data, and any other applicable information.
 - C.) On units where population decreases are necessary, UDWR will recommend short term population objectives in unit management plans or increases in antlerless elk permits.
- Population Management
 - A.) Utilize antlerless harvest as the primary tool to manage elk populations within herd size objectives and to target specific areas where range concerns or depredation problems exist.
 - B.) Properly manage elk populations to minimize competition with mule deer on crucial mule deer range.
 - C.) If drought related conditions and high elk densities are negatively impacting habitat, recommend additional antlerless elk permits at the August Wildlife Board meeting.
 - D.) During severe winters, aggressively use antlerless elk harvest (public hunters and DWR removal) to minimize conflicts.
 - E.) Consider using over-the-counter cow elk permits to provide additional harvest and hunting pressure in areas of conflict.
 - F.) On units over objective where cow harvest is difficult to obtain, allow for cow harvest using a general season muzzleloader bull elk permit (similar to general season archery elk hunt).
 - G.) Encourage innovative ideas from regional biologists to manage towards population objectives.
- Disease Control
 - A.) Investigate and manage disease outbreaks that threaten elk populations including CWD and brucellosis.

- B.) Promote management practices that minimize disease risks such as discouraging baiting/feeding, conducting CWD surveillance, and assisting Department of Agricultural in monitoring elk farms/ranches for compliance.
- C.) Follow the emergency big game winter feeding policy, and avoid unnecessary feeding of elk.

Damage Prevention/Mitigation:

- Depredation of private croplands continues to exist in some areas despite careful management of elk populations. In some localized areas depredation can be a significant problem. UDWR has committed substantial resources to address depredation concerns, and there are numerous programs designed to assist landowners with depredation situations. Harvesting elk on private lands can ease frustrations of private landowners and better distribute elk into more favorable portions of a unit. Depredation problems need to be addressed within the sideboards of state code, rule, and policy, and in a timely and efficient manner so that landowners will better tolerate migratory populations of elk
- If big game animals are damaging cultivated crops on cleared and planted land, or fences or irrigation equipment on private land, the landowner or lessee shall immediately, upon discovery of big game damage, request that the division take action by notifying a division representative in the appropriate regional office.
 - A.) Division action shall include:
 - 1.) Removing the big game animals causing depredation; or
 - 2.) Implementing a depredation mitigation plan approved in writing by the landowner or lessee.
 - B.) The division mitigation plan may incorporate any of the following measures:
 - 1.) Sending a division representative onto the premises to control or remove the big game animals, including:
 - i.) Herding;
 - ii.) Capture and relocation;
 - iii.) Temporary or permanent fencing; or
 - iv.) Removal, as authorized by the division director or the division director's designee;
 - 2.) Issuing big game mitigation permit vouchers for use on the landowner's or lessee's private land during a general or special hunt authorized by the Wildlife Board
 - 3.) The mitigation plan may describe how the division will assess and compensate for damage
 - 4.) The landowner or lessee and the division may agree upon a combination of mitigation measures to be used, including a damage payment or a description of how the division will assess and compensate the landowner or lessee for damage to cultivated crops, fences, or irrigation equipment.
 - C.) The division may provide compensation to landowners or lessees for damage to cultivated crops on cleared and planted land, or fences or irrigation equipment on private land caused by big game

Winter Wildlife Feeding Policy and Operations:

- Supplemental feeding is often viewed by the public as a viable solution to a lack of suitable winter range. However, there is evidence that the potential harm created by feeding elk may outweigh the limited benefits. Winter feeding programs are generally costly and can cause problems for elk including behavioral changes, range destruction, and expansion of disease problems. Recent research conducted in Utah has shown that elk feeding programs in Utah can be reduced or eliminated without creating new problems.
- Although there are negative consequences of winter feeding, it is also recognized that feeding may be necessary to sustain elk populations in emergency situations. It may also be necessary to temporarily feed elk to reduce depredation problems or to keep elk from impacting deer populations in extreme conditions. For instance, elk are fed at Hardware Ranch each winter to keep elk from moving on the urban interface. These elk are also physically examined, disease tested, and an outreach opportunity for the public to view and enjoy elk.
- In Utah, winter feeding of big game is currently guided by the winter feeding policy. Under this policy, feeding is discouraged except under extreme circumstances. With the discovery of CWD in Utah, the feeding policy was updated to state that "the Division will not participate in any emergency big game feeding program that occurs within the known range or use area of any big game population where CWD, brucellosis or tuberculosis has been detected."
- Emergency Big Game Winter Feeding
 - A.) PURPOSE - The purpose of this policy is to establish the procedure for emergency supplemental winter feeding of big game. The intent of this policy is to provide emergency feed for big game animals only during periods of critical stress and not as a sustaining program that would carry larger game populations than the range can normally support.
 - B.) POLICY - Continual supplemental winter feeding of big game is not a part of the Division's routine management program, because it is recognized that in most cases big game populations should be maintained under natural conditions and by natural available forage. However, the Division also realizes that there are times when unusual weather conditions can create critical times of stress when winter forage becomes extremely limited, unavailable, or animals are forced into areas threatening public safety. Furthermore, it is recognized that by providing the proper feed, only during these times of critical stress, the Division may improve the survival of those animals that may have otherwise succumbed to starvation. The implementation of widespread feeding, which supports higher population levels than healthy habitat can sustain, is not only prohibitively expensive, but involves serious risks in terms of disease and habitat degradation. Under certain circumstances, however, supplemental winter feeding can be used as a tool to help accomplish the following, especially in the short-term:
 - 1. Control big game (primarily elk and deer) damage in agricultural areas (e.g. dairies, feed lots, orchards, etc.) until a better long-term solution can be found;
 - 2. Promote public safety by drawing animals away from highways and urban areas;
 - 3. Maintain parent stocks of big game populations; and
 - 4. Relieve stress on populations in short-term severe emergencies.
 - Authorization for feeding will occur on a site-by-site basis only. Biological triggers will help guide the decision to initiate a Division feeding program. The Division will not participate in any emergency big game feeding program that occurs within the known

range or use area of any big game population where chronic wasting disease, brucellosis, or tuberculosis has been detected.

- C.) PROCEDURES
 - 1.) Approval Procedure Emergency - Division feeding programs will be allowed only in accordance with a feeding proposal prepared by the region, reviewed by the Wildlife Section Chief, and approved by the Director. Generally, the feeding program will be confined to those situations described in the previous section.
 - 2.) Feeding Proposal - A feeding proposal must address the following issues:
 - i.) Why feeding is necessary (emergency /unusual circumstances).
 - ii.) Number of animals and length of time.
 - iii.) Estimated cost.
 - iv.) Type of feed to be used (weed-free material is required).
 - v.) Whether the proposed emergency feeding areas are within the known range or use area of any deer or elk population where chronic wasting disease, brucellosis, or tuberculosis has been detected.
 - vi.) Desired benefits.
 - vii.) Extent of monitoring.
 - viii.) Description of outreach actions to be taken to explain to public what is being done, why it is being done, and planned future actions.
 - ix.) Future actions to prevent the feeding need from recurring (e.g. hunts, fencing, habitat improvement projects, etc.).
 - 3.) Division Discourages Private Feeding Programs - The Division strongly discourages private individuals and/or organizations from implementing feeding programs. In emergencies, the public may be asked to assist the Division in emergency feeding.
 - 4.) Funding - The availability of funding will be a determining factor in approving emergency feeding programs. In the event of any extensive feeding initiative, funding for big game emergency winter feeding programs will be sought outside the standard Division budget.
- UDWR feeds approximately 600 elk per winter on the Hardware Ranch Wildlife Management Area in an effort to reduce damage to neighboring private lands and neighborhoods.

Oregon:

Elk Management:

- Oregon Department of Fish and Wildlife (ODFW) manages elk based on management objectives (MOs) for winter population size and post-season bull ratios in each Wildlife Management Unit (WMU) in the state. The Oregon Fish and Wildlife Commission first adopted MOs for most of Eastern Oregon in 1981. MOs were updated and adopted for all WMUs, except Alsea and Snake River, in 1994 after an extensive public input process.
- Management objectives for winter population size are targets that guide elk herd management. It is recognized that due to migration between summer and winter ranges in many areas, elk numbers can be different in summer than winter in many WMUs. Measurement of total numbers in any wildlife population is difficult. Any improvements in census and modeling methods that result in more accurate population estimates will be used by ODFW to update MOs.
- Management objectives will be reviewed every five years as required by statute.
- Post-season bull escapement MOs are management targets for the number of bulls/100 cows after the hunting season for each WMU.

Damage Prevention/Mitigation:

- Appropriate measures must be taken to assist farmers, ranchers and others in resolving wildlife damage problems.
 - A.) ODFW Wildlife Damage Policy;
 - 1.) Advice/Repellents
 - 2.) Hazing
 - 3.) Barriers/Fencing
 - 4.) Habitat Programs
 - 5.) Harvest Management
 - i.) Hunting Seasons
 - ii.) Landowner Preference Tags
 - iii.) Oregon Landowner Damage Program
 - iv.) Emergency Hunts
 - v.) Kill Permits

Winter Wildlife Feeding Policy and Operations:

- Harsh winter weather (i.e., deep snow and low temperatures) occurs periodically, primarily in Southeastern and Northeastern Oregon and for elk wintering at high elevations in the Cascades. Under severe weather conditions elk calves may suffer relatively high levels of mortality. Supplemental feeding to reduce mortality due to severe winter conditions is not desirable on a long-term basis and has a number of associated problems that include:
 - A.) Supplemental feeding may develop concentrations of animals that could increase the possibility of disease outbreaks and transmission and may cause damage to habitat resulting in long-term damage to the site.

- B.) Dependency on feed grounds may delay or diminish migration to traditional winter or summer ranges. Elk are then encouraged to return in large numbers each year to areas that do not have adequate winter habitat.
- C.) Supplemental feeding may maintain an artificially high elk population that will ultimately need to be reduced if the feeding program is interrupted.
- D.) Feeding may habituate elk to hay, causing them to seek out haystacks rather than natural winter forage. Some elk learn to remain near the feeding area during summer, causing damage to crops during the growing season.
- E.) Supplemental feeding is expensive. Funding is generally not available and may be better spent maintaining or enhancing natural habitat for long-term benefits to elk and other wildlife.
- F.) Supplemental feeding, to be effective, must be initiated prior to elk undergoing nutritional stress in order to allow rumen digestive organisms to adapt to a new diet. Once started, the program must be continued through the winter.
- G.) Funding mechanisms are not in place to buy feed and begin feeding in a short time frame when needed.
- Supplemental feeding may be effective in preventing winter elk damage to private property or in maintaining elk in areas where there is abundant summer range, but adequate natural winter range no longer exists. This may be the only means to maintain elk in such areas. Costly programs to save elk from starvation during severe weather generally are not effective in producing desirable results. Such programs are inefficient, divert public attention and funding from real problems, and can quickly cripple an agency's budget.
- ODFW operates wildlife feeding sites on several of its Wildlife Areas. These include Elkhorn Wildlife Area (1,400 elk and 800 deer), Wenaha Wildlife Area (1,400 elk and 750 deer), White River Wildlife Area (1,000 elk and 4,000 blacktail deer), and Jewell Meadows Wildlife Area (500 Roosevelt elk). Actual numbers of animals attending feeding operations annually depends on winter severity and population levels and damage mitigation efforts.

Washington:

Elk Management:

- The primary goal of the Washington Department of Fish and Wildlife (WDFW) is to manage for viable and productive elk populations with desirable population characteristics using the best available science. The WDFW measures elk populations using a variety of techniques. Techniques that work well in the more open habitats of eastern Washington may be of little value in areas that are densely forested. Population objectives defined in this plan are consistent with objectives defined in the respective elk herd plans. A realistic approach to the management of wild animal populations does not assume that the true number of animals in the population is known. Therefore, the preferred target for each elk herd is defined as the population objective plus or minus a range of 10%.
- Population objectives are determined by agency staff using a combination of factors that include:
 - A.) Current population estimates
 - B.) Harvest history
 - C.) Current harvest levels
 - D.) Currently occupied summer and winter range
 - E.) Current condition of available forage
 - F.) Nutritional status of elk, if known
 - G.) Current land use practices
 - H.) Number and location of elk damage complaints
 - I.) Landowner tolerance
 - J.) Hunter satisfaction
 - K.) Disease considerations
- Consistent with the primary goal, the secondary goal is to provide recreational opportunity and sustainable annual harvests that fluctuate somewhat due to weather conditions, hunter participation, the number and density of available legal animals, the number of special permits issued for a particular GMU, etc. Hunting seasons are designed to limit extreme fluctuations in sustainable harvests from year to year, although some aspects are out of the control of the WDFW.

Damage Prevention/Mitigation:

- Farming is a vital part of Washington's economy. The lands that support this industry also provide wildlife habitat and forage opportunities for deer and elk, which may result in crop damage. Landowner tolerance for deer and elk damage depends on how quickly and effectively the WDFW responds to mitigate damage. The WDFW is committed to providing technical assistance for minimizing and mitigating damage. Damage resolution may be achieved through use of non-lethal or lethal measures. Whereas the WDFW generally promotes the use of non-lethal measures prior to lethal action, there are occasions where lethal removal may be necessary. Washington residents historically have supported the use of hunting as a tool for damage prevention and mitigation.
- Respond to wildlife damage complaints to private agricultural crop lands within 72 hours, and increase the number of WDFW agreements used to mitigate deer and elk damage issues by 10% during the period 2015-2021. Strategies to achieve this include;

- A.) Provide agriculture producers with information materials to proactively address deer and elk damage issues and to improve the WDFW's ability to respond to agriculture crop damage from deer and elk.
- B.) Promote the use of WDFW agreements to commercial landowners and lessees, and encourage non-commercial agriculture landowners to use non-lethal conflict prevention measures identified on a prevention measures checklist.
- C.) Promote participation in conflict prevention/resolution by Treaty Tribes.
- D.) Use hazing and other non-lethal measures to resolve damage; with emphasis placed in areas where the feasibility of lethal action is limited or ungulate populations are below management goals.
- E.) Encourage recreational harvest in areas with chronic crop damage.
- F.) Implement actions to encourage private landowners to consider, purchase, and use deer/elk fencing as part of their new and long-term business practices.
- G.) Expand the use of cooperative fencing projects in chronic damage areas with an emphasis on high-value crops.
- H.) Facilitate the deer/elk depredation program (including agreements, permits, and claims process) to improve WDFW's response to landowners experiencing agriculture damage.
- I.) Assess the feasibility of using partnerships and cooperators to assist with crop damage issues.
- J.) Increase the number and accessibility of crop assessors on contract statewide.
- K.) Utilize agency kill authority and depredation permits for problem crop damage areas.

Winter Wildlife Feeding Policy and Operations:

- It is the intent of the WDFW that wildlife should exist under natural conditions supported by suitable habitat. Although artificial feeding may assist in wildlife winter survival, it should not generally be considered a substitute for lost habitat and feeding shall be done only in limited situations as prescribed by WDFW Policy 5302.
- Despite this intent, the WDFW maintains some historic supplemental feeding operations for wildlife. Supplemental feeding is defined by the WDFW as regular winter feeding operations to provide feed to wildlife where adequate winter habitat is not available and feeding is necessary to support the population level as identified in a management plan, or for specific control of deer or elk damage. The best example is the Yakima elk herd where winter habitat has been eliminated. Some historic winter habitat is currently growing high-value agricultural crops. These crops are at risk of damage by elk unless supplemental feeding is provided each winter. A large percentage of what is considered historic elk winter range before European settlement has been lost or altered due to agriculture and housing development. To prevent elk in the Yakima herd from causing agricultural damage, elk fencing was constructed and a winter feeding program was established decades ago. Elk winter-feeding programs can be problematic. They are expensive and cause elk to congregate at high densities, where they have a higher potential for spreading diseases and/or parasites. Elk that are fed in the winter can also have extreme impacts on shrubs, trees, and riparian zones near feeding sites.
- FEEDING WILDLIFE DURING THE WINTER: This policy applies to all WDFW employees except if policies and procedures are in conflict with or are modified by a bargaining unit agreement, the agreement language shall prevail.
 - A.) Definitions:

- 1.) Artificial feeding: The distribution of harvested feed for wildlife through either supplemental feeding or emergency feeding.
- 2.) Emergency feeding: The occasional feeding of wildlife, which the WDFW implements due to extreme winter conditions or a disaster such as fire or drought.
- 3.) Supplemental feeding: The WDFW's regular winter-feeding operations to provide feed to wildlife where adequate winter habitat is not available and feeding is necessary to support the population level as identified in a management plan, or for specific control of deer or elk damage.
- B.) WDFW May Provide Supplemental or Emergency Feeding for Wildlife Under the following conditions
 - 1.) To prevent and/or reduce deer or elk damage to private property (agricultural or horticultural crops).
 - 2.) To support a WDFW management plan.
 - 3.) To respond to an emergency as determined by the Director or the Director's designee.
 - 4.) To allow for the regeneration of winter habitat that has been severely damaged or destroyed by disaster, such as fire or drought.
 - 5.) For WDFW approved wildlife research or wildlife capture.
 - 6.) In areas or times where hunting seasons have closed.
- C.) The Director or Director's Designee Declares an Emergency Implementation of emergency feeding operations will begin after an emergency has been declared in a specific location of the state. The Director's Emergency Feeding Advisory Team will include the Assistant Directors of the Enforcement Program, Wildlife Program, and affected Regional Director(s).
- D.) WDFW Will Use the Following Factors to Determine Whether an Emergency Exists in a Specific Location of the State
 - 1.) Weather conditions and forecast: Includes conditions such as abnormally cold temperatures, extreme wind chill, snow depth, icing, or crusting over a prolonged period of time. Evaluation may also include the forecasted weather to reflect early arrival and projected duration of severe winter weather.
 - 2.) Concentration and distribution of wildlife: Includes assessment of wildlife patterns such as animals concentrated in unusually high numbers in a specific area or located in areas where they are generally not found.
 - 3.) Access to natural forage: Assessment of availability of natural forage, including factors that may limit access (such as snow depth, icing, or crusting)
 - 4.) Disaster: Includes description of disaster (such as fire or drought) and its impact on wildlife, such as winter range that has been severely damaged or destroyed. Feeding may be an option to provide adequate time for the recovery of wildlife habitat and subsequently reduce wildlife mortality.
 - 5.) Physical condition of wildlife: Evaluation to determine the physiological condition of animals, including experienced judgment by WDFW personnel based on knowledge of local wildlife. Evaluation may include bone marrow and kidney fat analysis to evaluate body fat reserves necessary for winter survival.
- E.) WDFW May Discourage Private Feeding of Wildlife
 - 1.) The WDFW discourages private feeding of wildlife where animals may become a problem or a nuisance, cause damage to property, or present a health risk.

- 2.) WDFW will provide the public with information on the appropriate way for winter-feeding of wildlife (i.e., deer, elk, upland birds, songbirds).
 - 3.) WDFW may provide feed in those situations where private actions will complement agency staff supplemental or emergency feeding.
- F.) WDFW Will Accept Donations to Help Pay for Emergency Winter Feeding
- WDFW feeds approximately 1,200 elk yearly (but up to 8,000 elk in severe winters) at seven locations on the Oak Creek and Wenaha Wildlife Areas in an effort to offset loss of native winter ranges in the Yakima Valley.

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Attachment 3

Court Case Rulings

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF WYOMING

WESTERN WATERSHEDS PROJECT, et
al.,

Petitioners,

vs.

VICKI CHRISTIANSEN (Chief, U.S.
Forest Service), et al.,

Respondents.

Case No: 17-CV-202-NDF

MEMORANDUM DECISION AND ORDER

Petitioners Western Watersheds Project, Sierra Club, Wyoming Wildlife Advocates and Gallatin Wildlife Association (collectively, "Petitioners") challenge the United States Forest Service's ("Service") approval of the request by the Wyoming Game and Fish Department ("WGFD") Commission to amend a special use permit to include Alkali Creek Feedground, located in the Bridger-Teton National Forest ("BTNF"), as an elk winter feeding location for use through 2028. In general, Petitioners allege the Service's 2015 Final Supplemental Environmental Impact Statement ("2015 FSEIS"), Record of Decision ("ROD"), and special use permit for Alkali Creek Feedground are contrary to the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370m, and the Administrative Procedure Act (APA), 5 U.S.C. § 706. Petitioners complain that the Service's analysis of the impact of the Alkali Creek Feedground on Chronic Wasting Disease ("CWD") was faulty. Petitioners request the Court vacate and remand the

Service's decision to grant the special use permit. After considering the filings in this matter, the Court concludes the Service failed to comply with the procedural requirements of NEPA. Because of this, the Court VACATES and REMANDS the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of National Forest Service lands for winter elk feedground activities at Alkali Creek Feedground.¹

BACKGROUND

I. Statutory and Regulatory Background

A. *NEPA Procedural Requirements*

NEPA requires federal agencies to consider the environmental impacts of their actions, disclose those impacts to the public, and then explain how their actions will address those impacts. *Baltimore Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983). To accomplish these goals, NEPA requires federal agencies to prepare an Environmental Impact Statement ("EIS") for all "major federal actions" that may "significantly affect[] the quality of the human environment." 42 U.S.C. § 4332(C). Among other considerations, the EIS must describe (1) "the environmental impact of the proposed action," (2) "any adverse environmental effects which cannot be avoided," and (3) "alternatives to the proposed action." 42 U.S.C. § 4332(C)(i)-(iii). An agency need not include every possible alternative, nor analyze consequences of alternatives it has in good faith rejected "as too remote, speculative, or .

¹ Nothing in this decision or order adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) special use permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim past practice. *See, e.g.*, AR17733-71.

. . impractical or ineffective.” *WildEarth Guardians v. National Park Service* 703 F.3d 1178, 1183 (10th Cir. 2013) (citation omitted). Further, an EIS must also assess the direct, indirect, and cumulative impacts of the proposed action, including unavoidable adverse environmental effects. 30 CFR § 1508.25. Cumulative impacts result from the “incremental impact[s]” of the proposed action when added to the impacts of other past, present, and reasonably foreseeable future actions, whether undertaken by other federal agencies or third parties. *Id.* at § 1508.7.

NEPA prescribes the process, not the end result, of agency action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). In this regard, NEPA only requires an agency to take a “hard look” at environmental consequences of its actions and to adequately disclose those impacts to the public. *Baltimore Gas*, 462 U.S. at 97-98; *Middle Rio Grande Conservancy Dist.*, 294 F.3d 1220, 1225 (10th Cir. 2002).

B. *Substantive Management Requirements for National Forest System Lands*

In the Organic Administration Act of 1897, Congress established “a limited multiple-use mandate for management of the National Forests”, authorizing use of the forests for the purposes of “improv[ing] and protect[ing] the forest[s],” “securing favorable conditions of water flows,” and “furnish[ing] a continuous supply of timber for the use and necessities of citizens of the United States.” *Wyoming v. U.S. Dep’t of Agriculture*, 661 F.3d 1209, 1221 (10th Cir. 2011) (quoting 16 U.S.C. § 475). In the Multiple-Use Sustained-Yield Act of 1960, Congress expanded that limited multiple-use mandate to include use of the national forests for the additional purposes of outdoor recreation, range, timber, watershed, and wildlife and fish purposes. *See* 16 U.S.C. § 528.

Congress delegated the forest management authority to the U.S. Department of Agriculture (“USDA”), and in turn, the Service, to manage National Forest System (“NFS”) lands consistent with Congress’s multiple-use mandate.

The National Forest Management Act, passed in 1976, instructs the Service to manage each forest unit at two different levels (programmatic level and project or site-specific level) pursuant to multiple-use and sustained yield principles. 16 U.S.C. § 1604. Specific to this case, Congress instructed the Service “[a]t the project or site-specific level, [to] implement[] the forest plan² by approving or disapproving particular projects using an environmental impact statement, an environmental assessment, or a categorical exclusion,” *Utah Environmental Congress v. Bosworth*, 443 F.3d 732, 737 (10th Cir. 2006), and to ensure that each project complies with the applicable forest plan, *see id.* (citations omitted); 16 U.S.C. § 1604(i).

By these laws, Congress intended the Service’s discretion and authority to regulate NFS lands to be “broad”. *Wyoming*, 661 F.3d at 1235. The regulatory scheme Congress enacted provides for the Service to cooperate with state and local governments in making land management decisions. *See, e.g., id.* § 1604(a) (requiring the Forest Service to develop its Forest Plans in coordination “with the land and resource management planning processes of State and local governments”); 40 C.F.R. § 1506.2(b) (providing that “[a]gencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements”); *accord id.* § 1506.2(c) (same). However, in the end, the statutory framework makes clear that

² The BTNF Land and Resource Management Plan can be found in the record at AR1-388.

Congress contemplated that all final decision-making authority rests with the Service and not in a state or local governmental body.

II. Factual Background

A. *The Jackson Elk Herd and Elk Feedgrounds in General*

The Jackson elk herd comprises one of the largest concentrations of elk in North America. AR17778. The elk migrate across several boundaries, including the BTNF, Grand Teton National Park (“GTNP”), and the National Elk Refuge³ (“Refuge”). In 2013, the Jackson elk herd had an estimated population of 11,600, with less than a ten percent interchange with adjacent herd units. AR28852; AR28974. Since 1998, wolf activity has influenced the movement of the elk herd in the Gros Ventre drainage,⁴ resulting in one large group (as much as 3,221 animals) congregating on one feedground and then moving to another feedground in the drainage. AR22037, 28774.

Wyoming first started to provide supplemental feed to elk in the early 1900’s to prevent large-scale die-offs during hard winters. AR28970. Since those early years, feedgrounds have also become an important tool for the State to reduce damage to haystack yards and winter pastures on private lands⁵ and to reduce the potential or transmission of brucellosis to livestock.⁶ AR10208. On NFS lands, elk feedgrounds are strategically placed near the boundaries to gather elk as they transition from summer

³ The National Fish and Wildlife Service (NFWS) manages the Refuge, which is part of the National Wildlife Refuge System. NFWS has an agreement with the WGFD which calls for a maximum of 7,500 elk on feed at the Refuge during any given winter. AR28971.

⁴ East of Jackson Hole lies the Gros Ventre drainage, a semiarid valley running east to west in the middle of approximately one million acres of the BTNF and Shoshone National Forest with no paved roads. AR18879.

⁵ Wyoming state law imposes liability on the WGFD Commission to pay for damages to crops caused by big game animals.

⁶ Brucellosis is a highly contagious bacterial disease that typically causes an infected female to abort her first calf following infection, and even subsequent calves. AR28977.

ranges down to lower elevations, mostly preventing elk from migrating through private lands in route to lower elevations. *Id.* Service regulations require authorization for feedground use and occupancy on NFS lands.

State-operated feedgrounds are located on BLM, Forest Service, State, and private lands.⁷ In terms of the Gros Ventre drainage and in addition to the Refuge, three state-operated feedgrounds provide supplemental winter feed to the Jackson elk herd: Alkali Creek, Patrol Cabin (on state land), and Fish Creek. AR21977. The practice of supplemental feeding is quite controversial and has been the subject of litigation. *See, e.g., Defs. of Wildlife v. Salazar*, 651 F.3d 112 (D.C. Cir. 2011); *Greater Yellowstone Coal. v. Tidwell*, 572 F.3d 1115 (10th Cir. 2009).

B. *Alkali Creek Feedground*

Alkali Creek Feedground encompasses 91 acres of NFS lands, including an elk tagging corral, a horse corral, a tack shed, a haystack yard containing two hay sheds, a water facility, and a feeding ground. AR27483. It is located about 12 miles from the Refuge, at the bottom of a topographic bottleneck that naturally limits down-river westerly elk movement. AR19144; 28853; 28877–78. This location effectively limits elk movement further down onto the Refuge, as well as onto nearby private lands. AR28878. The WGFD explained to the Service that the objectives of Alkali Creek Feedground were to prevent elk from co-mingling with livestock on private lands and prevent damage on

⁷ Currently, the WGFD manages 22 state-operated feedgrounds. AR17885. In addition, the Refuge, managed by the NFWS, engages in winter feeding.

private property.⁸ *Id.* Elk population density estimates at this feedground are quite high compared to those at the Refuge or at other WGFD feedgrounds.⁹ Wolf activity influences elk distribution in the Gros Ventre drainage, resulting in elk aggregating into one large group of up to 2,845 animals. These elk typically congregate on one feedground and move to another feedground in the drainage in response to wolf pressure. AR10208.

C. *Chronic Wasting Disease (CWD)*

CWD, the equivalent of “mad cow disease,” is a fatal prion disease of cervids, which include elk, white-tailed deer, mule deer, and moose.¹⁰ AR29034; AR10283. The disease is easily transmitted,¹¹ the prion (TSE) agent can contaminate the environment for long periods,¹² and management strategies have failed to stop its spread. *Id.*; AR28854; AR28876. As additional challenges, clinical signs of CWD are not diagnostic, there is a long incubation period, there is no treatment, there is no prevention in the sense of vaccination, and CWD is invariably fatal once clinical signs develop. AR18430. These challenges make surveillance difficult and expensive; hence the emphasis on preventing its introduction into the region. AR18431. Once this chronic disease is introduced into a

⁸ The WGFD contends that without Alkali Creek Feedground, elk-to-cattle brucellosis exposure would be much higher because of Alkali Creek’s key location in preventing elk movement downstream and onto private lands. AR28879; Doc. 63, p. 18.

⁹ A “high-density” elk population, as defined by a Rocky Mountain National Park study, is one that ranges from 10-100 elk per square kilometer. AR27771. The density for the Refuge is an estimated average of 59.3 elk per square kilometer. AR26284. Average population densities at Wyoming state feedgrounds are much higher, at nearly 2,000 elk per square kilometer. *Id.* Higher still is the estimated population density at Alkali Creek Feedground, which has been estimated between 2,470 to 8,600 elk per square kilometer. *Id.*

¹⁰ There is no evidence that the disease can be transmitted to humans or domestic livestock. AR28978.

¹¹ “Evidence suggests the disease can pass directly from infected animal to uninfected animal; by contact with soil, plants, or feed contaminated with the prion; or by direct or indirect contact with the carcass of an animal that has died from CWD.” AR19635.

¹² “The agent is extremely resistant to chemical disinfectants as well as to physical methods of inactivation. It is still not known whether environments contaminated with TSE agents can ever be completely disinfected.” AR18711.

population, “CWD can exceed natural rates of mortality, reduce survival of adult females, and decrease population growth of elk herds.” AR19277.

While CWD is well-established in south-central Wyoming and northern Colorado, it has yet to reach the Jackson elk herd. AR28876; AR28853. However, research indicates that the disease will continue to slowly spread west on a protracted time-scale.¹³ AR28876. Current models projecting the arrival of CWD in the Jackson elk herd are uncertain and predict a broad range of outcomes. AR28854.

As noted above, there is controversy about feedgrounds and their contribution to the introduction and spread of CWD.¹⁴ Petitioners refer to the joint 2007 Bison and Elk Management Plan (“2007 BEMP”), prepared by the NPS and the NFWF for the Refuge, which reported feedgrounds are a significant risk factor for the introduction and rapid spread of CWD. CM/ECF Document (“Doc.”) 43, p. 16; AR17781 (seasonal concentrations of elk create “an unnatural situation that has contributed to . . . an increased risk of potentially major outbreaks of exotic diseases,” and “damage to and loss of habitat”). Further, at least one expert with the USDA Animal and Plant Health Inspection Service (“APHIS”) thinks “long-term feedgrounds are detrimental to the health of the wildlife.” AR26800. The Service itself recognizes “that the WGFC action of feeding elk results in the artificial concentration of elk during winter and early spring that increases risk of disease transmission” (AR11108), and that prevalence of CWD is

¹³ However, a 2014 briefing paper notes “[s]cientists predict that CWD may arrive at NFS feedgrounds in the near future, as soon as within one year, subsequently affecting the ecosystem food web.” AR19635. CWD has been detected (in deer) within 60 miles of Alkali Creek Feedground. AR28853.

¹⁴ “CWD is not the only disease that could spread as a result of artificial feeding practices; there are a host of other debilitating or infectious diseases as well,” (e.g., foot rot, bovine tuberculosis, scabies, paratuberculosis, brucellosis). *Defrs of Wildlife v. Salazar*, 698 F.Supp.2d 141, 144 (D.C.D.C. 2010); AR28853.

likely “functionally related to ungulate density” (AR28876). Indeed, in its brief the Service states, “the practice [of supplemental feeding] concentrates elk during the winter months and contributes to the spread of diseases such as brucellosis and CWD.” Doc. 62, p.11. Also, the Brief of Amici Curiae Scientists discusses the very high population density estimates of elk at Alkali Creek Feedground, the behavior changes that occur as elk population densities grow (higher frequency and duration of contact), and the corresponding significant risk of disease transmission, both directly between animals and indirectly through the environment. Doc. 55, p. 15; AR26284; 24695. Further, both the NPS and NFWS agree that “elk concentrated on feedgrounds is likely to facilitate the spread of [CWD] when it reaches [the GTNP and Refuge]. As such, an overarching strategy to achieve the goals of the 2007 BEMP is to reduce reliance on winter supplemental feeding of bison and elk, and to transition to complete reliance on natural standing forage at an undetermined time in the future.” AR28174. Finally, one court found that the 2007 BEMP for the Refuge “might well have been unreasonable had the agencies categorically refused to phase out the winter feeding program in spite of all the evidence in the record about the dangers of supplemental feeding.” *Def. Of Wildlife v. Salazar*, 698 F.Supp.2d 141, 148 (D.C.D.C. 2010), *aff’d* 651 F.3d 112, 118 (D.C.Cir. 2011) (“There is no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System”).

Intervenor-Respondent State of Wyoming (“the State”) is a bit more circumspect in its briefing¹⁵ on the risk of CWD and feedgrounds. The State puts forward two theories – one which postulates that a feedground might attract elk from a large catchment area and congregate them, thereby increasing the introduction of CWD to a new herd area. Doc. 63, p. 20; AR29039. Another theory suggests, based on known low-prevalence rates for the disease in wild elk, there may be little to no impact on elk populations because the purpose of most feedgrounds is to intercept elk migration corridors and prevent further migration. *Id.*; AR29039; 28979. Thus, according to this second theory, feedgrounds could isolate herds from each other and limit inter-herd transmission of CWD. *Id.*

III. Procedural Background

The process resulting in the reissuance of the amendment to the special use permit at issue began prior to 2008 when the WGFD Commission asked to continue to operate (or to expand) six feedgrounds on NFS lands. AR10212. Three of these feedgrounds (Alkali Creek, Fish Creek, and Patrol Cabin, including its proposed expansion) provide supplemental feed to the Jackson elk herd in conjunction with the Refuge. AR21977. In response, the Service prepared a Final Environmental Impact Statement (“2008 FEIS”). The 2008 FEIS analyzed three alternatives: a no action alternative denying the special use request; a mid-range action authorizing only the requested feedgrounds but not the

¹⁵ The State’s brief discusses these two theories but WGFD separately acknowledges “[m]ost wildlife disease professionals consider artificial feeding a potential health threat to the fed animals due to the belief that prolonged congregation of animals around a feeding site increases the probability of disease transmission. This increased probability is generally irrespective of how the disease is transmitted, i.e., direct contact, aerosol, environmental contamination, or infected feces and urine.” AR17889.

expansion of Patrol Cabin; and an action fully granting the permit as requested. AR10217–20. As a result, in 2008 the Service granted the permit for several locations but did not authorize the Patrol Cabin expansion and postponed a decision on Alkali Creek Feedground to conduct additional analyses. AR11104–07.

Prior to the 2015 decision on Alkali Creek Feedground, the Service prepared the 2015 Final Supplemental EIS (2015 FSIES), which tiered to the 2008 FEIS. The Service limited the objective and purpose of its 2015 FSEIS to whether the Alkali Creek Feedground permit should be reissued, and if so, under what terms and conditions. AR28776. In light of this objective, the Service analyzed two alternatives in detail and eliminated alternatives from detailed consideration. AR28783–88. Important to the issues raised in this case, the Service eliminated an alternative to improve winter range on the BTNF and eliminate all elk feeding in an effort to restore historical migration routes. AR28787. As to these eliminated alternatives, the Service concluded it was already working to improve winter range through habitat projects (AR28787), and it lacked the authority to direct the WGFD to stop elk feeding because, even without the permit, the WGFD would continue to feed elk on private, State, and other federal lands. AR28787. The Service also eliminated an alternative to construct elk-proof fencing around private lands in the Gros Ventre drainage, concluding this was implausible, would fence in private property to the detriment of landowners, and would negatively affect migration routes. AR28787; 21895. As part of its analysis and specific to the spread and prevalence of CWD, the Service generated a Literature Review Technical Report. AR29160; 29034–45.

On December 1, 2015, the Forest Service amended the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk feedground activities at Alkali Creek Feedground. AR30635. The final decision added additional mitigation and monitoring requirements to address potential impacts of CWD.¹⁶ AR30636.

DISCUSSION

I. Threshold Questions

A. *Standing*

As an initial matter, the Service argues that Petitioners lack Article III standing to pursue their claims for relief because they have failed to demonstrate “redressability.” Article III standing is a “threshold jurisdictional question” that a court must decide before it may consider the merits. *Steel Co. v. Citizens for a Better Env’t*, 523 U.S. 83, 93-101 (1998).

Here, Petitioners are suing on behalf of their members. “An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization’s purpose, and neither the claim asserted, nor the relief requested requires the participation

¹⁶ Use of hay obtained from CWD endemic areas is prohibited from being used anywhere on the BTNF. In addition, the following requirements were imposed on the WGFD:

- Annually test the soil on BTNF feedgrounds to monitor for incidence of CWD prions and annually submit reports of findings if a feasible and economical soil test for prions is developed in the future. Sampling methodology would be jointly determined by WGFD and the FS, in consultation with APHIS. (Note-as of 2017, this test was not economically feasible. [AR31044]).
- Annually report CWD mitigation actions that have been taken with regards to feedground management on NFS lands in western Wyoming. AR 30636; 30852.

of individual members in the lawsuit.” *Friends of the Earth, Inc. v. Laidlaw Envtl. Sevs.*, 528 U.S. 167, 181 (2000).

The only issue presented is whether Petitioners’ members would otherwise have standing to sue in their own right. To establish Article III standing, Petitioners bear the burden of demonstrating, through their members, that: (1) they have suffered an “injury in fact” that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the defendant’s challenged action; and (3) that it is likely, as opposed to merely speculative, that a favorable judicial decision will prevent or redress the injury. *Summers v. Earth Island Inst.*, 555 U.S. 488, 129 S.Ct. 1142, 1149 (2009). This requirement assures that “there is a real need to exercise the power of judicial review in order to protect the interests of the complaining party.” *Schlesinger v. Reservists Comm. to Stop the War*, 418 U.S. 208, 221, 94 S.Ct. 2925, 41 L.Ed.2d 706 (1974). Where such a “real need” does not exist, allowing courts to oversee legislative or executive action “would significantly alter the allocation of power . . . away from a democratic form of government,” *Summers, supra*, 555 US at 1149, citing *United States v. Richardson*, 418 U.S. 166, 179, 94 S.Ct. 2940 (1974) (Powell, J., concurring).

By the Amended Complaint and further supported by affidavits, Petitioners allege their members have interests in improving public land management, promoting species and habitat protection on public lands, protecting Wyoming wildlife, viewing and enjoying wildlife within the Greater Yellowstone Ecosystem, and supporting the sustainable management of fish and wildlife populations. Petitioners allege the legal violations by the Service in renewing the permit cause concrete injury to these interests,

including adversely affecting the behavior of elk and creating an enormous risk of disease transmission in the elk and other wildlife populations of interest to Petitioners' members. Petitioners further allege a vacatur of the challenged permit pending full compliance with NEPA and other legal requirements will remedy Petitioners' injuries.

The Service and the State (collectively, "Respondents") argue the Jackson elk herd will continue to use the two other state feedgrounds and the Refuge in the Gros Ventre, regardless of whether the Service issues a permit for the use of NFS land at Alkali Creek Feedground. Further, nothing in the record supports the notion that the spread of CWD can be halted. Thus, according to Respondents, a favorable decision will not afford Petitioners the kind of tangible, meaningful results in the real world necessary for Article III standing.

As to standing, the Court agrees with Petitioners. The issue isn't whether the spread of CWD can be halted, or whether WGFD will continue to use feedgrounds to manage elk in the Gros Ventre. The issues concern the long-term use of NFS lands at Alkali Creek as a feedground, and whether that use was reasonably approved as consistent with law, following the required procedures, and after a consideration of all relevant factors. Whether Petitioners' arguments are persuasive is a merits-based matter separate from standing. Petitioners need only allege the long-term use of Alkali Creek Feedground will have *some* impact on and pose *some* risk to their interests. *Consumer Data Indus. Ass'n v. King*, 678 F.3d 898, 902 (10th Cir. 2012).

Not only have Petitioners made this showing but the Service admits the alternative of not issuing the long-term use permit "would remove the small contribution of the

Alkali Creek Feedground ‘toward increased prevalence, incidence, and persistence of CWD in the Jackson elk herd unit and elk herds in Western Wyoming, should the disease become established during the period allowed by the permit.’” Doc. 62, p. 61-62 (citing AR28881). Whether Alkali Creek Feedground poses a small or somewhat larger risk is immaterial, as the risk is not speculative. *Friends of the Earth, Inc.*, 528 U.S. at 181 (the redressability prong is met when “it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision”). Therefore, Petitioners have adequately demonstrated Article III standing.

B. *Exhaustion*

The Service argues Petitioners now apparently seek a phase-out alternative at Alkali Creek Feedground (as opposed to all NFS lands), and no one raised this alternative during the administrative process. Petitioners reply by arguing the objections raised during the administrative process were sufficient to alert the agency of the need to consider the phase-out alternative.

To seek judicial relief, Petitioners were required to first raise their concerns with the agency to allow “the agency to give the issue meaningful consideration.” *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 553-54 (1978); *Department of Transp. v. Public Citizen*, 541 U.S. 752, 764 (2004); *Forest Guardians v. FS*, 495 F.3d 1162, 1170 (10th Cir. 2007). The purpose of this rule is to ensure that reviewing courts do not substitute their “judgment for that of the agency on matters where the agency has not had an opportunity to make a factual record or apply its expertise.” *New Mexico Environmental Imp. Div. v. Thomas*, 789 F.2d 825, 835 (10th

Cir. 1986). Further, claims cannot be “only vaguely and cryptically referred to.” *Ark Initiative v. U.S. Forest Service*, 660 F.3d 1256, 1261 (10th Cir. 2011) (citation omitted). However, the waiver concept behind the principle of exhaustion does not apply to problems underlying claims that are “obvious, or otherwise brought to the agency’s attention.” *Id.* at 1262 (citing *Forest Guardians v. U.S. Forest Service*, 495 F.3d 1162, 1170 (10th Cir. 2007)).

The Court again agrees with Petitioners. The issue before the public was the long-term use of NFS lands at Alkali Creek. Many comments urged leadership by the Service in phasing out “artificial feeding” on NFS lands, and then focused on reasons why the Alkali Creek location is significant to the Jackson elk herd (e.g., location and migration patterns). *See, e.g.*, AR19144. Others commented about the need to transition elk to natural forage by “phasing out specific feedlots.” AR26847. The NFWS and NPS specifically recommended the Service consider, *for the Alkali Creek Feedground permit*, the goal of reducing reliance on winter supplemental feeding by transitioning elk to complete reliance on natural forage at an undetermined time in the future. AR28175. Then, prior to the decision on the permit, a project leader at the Refuge forwarded to the Service the district court and circuit court decisions concerning supplemental feeding on the Refuge, and recommended the Service “pay close attention to” portions of the circuit court opinion and how the decisions might have been otherwise “[i]f we were refusing to eventually end supplemental feeding.” AR34191-218. The Service responded, “Something to consider when drafting the decision for Alkali.” AR34191. With this record, there is absolutely no merit in suggesting the agency’s attention was not drawn to

a phase-out/transition alternative at Alkali Creek. Exhaustion does not bar any of Petitioners' claims.

II. Standard for Review

Under the APA, courts "shall . . . hold unlawful and set aside agency actions, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or "in excess of statutory jurisdiction, authority, or limitations." 5 U.S.C. § 706(2)(A), (C). An agency's decision is arbitrary and capricious if the agency (1) "entirely failed to consider an important aspect of the problem," (2) "offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise," (3) "failed to base its decision on consideration of the relevant factors," or (4) made "a clear error of judgment." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 704 (10th Cir. 2009) (quoting *Utah Envtl. Cong. v. Troyer*, 479 F.3d 1269, 1280 (10th Cir. 2007)).

"The APA's arbitrary and capricious standard is a deferential one; administrative determinations may be set aside only for substantial procedural or substantive reasons, and the court cannot substitute its judgment for that of the agency." *Utahns for Better Transp. v. U.S. Dept. of Transp.*, 305 F.3d 1152, 1164 (10th Cir. 2002) (citation omitted). "A presumption of validity attaches to the agency action and the burden of proof rests with the appellants who challenge such action." *Citizens' Comm. to Save Our Canyons v. Krueger*, 513 F.3d 1169, 1176 (10th Cir. 2008) (quoting *Colo. Health Care Ass'n v. Colo. Dep't of Soc. Servs.*, 842 F.2d 1158, 1164 (10th Cir. 1988)). However, this presumption

does not shield the agency from a “thorough, probing, in-depth review.” *Olenhouse v. Commodity Credit Corp.*, 42 F.3d 1560, 1574 (10th Cir. 1994). Further, the “[d]etermination of whether the agency acted within the scope of its authority requires a delineation of the scope of the agency’s authority and discretion, and consideration of whether on the facts, the agency action can reasonably be said to be within that range.” *Id.*

III. Compliance with NEPA

A. *Reasonable Range of Alternatives*

Petitioners argue the Service failed to examine a reasonable range of alternatives in violation of NEPA. In support of this argument, Petitioners contend the Service improperly analyzed only two alternatives in detail – the “no action” alternative and the grant of the permit alternative – and failed to offer a reasoned explanation for its refusal to examine phase-out alternatives.

In response, the Service argues it reasonably eliminated the phase-out alternative from further study because it does not have the authority to direct the WGFD to stop winter feeding and that the State intends to continue to feed elk on private, state and other federal lands. AR28787; 30642. The Service refers to *WildEarth Guardians*, 703 F.3d at 1184, in support of the proposition that, where state agency responsibility for management of wildlife is necessary for an alternative to be feasible, NEPA does not force a federal agency to consider alternatives rendered infeasible by the unwillingness or lack of cooperation of the responsible state agency. In addition, the State argues any action short of authorizing the feedground at Alkali Creek with mitigation and

modifications would have been a denial of the special use permit, which was the second alternative analyzed. Thus, the Service properly considered a reasonable range of alternatives.

In reply, Petitioners argue reliance on *WildEarth Guardians* is misplaced as the record here provides ample support for the practicability of phase-out alternatives, even without the support of the WGFD. Petitioners argue that despite this record, the Service relied solely on WGFD's stated lack of support to reject the phase-out alternative, without any analysis as to whether support could be negotiated or was even necessary.

WildEarth Guardians recognizes the "rule of reason" in the agency's choice of alternatives to include in its analysis. *Id.* at 1183. That case concerned the choice by the NPS to take off the table the option of reintroducing a naturally reproducing wolf population as an alternative in preparing a new elk and vegetation management plan for Rocky Mountain National Park. The "natural wolf option" was not eliminated based on state agency jurisdiction because wolves could be reintroduced in the park without state approval. *Id.* at 1185. The option was eliminated because of feasibility (small size of the park, near certainty that wolves would leave, and the resulting need for state agency management of wolves outside the park).

While instructive, *WildEarth Guardians* is not controlling. Notwithstanding the Service's efforts to argue otherwise, the Court is not dealing with jurisdictional issues surrounding the management of elk. The Court is presented with a straight-forward request by a state agency to continue the long-term use of facilities on NFS lands at Alkali Creek as an elk winter feedground. Commenters asked the Service to improve

winter range on the BTNF, then eliminate all elk feeding and restore historical migration routes. AR27484. Obviously, the commenters focused on function – the artificial feeding of elk – which the Service seized upon and then readily dismissed by saying it “does not have the jurisdiction to stop elk feeding.” AR27485. But the “rule of reason” controls. Was it reasonable, within the agency’s jurisdiction, and feasible for the Service to consider a shorter-term, reduced impact, and/or phase-out alternative for the use of Alkali Creek as a feedground, while taking steps to transition elk to natural winter range and support historical migration routes? The answer to this question was and is yes. The Service’s focus on jurisdiction *when the issue concerns WGFD’s use of NFS land*, was not a reasoned explanation for its refusal to examine phase-out alternatives.

Further, the argument that any action other than wholesale approval would be equivalent to the no-action alternative is unsupported by the record. While the State makes this argument, there is no citation to the record of any affirmative statement by the State that something other than approval of long-term use would result in the State ceasing its winter feeding activities at Alkali Creek. Indeed, since the Service’s action authorizing the existing 2008 long-term special use permit for other feedgrounds, the Alkali Creek Feedground has operated under temporary (one year) special use permits. *See, e.g.*, AR17733-71.

B. “*Hard Look*” at Environmental Consequences

Petitioners argue the Service failed to take a “hard look” at the environmental consequences of artificial feeding and its impacts on the introduction and spread of CWD in the Jackson elk herd, even if the precise extent of the effect is less certain. Petitioners

claim the Service “washed its hands” of the problem by insisting the responsibility for managing the disease ultimately fell to WGFD, and they provide as an example, the Service’s action in issuing the 2015 FEIS and draft ROD prior to the finalization and approval of WGFD’s CWD Management Plan. Doc. 42, p. 43-44. Petitioners claim the literature review and deference to WGFD did not constitute a meaningful analysis of how Alkali Creek Feedground *itself* contributes to the risk of CWD introduction and spread, especially given Alkali Creek’s unique location which forms a natural bottleneck for elk movement in the drainage that is the “most likely point of entry” for CWD into the Jackson elk herd.¹⁷ AR28884; 18851; 18706. In short, Petitioners argue the Service never explained why it could not even attempt to use the well-established methods described in the scientific literature to quantify the impacts expected from the introduction of CWD. *Id.* at p. 54.

In response, the Service argues it took the requisite hard look at the likely impacts of CWD, pointing to the white paper prepared by the Service synthesizing the best available science on CWD in elk. AR29033-45. The Service’s analysis revealed that, while “models projecting the arrival and subsequent transmission of CWD in the Jackson Hole area are highly uncertain[,] ... it is probable that [CWD] will spread throughout Wyoming.” AR28853. The Service continued by focusing on the Jackson elk herd and concluded “[b]ecause other feedgrounds in western Wyoming and the Gros Ventre drainage are likely to remain operational in the absence of elk management at Alkali

¹⁷ The Service takes issue with this statement arguing the references are not peer reviewed and none of the best available science in the record supports the proposition that the Gros Ventre drainage is the most likely entry point for CWD into the Jackson elk herd. Doc. 62, p. 63, n. 18.

Creek Feedground, the timing and arrival for new diseases such as CWD in the drainage and region is not likely to be greatly affected by elk management at Alkali Creek itself.” AR28876. Further, the Service discussed how “Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming,” [AR28884] while also including the opposing discussion that Alkali Creek Feedground “would be less likely to become contaminated with prions” under the no-action alternative. AR28879. The Service also concluded that “feeding operations at Alkali Creek would, to a minor extent, contribute to population-level effects” AR28886. Finally, the Service argues its decisionmaker was aware of the risks posed by CWD. AR 30638 (“I clearly understand and acknowledge that the Commission’s action of feeding . . . increases risk of disease transmission”). The Service argues this satisfies NEPA’s procedural requirement that the agency take a hard look at the environmental consequences of the proposed action, disclose those consequences, and apply the best available scientific information. Finally, the Service disagrees with the argument that it should have waited until WGFD finalized its new CWD management plan as no state management plan has been able to stop the spread of CWD and conditions were imposed allowing revocation if the plan was insufficient. AR29026-27.

The State advances many of the same arguments as the Service, in support of the claim that the agency took the requisite hard look at the effects common to both alternatives. The State argues Petitioners disagree with the Service over the impact of a single feedground on disease transmission and the conclusion of the technical report. However, disagreement is not the same as not taking a hard look. The State argues the

Service adequately obtained expert opinions in the form of reports and studies, and reviewed and synthesized the reports and studies into a single report, which was then peer reviewed. AR29160; AR29034-45. Further, the Service gave careful scientific scrutiny to the material, responded to all legitimate concerns that were raised, and fairly found the science regarding the influence of a single feedground to be overall – inconclusive. According to the State, this complies with NEPA’s requirement that the agency take a hard look at the environmental consequences before taking a major action.

NEPA requires an agency look at the environmental impact of the proposed action, any unavoidable adverse environmental effects, the alternatives to the proposed action, the relationship between local short-term uses of man’s environment, and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources. 42 U.S.C. § 4332(C). A court determines whether the agency “took a ‘hard look’ at information relevant to the decision,” *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 704 (10th Cir. 2009), by asking whether the agency “entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.” *Biodiversity Conservation Alliance v. Forest Service*, 765 F.3d 1264, (10th Cir. 2014) (citation omitted). NEPA does not impose substantive limits on agency conduct. *Robertson v. Methow Valley Citizens’ Council*, 490 U.S. at 350. “Rather, once environmental concerns are ‘adequately identified and evaluated’ by the agency, NEPA places no further constraint on agency actions.” *Friends of the Bow v. Thompson*, 124

F.3d 1210, 1213 (10th Cir. 1997) (citation omitted). Nonetheless, NEPA's "action-forcing" purpose "gives the public the assurance that the agency 'has indeed considered environmental concerns in its decisionmaking process.'" *Robertson v. Methow Valley Citizens' Council*, 490 U.S. at 349 (citation omitted).

The record reflects the Service took a hard look at certain environmental impacts of the proposed action and no-action alternative. However, the Service's failure to consider a reasonable range of alternatives results in the conclusion that the Service failed to take a hard look at the alternatives to the proposed action, some of which might mitigate impacts.

Further, while not a specific focus of the arguments by the parties, there is little to indicate the Service took much of a look at the relationship between a stepped, phase out approach compared to longer-term use of the site as a feedground, and the maintenance and enhancement of long-term productivity. There is also little to suggest the Service took a hard look at the irreversible and irretrievable commitment of resources. Both considerations are required by 42 U.S.C. § 4332(C). There is no question that Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat. However, the Service's only analysis and evaluation was of the longer-term use of the site as a feedground and the no-action

alternative, without any evaluation of reduced impact or phase-out alternatives, or how these various alternatives affect *all* the considerations required to be evaluated under 42 U.S.C. § 4332(C).

Finally, there is no question that the Commission overseeing the WGFD decides whether or not to feed elk in the winter. However, this does not excuse the Service from taking a hard look at the consequences of *its* action to allow the long-term use of NFS lands at Alkali Creek as a feedground. Relevant to the Service (and not simply within WGFD jurisdiction) are the problems that artificial feeding increases the risk of disease transmission, increases the risk that the site will be contaminated with prions for a very long time, and also appears to blindly support WGFD's goal of managing elk movements to prevent commingling with livestock and danger to agricultural land, notwithstanding the BTNF Land and Resource Management Plan that includes a stated goal to "[h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients." AR119. Based on the record, feedgrounds seem to undermine this goal. For all these reasons, the 2015 FSEIS is inadequate in that it fails NEPA's hard look requirement.

C. *Cumulative Impacts*

Petitioners argue the Service failed to meaningfully analyze the cumulative impacts of the region's feedgrounds on wildlife resources, in violation of NEPA. Specifically, Petitioners complain that the Service refused to examine the impacts of Alkali Creek Feedground in conjunction with the other feedgrounds located in the BTNF, or the artificial feeding program conducted by the NFWS on the Refuge. Rather, the

Service restricted its evaluation of cumulative impacts to include effects only from Alkali Creek and the other feedgrounds in the Gros Ventre drainage (Fish Creek and Patrol Creek), thereby severing analysis of this action's impacts from the effects of other nearby feedground operations impacting the same elk herd, as well as the effect of the 2007 BEMP on the Refuge which anticipates a step-down approach to phase out artificial feeding. Petitioners argue these feedgrounds are all part of an integrated program which cumulatively impacts the Jackson elk herd, and the restricted analysis by the Service violates NEPA.

In response, the Service argues that it considered the threat of CWD to the Jackson elk herd and considered the additive contribution of the Alkali Creek Feedground to that threat. The Service also notes that its analysis supplements the 2008 FEIS, which analyzed the impacts of the other feedgrounds in one document and cannot now be challenged. According to the Service, it was not required to redo that analysis. As to the 2007 BEMP, the Service argues it incorporated that plan by reference, and discussed how use of the Alkali Creek Feedground will lower the numbers of overwintering elk at the Refuge. Further, no framework has yet emerged for transitioning from winter feeding on the Refuge to greater reliance on natural forage. Absent a framework, the Service argues it cannot consider specific impacts to Alkali Creek.

As to cumulative impacts, the Court again agrees with Petitioners. The finality of the 2008 FEIS does not eliminate the need for the Service to consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission and mitigation

since the 2008 analysis. Also, the Service need not await a specific framework for the implementation of the 2007 BEMP, but may reasonably rely on the good faith representation that the agencies aim to implement the transition sometime during the life of the Alkali Creek Feedground permit.¹⁸ This requires the Service to examine how granting the permit through 2028 or some shorter term would interrelate with, potentially support, or potentially undermine, the objectives of the combined agency work under the 2007 BEMP.

IV. APA

Petitioners argue the permit and record of decision violate the APA because they fail to analyze the factors set forth in federal laws governing national forests and instead impermissibly defer to WGFD's objectives. Given the conclusion that the Service failed to comply with NEPA procedural requirements, the Court concludes the agency action violated the Administrative Procedure Act.

CONCLUSION

The Service approved WGFC's special use permit for the Alkali Creek Feedground without complying with the procedural requirements of NEPA. Accordingly, the Court VACATES the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk

¹⁸ The goal in the 2007 BEMP is for a progressively managed phase-out of artificial feeding and transition to natural forage on the Refuge over a fifteen-year period (ending 2022), compared to the term of the amended 2008 special use permit which is twenty years (ending 2028). AR10393-4; 11104.

feedground activities at Alkali Creek Feedground, and REMANDS to the agency for further proceedings consistent with this decision.¹⁹

Dated this 14th day of September, 2018.



NANCY D. FREUDENTHAL
UNITED STATES DISTRICT JUDGE

¹⁹ Nothing in this decision adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) Special Use Permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim practice. *See, e.g.*, AR17733-71.

Attachment 4



What Happens When Elk Feeding Ends

Prepared for Wyoming Wildlife Advocates

*by Lloyd Dorsey
Policy Director*

January 2015

According to public comments to Environmental Impact Statements ^{1 2}, many wildlife enthusiasts see the wisdom of carefully phasing out winter elk feeding to help ensure healthier herds in the future. Some stakeholders, however, both individuals and groups, are uneasy or opposed to ending a century-long practice of artificially feeding thousands of elk hay or alfalfa pellets on 23 feedgrounds in three Western Wyoming counties (Sublette, Lincoln and Teton) during the winter months.

This report lists some of the oft-repeated concerns over the ramifications of ending feeding followed by responses to those concerns. End notes contain the sources of supporting information to the responses, or additional explanation, as needed.

###

1. Eliminating elk feedgrounds is "foolishly impractical"³.

There are several examples where ending or significantly reducing winter elk feedgrounds has already been successfully accomplished. Those successes were in Yellowstone National Park in 1937⁴; eastern Idaho, beginning in 1998⁵, North Piney in Western Wyoming⁶, and the Deseret Ranch in Utah⁷. In fact, *it is out of the ordinary* for Rocky Mountain elk to be artificially provisioned during winter months (or any months) throughout its range in North America. From New Mexico north through all the Rocky Mountain States and Canadian provinces to the Yukon Territory, elk range free year round. Indeed, only 3 percent of Rocky Mountain elk are artificially fed⁸. Therefore, the most common and "practical" method of managing wild elk is to allow them to range freely, not to concentrate them on small plots of ground and feed them hay or alfalfa pellets. *Practically speaking, Rocky Mountain elk do well without artificial feeding during Rocky Mountain winters and all other seasons.*

2. Most of the elk winter range in Jackson Hole and throughout Western Wyoming has been developed, no longer exists, and therefore could not sustain many elk.

The three counties where elk are fed during winter in Wyoming, (Sublette, Lincoln and Teton) are comprised of 83 percent federal land. Their combined acreage is almost 8.6 million acres with more than 7 million acres managed by the National Park Service, the US Forest Service, the US Fish and Wildlife Service or the Bureau of Land Management ⁹. There exists today approximately 1.74 million acres of big game winter range designated by the Wyoming Game and Fish Department and the federal agencies in these three counties alone^{10 11 12 13}. In adjacent counties there is even more winter range^{14 15}. Despite some development on these public lands for energy (oil and natural gas) and other uses, the majority of these winter ranges are undeveloped and available for winter elk, deer, moose and pronghorn. Indeed, these critical habitats have some better protections for wildlife than they did during settlement times in the late 19th and early 20th centuries. Federal agencies and the WGFD restrict or prohibit human activities on winter ranges to protect wildlife.

Teton County alone is comprised of 97 percent federal land. Of the remaining 3 percent, about 79,000 acres of private lands, 20,000 acres are under conservation easement for protection of wildlife habitats^{16 17}. Essentially, Teton County is about 98 percent protected wildlife habitat. There is ample room for wildlife to roam free.

The Gros Ventre Valley east of Jackson Hole contains 100,000 acres of designated winter range on US Forest Service lands ¹⁸. Hundreds of thousands of acres of wind-swept public, private and tribal land in the Upper Wind River Valley around Dubois, Crowheart, Pavillion and Riverton, provide winter range for all big game. In Eastern Idaho, around Montpelier, Idaho Falls, Ashton, and Island Park, the Idaho Fish and Game Department manages designated winter ranges for thousands of elk and other big game ¹⁹.

The 20 million-acre Greater Yellowstone Ecosystem is comprised of 80 percent federal lands with vast areas of winter ranges where big game and their habitats thrive far better than on feedgrounds.

Wyoming has the fewest residents of any state in the U.S. and its three feedground counties are no exception. Wyoming is approximately the same size as Colorado ²⁰, but Colorado contains a human population nine times that of Wyoming ²¹. Colorado also has nearly 3 times the amount of elk as Wyoming ²². Despite the large human population, three times the number of elk, and twice as many cattle in Colorado as Wyoming, Colorado doesn't feed any of their 280,000 elk during winter. Nor does Montana or almost any other jurisdiction in the Rocky Mountains.

Because of exceptionally successful conservation efforts during the past decades, bountiful herds of elk and other big game throughout the Greater Yellowstone Ecosystem use protected winter ranges including those in western Wyoming.

3. Balancing elk numbers with available habitat will require reductions of 60 percent of the elk numbers.

Believing that virtually all elk must be on feedgrounds or perish has been proven incorrect for generations. We know that during the past 100 years elk have recolonized or have been

reintroduced to their historic ranges by the hundreds of thousands. There are now more than 850,000 elk roaming private and public lands from New Mexico to the Yukon Territory, and nearly everywhere in between²³.

The purpose of ending artificial feeding is to spread elk out, and allow them to roam naturally and be healthy. Therefore wintering elk numbers in Jackson Hole and immediately around feedground locations in the three Western Wyoming counties will certainly decrease. Areas like the Gros Ventre Valley, however, are underutilized and can winter more elk than at present ²⁴. Wyoming's elk population is at 112,000, and the objective is only 81,275, so Wyoming is already 37 percent over objective²⁵. Most of the Montana and Idaho hunt areas within the Greater Yellowstone Ecosystem are also at or over their objectives for elk^{26 27}. It is generally accepted that there are more elk in the region than managers want.

The Jackson Hole area, consisting of the Buffalo Valley, Gros Ventre Valley and the Jackson Hole valley itself, can winter approximately 8,850 elk (median between low estimates of 7,600 to upper end estimates of 10,100), plus other big game, without artificial feeding ^{28 29 30 31 32}. Without artificial feeding, there will be abundant populations of healthier free-ranging elk in all seasons for the public to enjoy.

4. Biologists say that half of the elk will starve to death in a harsh winter if feedgrounds are phased out.

What killed off most of the elk herds a century ago were bullets, not starvation. Some winter loss of elk and deer is natural in the Rocky Mountains, and it always has been. If feedgrounds were necessary to maintain thousands of elk, every state would need them. They don't. If feedgrounds were phased out, particularly if elk numbers were reduced first through hunting and predation below the carrying capacity of regional winter ranges, the elk would spread out and thrive. Other regions of the Rocky Mountains have similar climates to Teton, Lincoln and Sublette counties, and their elk range freely and remain healthy during winter. Moose, bighorn sheep, pronghorn antelope and deer also range freely without supplemental feed and do well.

Some small percentage of winter loss is normal and helps the herds remain healthy. Once the herds are reduced close to the carrying capacity of the surrounding or migration-distance winter habitats, feeding can end. Elk, deer and other wildlife have proven that they can find protected winter ranges as long as we protect the migration corridors to get there. The elk will do well without feedgrounds, just as they do everywhere else in North America.

5. If elk aren't fed during winter, they will be in neighborhoods and destroy flowers, shrubbery, trees and lawns.

As with other wildlife in the Rocky Mountain states and Canadian provinces, some elk will roam into settled areas. Fortunately, by far the greatest amount of their habitat is peripheral or some distance away from towns and neighborhoods. Wildlife prefer to avoid people and neighborhoods, and will use habitat farther away for the most part. Additionally, the Rockies are sparsely settled; there's significantly more open, undeveloped land than developed land. But the occurrence of some wildlife is not uncommon in settled areas in the Rocky Mountains and all neighborhoods coexist well with wildlife. In fact most people value the wildlife in their areas. If people don't want their shrubs disturbed by moose, deer, or elk, they can fence around them. Many people and towns do

this already. If palatable plants are off limits, or aren't planted, in neighborhoods, the elk, moose and deer will move through onto large expanses of habitat that characterize the Rocky Mountain states and Canadian provinces. There are many resources, such as the 2011 Teton County Rural Living handbook, that counsel homeowners about coexisting with wildlife and how to protect their landscaping³³.

6. If elk aren't confined to feedgrounds, they will get in rancher's haystacks and mingle with cattle and other livestock.

Virtually all haystacks in the feedground counties, and surrounding counties in various states, are already fenced to prevent deer, elk and moose from getting the hay. That's the normal way to store hay outside in the Rocky Mountains and has been for generations. State wildlife agencies and conservation districts typically offer materials free to ranchers to fence their haystacks. Fencing around cattle and horse winter feedlines is also common throughout the Rocky Mountain states and Canadian provinces. Teton, Sublette and Lincoln county livestock owners can easily follow suit. Money is available from the above sources as well as the Wyoming Wildlife and Natural Resource Trust (WWNRT) account and other non-profits to help the livestock owners pay for the fences. One of the purposes of the WWNRT is to mitigate conflicts and reduce the potential for disease transmission between wildlife and livestock, so this is a perfect execution of this state fund that pays out hundreds of thousands of dollars annually³⁴.

Idaho legally requires livestock owners in the brucellosis endemic area of eastern Idaho to fence in their haystacks, as well as cattle and horse winter feedlines to prevent comingling with elk³⁵. This is a widely practiced and practical way to coexist with free ranging elk and other wildlife especially where disease transmission is of concern.

7. If elk aren't maintained on feedgrounds by the tens of thousands, predators may go hungry. If predators are hungry, they will threaten people.

There are hundreds of thousands of elk, deer, moose, bighorn sheep, antelope and buffalo in the Greater Yellowstone Ecosystem. Most of them are not on feedgrounds. As long as this is the case, apex predators will never suffer from lack of prey. The American people have done an exemplary job of protecting or restoring prey and predator wildlife species in this region, and this is undeniably the pattern for the future. Bears, wolves and mountain lions have never posed a significant threat to people, and people know how to behave if ever confronted by these wildlife species that they value (e.g., bear spray). Each year in the U.S., horses kill 20 people; cows kill 22; pet dogs kill 30 to 35 people every year in the U.S.³⁶. Yet, no one thinks that horses, cows, or dogs- as species- pose a threat to humans.

8. If elk aren't sustained by feedgrounds, and take sanctuary within neighborhoods, predators will follow.

This is quite true. Even when elk are mostly kept for the winter months on feedgrounds in Jackson Hole, some elk (and deer and moose) find sanctuary in neighborhoods, and a very few predators follow and scare some people. Unfortunately, the WGFD then either relocates or kills the "offending" cougar, wolf or bear. All that's needed are for neighborhoods not to plant palatable plants, or high-fence those shrubs in proximity to their houses. Elk and deer will then pass through

and not stay near homes and attract predators. It works. In April 2003 Teton County passed an ordinance prohibiting feeding of deer and elk precisely because of this concern ³⁷.

9. Reducing the Jackson (or any feedground) elk herd, or not having thousands of elk on feedgrounds consistently in view of tourists, will harm the local economy.

Wildlife populations naturally wax and wane in numbers according to natural influences. Over the span of decades, some elk herds and other wildlife species have decreased in Yellowstone National Park, some herds and species have increased. Tourism hasn't been harmed. Jackson's economic indicators are increasing and there are no indications that fewer elk in one location (e.g., on the Elk Refuge during winter), or more elk in other locations (e.g., on native winter ranges) will cause our local economy any harm. The Jackson Elk Herd exceeded 18,000 in the mid 1990's ³⁸, and has decreased to approximately 12,000 in 2013 ³⁹, and the local economy nevertheless has improved ⁴⁰.

What *may* someday affect the wildlife viewing and hunting segments of the tri-county area of Western Wyoming would be the loss of elk (and deer and moose) to the long-term persistence and high prevalence of chronic wasting disease engendered by the dense concentrations of elk on feedgrounds. The experts tell us to phase out feedgrounds, spread elk out, conserve abundant predators to help keep the herds spread out and healthy, so disease doesn't cause the loss- and prevent the recovery- of our wildlife ^{41 42 43}. To protect the wildlife-dependent sectors of our economy, phasing out feedgrounds will pay long-term dividends.

10. If thousands of excess elk aren't kept on feedgrounds, providing abundant hunting licenses, the Wyoming Game and Fish Department funding will suffer.

The WGFD is already experiencing a fiscal crisis despite managing 22 feedgrounds and providing support to the National Elk Refuge. ⁴⁴ The department could save more than \$2.13 million dollars each year by closing the feedgrounds, which are the most expensive elk management system in North America. The WGFD is desperately seeking alternative sources of funding, and would do well to invite the non-hunting wildlife enthusiasts into their tent.

Fewer elk do not mean fewer licenses or less revenue. Since Wyoming's elk hunter success rate is more than double that of surrounding states, more than 40 percent success vs. approximately 20 percent and less ^{45 46 47}; the WGFD could still sell the licenses and allow the success rate per license sold to decline a bit towards the success standards of other Rocky Mountain states. There will still be abundant hunter opportunity and success.

11. If elk aren't kept on feedgrounds, they will cause havoc on our roads.

Since most surrounding states have more elk than Wyoming does, and since the number of elk on feedgrounds during winter is a small segment of the region's elk numbers, the risk of elk on roads if feedgrounds are phased out isn't going to be affected one way or another. All Rocky Mountain communities deal with deer, elk and other wildlife crossing their roads and in their neighborhoods. That's the norm throughout the Rockies. We have long perfected the tools to mitigate risks to wildlife and people alike.

12. Elk can't learn to migrate, so they must be kept on feedgrounds.

Nonsense. Most of the elk in the Rocky Mountains are descendants from elk transplanted into areas they'd never seen in the early 20th century. The elk in Colorado and New Mexico, Utah, Idaho, etc., are descendant from elk transplanted from Wyoming. And yet most of them migrate twice a year, sometimes only a few miles, sometimes many miles. The behavior is innate to elk and they readily make these choices to move from harsh climes to less harsh, if we manage their habitats well. Throughout the Rocky Mountains, we obviously have managed herds, their habitats and migration routes well since elk populations grew from about 50,000 at the beginning of the 20th century to nearly one million today. Protected lands are not only vast, but also connected. That means elk and other migratory wildlife can disperse across seasonal ranges, if we allow it. In Western Wyoming, mule deer, pronghorn, and some elk migrate significant distances between summer and winter ranges ⁴⁸. Such healthy behaviors are readily learned by new generations of deer, elk and pronghorn if the choices are available to them. That is why the conservation of these species has been so successful over the past century in the Rocky Mountains and beyond.

13. What happens in the future if elk aren't fed?

Elk will be healthier and more spread out. The Jackson Elk Herd, and each currently fed elk herd, will likely have a larger migratory component than today. Some elk that summer in and around Jackson Hole, including elk in the Gros Ventre Mountains, the Tetons, and southern Yellowstone Park, will spend some winters outside the Buffalo Valley, the Gros Ventre Valley and Jackson Hole, and then migrate back into lush summer ranges each May. That's what many elk did for thousands of years. Some elk will also choose to spend winters roaming on the approximately 150,000 acres of winter range in the Buffalo, Gros Ventre and Jackson Hole valleys. ^{49 50} Since winter ranges and migration routes are functional and mostly protected, the elk will have choices that are healthy and sustainable.

We don't have far to go to restore the natural historic, healthy patterns that elk and other wildlife evolved with. The basic necessities are in place in the form of large protected landscapes. We developed the appropriate sciences in the past century. Science informs us about the best ways to manage for healthy wildlife, which includes having predators on the landscape. Predators help keep the herds dispersed and healthy.

14. Conclusion:

Given the impending arrival of CWD into the three Western Wyoming counties with elk feedgrounds, given the fact that most other jurisdictions manage elk as free ranging herds ⁵¹, given that elk do well in Rocky Mountain winters without being artificially fed, given that we have perfected the tools such as fences and over or under passes to mitigate consequences of free-ranging elk, and given the modern science and the experts supporting ending feedgrounds, it would be "foolishly impractical" not to carefully but quickly phase out elk feedgrounds, before it's too late.

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Attachment 5
Chronic Wasting Disease Literature Review Technical Report

Tyler Johnson
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Abstract

Chronic wasting disease is an invariably fatal prion disease of cervids. There has been a recent increase in studies regarding the transmission and impacts of CWD in free-ranging and artificially contained elk and deer. Research indicates that CWD is easily transmitted between and among cervid species, can contaminate the environment and subsequently infect new individuals, and can impact cervid populations. Population level impacts have been noted in free-ranging elk and deer after a time lag. Such population level impacts arise from alterations in reproduction rates, increases in individual mortality from CWD, and increased susceptibility to other agents of mortality. CWD is lethal across all age groups. Management options for controlling CWD arrival and spread are very limited, and a review of relevant literature indicates that congregating elk at very high densities at feedgrounds is likely to increase the spread of the disease because of an increased number and rate of potentially infectious contacts with infected individuals and an infected environment.

Introduction

Chronic wasting disease (hereafter CWD) is an incurable, invariably fatal neurological disease of cervids (deer, elk, and their relatives) caused by a misfolded version (PrP^{CWD}) of the normal prion protein (PrP). PrP^{CWD} are believed to propagate by inducing the formation of more PrP^{CWD} from PrP. The abnormal or misfolded form of the prion protein converts the normal prion protein into the infectious form. During the 19-40 month course of CWD the prions cause lesions in central nervous system (CNS) tissues thereby producing visible behavioral and physiological alterations in the last months before death from CWD.

CWD is highly transmissible via multiple direct and indirect pathways between and among cervid species. Infected animals can directly infect nearby animals by contaminated nasal or oral secretions. Additionally, prions that are shed into the environment from infected animals in bodily fluids and soft tissues before and after death can infect other animals well after the infected animal has moved or died. It is likely that an animal infected with CWD would have been exposed to the infectious agent through more than one pathway. CWD can persist in the environment well after the infected animal has died. In this way, CWD differs from most other wildlife diseases in that environmental transmission plays an important role in the dynamics of the disease, something that isn't common for bacterial or viral diseases, which tend not to persist in the environment.

The typical course of CWD from infection to death in elk involves 2 stages, incubation and clinical (Argue *et al.* 2007, Figure 1 below). During the incubation stage the animal appears to be behaviorally and physiologically normal, once the animal becomes visibly affected the clinical stage begins. The change in behavior is associated with physiological changes in the CNS of the animal, most notably the

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brain. The length of the incubation stage can vary from 20-36 months based on the genetics of the infected elk (Hamir *et al.* 2006) and the exposure dose. Published and unpublished data indicates that depending on the genetics of an infected elk the incubation period can last for years or be very short (Williams *et al.* 2014 and reference therein). The incubation period is broken into two parts. During the latent period the animal is acting normally and is not shedding prions. At some point, typically around 6 months prior to clinical onset, the animal begins to shed prions in saliva, nasal mucous, urine, feces, and milk (Argue *et al.* 2007, Saunders *et al.* 2012). Prions shed in this manner are able to infect both nearby animals and the environment. Some animals perish as soon as the clinical stage begins, while others last for 12 or more months before death (Miller *et al.* 1998). It is possible for an infected animal to die from CWD infection alone. However, CWD infections that have become clinical have been shown to increase an animal's susceptibility to other agents of mortality including those from predators (Miller *et al.* 2008, Krumm *et al.* 2009), vehicle collisions (Krumm *et al.* 2005), stochastic events (extreme weather and inability to find food) (Williams 2005), and other diseases. Animals that are in the clinical phase are still shedding prions. During the clinical phase prions also accumulate in muscle, CNS, and other soft tissues (including skin and antler velvet) (Saunders *et al.* 2012). After a clinical or preclinical CWD infected animal dies the carcass can be a significant source of prion infection to other animals and can contaminate the environment for many years (Miller *et al.* 2004) (see discussion of environmental transmission below).

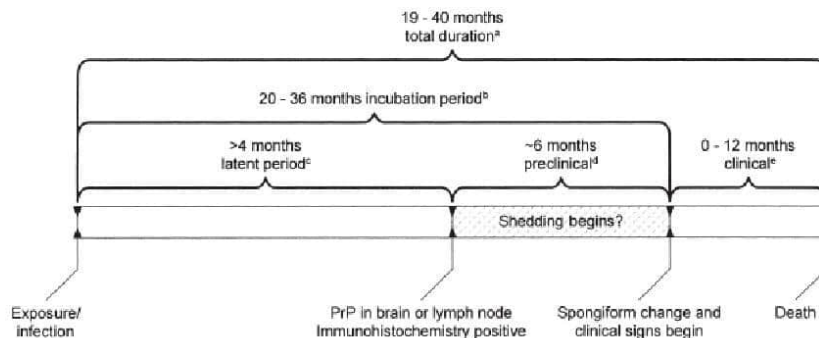


Figure 1 from Argue *et al.* 2007. Proposed progress of CWD in farmed elk

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CWD has been discovered in wild cervids in 19 U.S. States and 2 Canadian provinces, and exists in captive cervids in the US, Canada and South Korea (CWD-info.org). CWD is thought to have arisen in northern Colorado and spread to Wyoming, South Dakota, Nebraska, Kansas, and Utah. The movement of game farmed and hunter killed animals is thought to have introduced the disease to areas that are now satellite infection areas in New Mexico and Texas, Wisconsin and Illinois, Alberta and Saskatchewan, and the Northeast (Figure 2). The number of states and provinces where CWD is known has increased over time, even though funding for surveillance has decreased in recent years, indicating that the disease is spreading, albeit relatively slowly.



Figure 2 From CWD-info.org

Horizontal Transmission

Horizontal transmission of CWD is a highly efficient means of disease transmission between and among elk and deer (Miller and Williams 2003, Sigurdson and Aguzzi 2007). Maternal transmission (from mother to offspring via a reproductive interchange (being in the womb, birthing fluid, milk etc.)) is possible, but appears to be much less important than horizontal transmission from mother to offspring (Miller *et al.* 2004). Studies indicate that elk of both sexes spend a considerable amount of time within one body length of each other in the wild and in artificial environments. Such proximity likely exposes animals to horizontal transmission of disease from oral and nasal secretions (Mathiason *et al.* 2006), particularly where animals are artificially congregated and their contact rates increase significantly (Cross *et al.* 2013, Creech *et al.* 2012).

Environmental Transmission

CWD can be transmitted solely by environmental contamination (Miller *et al.* 2004, Mathiason *et al.* 2009, Williams *et al.* 2014) and this likely helps explain the spread and maintenance of disease (Gough and Maddison 2010). Several studies have demonstrated actual environmental transmission from decomposed carcasses and fecal material (Miller *et al.* 2004), as well as saliva, blood, and inanimate objects like feed buckets, bedding, and water (Mathiason *et al.* 2006, 2009). Suspected sources of environmental contamination with subsequent transmission include bodily fluids at elk wallow sites and mineral licks (VerCauteren *et al.* 2007), and the presence of CWD in soft tissues, blood, skin, antler velvet (though not the antlers themselves), urine, milk, nasal secretions, saliva, and placenta (Gough and Maddison 2010, Saunders *et al.* 2012). Annual antler velvet shedding represents an instance where potentially infected soft tissue is shed while the animal is still alive. Most other instances of potentially infected soft tissue contaminating the environment arise from the death of the animal. It has been estimated that the amount of CWD prion shed during the progression of the disease and the amount contained in a carcass of an animal killed by CWD is roughly the same because CWD prions become systemic and are concentrated in the CNS and muscle tissues as the disease progresses (Saunders *et al.* 2012). As a result, carcasses represent a large source of prions to the surrounding environment. Decomposing carcasses often induce a flush of vegetative growth, which may attract susceptible cervids. Because CWD remains infectious for at least 2 years in the environment (Miller *et al.* 2004) and possibly quite a bit longer (Georgsson *et al.* 2006) the presence of carcasses and their attractiveness may result in environmental transmission of CWD.

Carcasses in the environment also attract scavengers (Jenelle *et al.* 2009a). Research has demonstrated that scrapie, a prion disease of sheep and goats similar to CWD, can remain infectious after

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passage through avian digestive systems (VerCauteren *et al.* 2012) and that CWD is likely infectious after avian passage and the dispersal of CWD prions in avian feces may in some way facilitate the spread of the disease (Fischer *et al.* 2013). Prions are likely to be denatured to a large degree in the digestive tract of mammalian scavengers (Jeffrey *et al.* 2006 - scrapie study) and CWD prions consumed by mammalian scavengers do not result in infection of the scavenger (Jenelle *et al.* 2009b). Plants may uptake the prions into their plant structure, but evidence for this is only circumstantial at this point (mid-2014) and has not yet been published, this is different than prions simply existing *on* plants (Gough and Maddison 2010) and may represent yet another source of environmental contamination.

The importance of environmental transmission in the spread, persistence, and impact of CWD infection in deer and elk has been suggested in numerous modelling studies (Miller *et al.* 2006, Almburg *et al.* 2011, O'Hara Ruiz *et al.* 2013, Storm *et al.* 2013, Jenelle *et al.* 2014). Specifically, work by Almburg *et al.* 2011 showed that the longer that CWD is infectious in the environment the more influential it becomes on disease prevalence and transmission, owing to an increased pool of environmental sources of infection over time. The fact that the infectious agents of CWD likely outlive their hosts in the environment indicates that the distribution, concentration, and infectivity of CWD in the environment will play an important role in the ultimate course that CWD takes in quasi-free ranging elk in western Wyoming.

Elk congregate naturally on winter range and wallows, and artificially at feedgrounds in Wyoming. Should CWD arrive, the areas where elk naturally and artificially congregate could become continuous sources of disease transmission from animal to environment and back to animal. The environmental pool of infectious prions would thus likely increase with time with repeated use at such locations because prions persist in the environment and are essentially impossible to remove from areas where infected animals have lived.

Disease Transmission

In the early stages of a disease outbreak, the density of infectious and susceptible individuals drives the course of the disease. Owing to highly efficient direct transmission of CWD among cervids the number, duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD. Several studies have examined how coarse and fine scale elk behaviors change with increasing population density. These studies have shown that in general, elk in higher density populations contact other elk more frequently and for longer durations, although there are some differences in how males and females respond to higher densities.

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As elk population density increases the average group size increases but the mechanism of those increases differs between females and males, where females aggregate into larger groups that are more dispersed from other groups, while males cease to be solitary and form small groups (VanderWal *et al.* 2013a). Additional research has shown that as population density increases the frequency and duration of contacts between individuals and gender groups increases, but does so differently for females vs. males. VanderWal *et al.* 2012 showed that as population density increases the interaction rate of males increases, but the duration of those interactions decreases. The same study found that both the rate and duration of female interactions increases with increasing density, but both saturate at moderate population density. This is because female elk tend to form small familiar groups of at least 5 individuals *within* the larger group and that most contacts occurred within that small group, a finding supported by VanderWal *et al.* 2013a, 2013b, 2014. At higher population density the overlap of individual female elk home range is greater than for lower population density. As the overlap of home ranges increase so does the rate of interactions, such that there are more interactions at higher density, this relationship does however, saturate at high range overlap. The frequency and duration of within- and among-sex interactions not only changes with population density but also with season. Female-female dyads interact 4 times more frequently than male-male dyads do, but male-male dyads interact for 1.5 times longer than female-female dyads (VanderWal 2013b). The frequency and duration of interactions was higher for all groups in winter and lowest in summer. Cross *et al.* 2013 demonstrated that in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed. The same study showed that supplemental feeding can increase contact rates beyond that which a larger group size will incur on its own.

The role that artificially congregating elk at feedgrounds will play in the arrival of CWD is unclear. On one hand, elk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area. On the other hand, most elk feedgrounds are strategically placed on the landscape to interrupt migration corridors (the purpose of feedgrounds is to spatially confine the elk so that private hay and cattle do not contact elk). And as such, serve to isolate herds from each other, thereby possibly limiting inter-herd transmission of CWD. There has been no research that has addressed this issue. As a result, it is unknown if the presence of one or many feedgrounds will alter the arrival of CWD.

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Prevalence and population level impacts

Studies on naturally occurring populations of elk have shown that mortality from chronic wasting disease *by itself* can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello *et al.* 2014). Raithel *et al.* 2007 showed that cow elk survival less than 85% induced herd declines in most elk populations in North America. In addition, CWD mortality has been associated with a reduction in survival rates, alteration of reproductive success (Dulberger *et al.* 2010), and a stagnation in population growth (Sargent *et al.* 2011, Monello *et al.* 2014). CWD can also compound other agents of mortality by increasing the susceptibility of infected elk and deer to vehicle collisions (Krumm *et al.* 2005), predation (Miller *et al.* 2008, Krumm *et al.* 2009, Sargeant *et al.* 2011), and stochastic mortality (severe weather and other random events Williams 2005). Studies conducted on free-ranging elk populations indicate a time-lag between introduction of CWD and population level impact of between 10 (Sargeant *et al.* 2011) and 25 years (Monello *et al.* 2014) is possible. This time lag is likely due to the extended incubation period where diseased elk are still able to reproduce, while the disease prevalence builds in the population. Modelling studies indicate that genetics may influence the length of the incubation period and play a role in the progress and ultimate outcome of the disease, but field based studies have yet to show such influence (discussed in Williams *et al.* 2014). Field based studies have indicated that population level impacts can happen at prevalence levels from 5-13% ((Miller *et al.* 2000 (deer), (Monello *et al.* 2014 (elk)), depending on reproductive success and the importance of other agents of mortality in the population.

Taken together, studies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National Forest and nearby areas. What is less clear is the role that artificial grouping of elk at feedgrounds, the influence of predators, and the difference in sex-specificity and genotypes (in terms of prevalence and mortality) will play in the spread and impact of the disease in elk in western Wyoming. Indeed a modelling study by Williams *et al.* 2014 showed that mortality from CWD and hunting could act in concert to impact elk populations in western Wyoming, but that the genetic makeup of that herd could moderate those effects.

The impact of wolves on CWD dynamics has only been explored in modelling exercises based on data from a National Park that is absent of wolves (Wild *et al.* 2011, Hobbs 2006), and as such the role that wolves will play is largely unexplored. What is known is that presence of wolves influences elk behavior, and some generalizations can be made about the impact that those changes in behavior might have on disease transmission. At the landscape scale, the presence of wolves can simultaneously decrease

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population densities (by removing individuals) and increase herd densities and group sizes (Hebblewhite and Pletscher 2002, White *et al.* 2012), since the presence of wolves tends to turn small groups of elk into large herds or move elk from one habitat to another (White *et al.* 2012). Other studies have shown that there is no change in group size (Creel and Winnie 2005) or that changes in elk behavior are habitat-specific (Proffitt *et al.* 2009). Research on free ranging elk without wolf pressure has shown that elk in larger groups tend to have higher rates of contact and that contact lasts longer.

It has been shown that deer killed by mountain lions have a higher CWD prevalence than non-killed deer, suggesting that lions select for CWD affected deer. It stands to reason that mountain lions would similarly select for affected elk and that an elk clinically affected by CWD would be targeted by wolves. Typically, wolves target young and old elk from herds. It remains to be seen if this pattern holds for CWD affected elk or if wolves will take prime aged elk that have CWD. This is important for population level impacts because CWD kills across age groups and prevalence tends to be highest in prime breeding age (3-8 year old) and the age selection of wolves could amplify this.

When a new agent of mortality is introduced into an ecosystem the resulting mortality for a wildlife population can be additive to other sources of death, or can compensate for them. Additive mortality occurs when the new agent increases the total number or rate of mortality. Compensatory mortality does not increase the total number or rate of mortality because it replaces an existing cause of mortality. New sources of mortality may be completely compensatory, or may also be partially compensatory to existing sources of death.

Herd densities

Because so much of the literature and discussion about the arrival, spread, and impact of wildlife disease focuses on the density of the herds in question it is worth noting how congregating elk at feedgrounds alters the herd density. As previously discussed, research has shown that in general as herd densities increase, the frequency and duration of potentially infectious contacts (with infected individuals and infected environment) also increases. Free-ranging elk herds in Wyoming (Cross *et al.* 2013, Williams *et al.* 2014) and Canada (Vander Wal *et al.* 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km² (Table 1). Elk at Wind Cave National Park have densities between 2.1 and 7.1 elk/km² and elk at Rocky Mountain National Park have densities between 15 and 100 elk/km². Elk at the National Elk Refuge in Jackson average 59.3 elk/km² (6000 elk on 25000 acres). Elk density at the average state feedground in Wyoming is 1976.6 elk/km², based on the reported average of 600 elk on 75 acres.

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These elk herds can of course have much higher densities when they are congregated on winter range, feeding lines, or at natural bottle-necks. For instance, elk in the western part of Wyoming average densities of .26 to .31 elk/km² when considered at the herd unit scale, which includes 3 feedgrounds (Williams *et al.* 2014). However, that same herd can reach densities of 25,300 to 238,000 elk/km² when the elk are feeding on the feedlines (derived from proximity logging collars in a herd of 550-650 elk at one feedground) (Creech *et al.* 2012). Population level impacts have been documented in both the Wind Cave and Rocky Mountain National Park elk herds which have lower densities than are present at the feedgrounds in Wyoming.

Summary

The role that CWD has played in population level impacts to free ranging elk populations has been demonstrated in the literature and it stands to reason that similar impacts will be expected when CWD arrives in the proximity of the Bridger-Teton National Forest. There are many unknowns with regard to how disease progress will translate to population impact in western Wyoming, especially with an active predator guild, the presence of feedgrounds, rate of human harvest, the genetic makeup of the herds, and reproductive rates of elk. The onset and potential rate of spread of CWD in western Wyoming is similarly unknown. What is certain is that political, economic, and ecological conditions will change continuously once the disease is detected.

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Table 1 Reported or derived density of study or feedground elk herds

Author / Year	Density (elk / km ²)	Study Type
Cross et al. 2013	.21 - .28	Wyoming Free Range
Vander Wal et al. 2014	.22 - .42	Canada Free Range
Williams et al. 2014	.26 - .31	Wyoming Free Range
Vander Wal et al. 2013	.67 - 1.2	Canada Free Range
Sargeant et al. 2011	2.1 - 7.1	Quasi-natural population Wind Cave NP (fenced)
Monello et al. 2014	15 - 100	Natural Population Rocky Mtn NP
National Elk Refuge	59.3	Very Large Feedground (6000 elk on 25000 ac)
Vander Wal et al. 2012	71 - 149	Experimental in Large Cages
WY State Feed Grounds	1976.8	Based on reported average of 600 elk on 75 acres
Creech et al. 2012	25,300 - 238,000	Wyoming at Soda Lake Feed Ground

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Attachment 6

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Fish and Wildlife Management on Federal Lands: Debunking State Supremacy

Sandra B. Zellmer

Alexander Blewett III School of Law at the University of Montana, sandi.zellmer@mso.umt.edu

Martin Nie

Christopher Barnes

Jonathan Haber

Julie Joly

See next page for additional authors

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Authors

Sandra B. Zellmer, Martin Nie, Christopher Barnes, Jonathan Haber, Julie Joly, and Kenneth Pitt

ARTICLES

FISH AND WILDLIFE MANAGEMENT ON FEDERAL LANDS: DEBUNKING STATE SUPREMACY

BY

MARTIN NIE,* CHRISTOPHER BARNS,** JONATHAN HABER,*** JULIE JOLY,****
KENNETH PITT***** & SANDRA ZELLMER*****

This Article reviews the authority of federal and state governments to manage wildlife on federal lands. It first describes the most common assertions made by state governments regarding state powers over wildlife and then analyzes the relevant powers and limitations of the United States Constitution and federal land laws, regulations, and policies. Wildlife-specific provisions applicable within the National Park System, National Wildlife Refuge System, National Forest System, Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered, as is the Endangered Species Act. We reviewed an extensive collection of cases of conflict between federal and state agencies in wildlife management on federal lands. These cases show how federal land laws, regulations,

* Martin Nie is Director of the Bolle Center for People and Forests and Professor of Natural Resources Policy, W.A. Franke College of Forestry and Conservation, University of Montana.

** Christopher Barns is a wilderness consultant and former Wilderness Specialist, Bureau of Land Management National Landscape Conservation System, and BLM Representative at the Arthur Carhart National Wilderness Training Center.

*** Jonathan Haber is a wildlife planning and policy consultant and a former planning specialist for the United States Forest Service.

**** Julie Luman Joly is former Associate Professor of Resources Law and Policy at Alaska-Fairbanks.

***** Kenneth Pitt is Adjunct Instructor in the Natural Resource Department at Salish Kootenai College and formerly a General Attorney for the USDA-Office of the General Counsel.

***** Sandra B. Zellmer is Robert B. Daugherty Professor of Law, University of Nebraska-Lincoln.

and policies are frequently applied by federal agencies in an inconsistent and sometimes even unlawful fashion. They also demonstrate how commonalities found in state wildlife governance, such as sources of funding and adherence to the North American Model of Wildlife Conservation, often exacerbate conflict over wildlife management on federal lands.

Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. We debunk the myth that "the states manage wildlife and federal land agencies only manage wildlife habitat." The myth is not only wrong from a legal standpoint, but it leads to fragmented approaches to wildlife conservation, unproductive battles over agency turf, and an abdication of federal responsibility over wildlife. Another problem exposed is how the states assert wildlife ownership to challenge the constitutional powers, federal land laws, and supremacy of the United States. While the states do have a responsibility to manage wildlife as a sovereign trust for the benefit of their citizens, most states have not addressed the conservation obligations inherent in trust management; rather, states wish to use the notion of sovereign ownership as a one-way ratchet—a source of unilateral power but not of public responsibility. Furthermore, the states' trust responsibilities for wildlife are subordinate to the federal government's statutory and trust obligations over federal lands and their integral resources.

The Article finishes by reviewing the ample opportunities that already exist in federal land laws for constructive intergovernmental cooperation in wildlife management. Unfortunately, many of these processes are not used to their full potential, and states sometimes use them solely as a means of challenging federal authority rather than a means of solving common problems. Intergovernmental cooperation must be a mutual and reciprocal process, meaning that state agencies need to constructively participate in existing federal processes, and federal agencies should be provided meaningful opportunities to participate in, and influence, state decision making affecting federal lands and wildlife.

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I. INTRODUCTION

Some of the most significant cases in the development of federal lands and resources law revolve around questions pertaining to federalism and wildlife management. At stake are weighty issues related to constitutional law, sovereignty, and ownership. Complicating matters is the enduring tension between federal and state governments that is built into American politics, the opaque language sometimes found in federal lands law, and the interjurisdictional nature of wildlife conservation. And, of course, there is the politics of it all, as these cases force federal and state agencies to consider their sources of power and authority, their organizational values and biases, and other deeply polarizing and confrontational issues.

To begin, consider some of the following questions that were decided long ago by the courts: Does the United States Forest Service (USFS) have the authority to kill over-browsing deer deemed to be causing harm to the Kaibab National Forest and to do so in violation of state game laws? Similarly, does the National Park Service (NPS) have the authority to kill deer within Carlsbad Caverns National Park for research purposes without obtaining a state permit? Does Congress have the power to protect wild horses and burros on federal lands when those species compete with ranchers and their cattle for forage? And can the United States Fish and Wildlife Service (FWS) refuse to permit the State of Wyoming to vaccinate elk on the National Elk Refuge?

The courts answered these questions, all in the affirmative,¹ but standoffs between federal and state governments have nonetheless intensified in recent years. We examined several of these conflicts to help guide our research so that we could address the key arguments made by state and federal governments, and focus our analysis on the most relevant provisions related to wildlife as found in federal law, regulation, and policy. Included in our review were cases receiving national attention, such as the recent decision by NPS and FWS to preempt those hunting regulations of the State of Alaska that are in conflict with National Park and Refuge laws. These are rare cases where federal agencies pushed back against state interests. In other high profile cases, federal agencies acquiesced to the states, such as Grand Teton National Park's refusal to apply federal regulations to private inholdings within the boundaries of the Park, thus effectively ceding wildlife management authority to the State of Wyoming on roughly 2,300 acres of land within the Park. Other problematic cases include the management of wolves in federally designated wilderness areas, such as the decision made by USFS to permit the State of Idaho to land helicopters in the Frank Church River of No Return Wilderness in order to track and collar wolves, and to not take action to regulate the State of Idaho's plan to hire a professional trapper to kill two packs of wolves living within the Wilderness for the purpose of increasing the area's elk population. We also investigated cases receiving far less national attention, such as an annual predator killing contest on federal lands in Idaho managed by USFS and the Bureau of Land Management (BLM), and the State of Utah's introduction of non-native mountain goats to establish a population on national forest lands.

In cases like these, the states frequently claim that federal land agencies have limited authority over wildlife management, especially on multiple-use lands managed by USFS and BLM. In making this argument, states commonly assert that they own wildlife and manage it as a trust resource. As they see it, their power and authority over wildlife on federal lands reign supreme, and as the argument goes, neither federal land laws nor the courts have done much to change this historical arrangement. The states often justify their positions and actions by reference to the "North American Model of Wildlife Conservation" (the Model), which is a set of principles to guide state management of wildlife.

In comparison to the states, the federal government responds in a more varied and often inconsistent fashion. Rare is the situation where a federal agency challenges state interests, such as the case with NPS and FWS in Alaska. More common is a federal agency sending mixed messages about its authority over wildlife on federal lands, sometimes flexing its muscle, sometimes acquiescing to the states, and sometimes doing everything it can to watch from the sideline. This inconsistency may be why questions about wildlife management on federal lands have resurfaced with such force in recent years.

¹ See *infra* notes 136-153, 382 and accompanying text.

This Article sets the record straight by providing a comprehensive examination of the authority of federal agencies to manage wildlife on federal lands, with the goal of providing a more common understanding amongst federal and state agencies. To help ground the research and make it usable to decision makers and federal land and wildlife managers, the research team consists of three academics (Zellmer, Joly, and Nie) and three consultants (all retired federal employees) having decades of experience working for the United States Department of Agriculture's Office of the General Counsel (Pitt), USFS (Haber, a former planning specialist for the agency), and BLM (Barns, a former wilderness specialist at the Arthur Carhart National Wilderness Training Center).

The Article comes in three parts. Part II begins by providing the context of state wildlife governance. It highlights the core claims and arguments most often made by the states and their representative institutions in conflicts like those described above. It reviews the common assertion that states own wildlife and manage it as a trust resource. From there, the Part reviews common themes in state wildlife laws, decision-making processes, and sources of funding. The North American Model of Wildlife Conservation is then described insofar as it relates to federal lands and conflict over wildlife management. The Model was invoked frequently in the cases we examined, and we explain its relevance in Part II and what we view as its shortcomings in Part IV. Part II closes by summarizing some of the most common complaints and recommendations made by the states, through the Association of Fish and Wildlife Agencies (AFWA), regarding the management of wildlife on federal lands. We do so because of the role played by AFWA in negotiating agreements with federal land agencies.

Part III begins by providing the legal context of wildlife management on federal lands. The constitutional setting comes first, with a review of the United States Constitution's Property Clause, Treaty Clause, Commerce Clause, and the Tenth Amendment. The first Subpart closes by reviewing the doctrine of federal preemption and the use of savings clauses in federal land law. It shows that while states have well-established historical authority over wildlife within their borders, this authority is neither exclusive nor necessarily dominant. As found repeatedly by the courts, the Constitution grants the federal government the authority to manage its lands and resources, fulfill its treaty obligations, and control interstate commerce, even when the states object.

Part III then reviews the federal land laws, regulations, and policies of most significance to the management of wildlife on federal lands. Provisions governing the management of endangered and threatened species, the National Park System, National Wildlife Refuge System, National Forest System, public lands administered by BLM, the special case of Alaska, and the National Wilderness Preservation System are covered in this Subpart. Extra attention is provided to the latter because of the disproportionate amount of conflict and controversy generated by wildlife management in federally designated wilderness. The Subpart shows that federal land agencies have considerable powers and statutory duties to manage wildlife

on federal lands, even if they have chosen not to exercise those powers consistently in the past. Also reviewed in each are agency-specific savings clauses and provisions related to intergovernmental cooperation. Though each statute differs in important ways, all provide the states with meaningful and privileged opportunities to participate in decisions regarding the management of wildlife on federal lands. The savings clauses demonstrate Congress's desire to acknowledge some level of state responsibility over wildlife management, but in no way should these clauses be interpreted to diminish the federal government's vast constitutional and statutory authority to manage its own lands and resources, even when objected to by a state.

Our conclusions, analysis, and recommendations come in Part IV. We begin by explaining that federal land management agencies have an *obligation*, and not just the discretion, to manage and conserve fish and wildlife on federal lands, contrary to the myth that "the states manage wildlife, federal land agencies only manage wildlife habitat." We found this mantra repeated throughout our study, and it was commonly made by state and federal agencies in multiple cases and contexts. We explain the origins of this myth and explain why it is wrong from a legal standpoint and limited from a biological one. The myth must be debunked, not only because it is legally deficient, but also because federal lands are significant reservoirs of biodiversity and will become even more significant in the future due to the rapid pace of development on nonfederal lands.

We next address the common claim that states own wildlife and that such ownership necessarily limits the authority of federal land agencies to manage and make decisions concerning wildlife. We conclude that the states' assertion that they own wildlife—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. It is especially problematic when states assert ownership as a basis to challenge or undermine federal authority over wildlife on federal lands. The states are on solid footing when declaring a "sovereign ownership" of wildlife that must be managed as a public trust resource. But, invoking the public trust as a source of authority is simply not credible without its mirror-image, which is the conservation responsibility for trust resources.

We also explain in Part IV why it is important for the federal government to respond to state assertions of trust ownership by emphasizing that it too has statutory and trust obligations over federal lands, which often encompass the conservation of wildlife. This Subpart concludes by discussing how the all too often adversarial relationship between federal and state governments might be addressed in the future by embracing a more cooperative form of "co-trusteeship" between federal, state, and tribal governments. In moving forward, we also recommend a reexamination of how wildlife is managed and funded at the state level, such as finding a more secure and predictable source of funding for nongame management. We also suggest that advocates of the Model consider the significant role played by federal lands in the conservation of wildlife.

Addressed next are two issues of a more technical nature, both of which figured prominently in the cases reviewed for this research. The first is the United States Department of the Interior's policy statement on federal-state relations in wildlife policy. Some of the provisions found in the policy sow confusion amongst federal and state agencies. Most problematic is how the policy proclaims that states have "primary authority" for management of fish and wildlife on federal lands. We take issue with this misinterpretation of the law, the process used to write it, and explain how it can lead to unnecessary confusion and conflict between federal and state governments.

We then discuss the issue of what happens when federal agencies refuse to take action to protect wildlife on federal lands. This scenario played out in several of the cases reviewed as part of this project, with the distinction being between when the agency has a duty to act and when the agency has the authority to act but the action is discretionary. When a federal agency has a duty to act under a statute, regulation, or other legal requirement, the failure to do so through permit issuance or otherwise warrants an injunction of the non-permitted and non-federal activity.

The issue of wildlife management in the National Wilderness Preservation System is also addressed again in Part IV. We review the Wilderness Act² and its unambiguous affirmative obligation to preserve wilderness character, which includes fish and wildlife species within wilderness areas, and discuss problematic trends where federal agencies have skirted legal obligations in order to accommodate more political demands, often from state interests advancing a view of management that is antithetical to the Wilderness Act.

Part IV concludes by discussing the importance of intergovernmental cooperation in the management of wildlife on federal lands. Multiple opportunities for cooperation already exist in federal decision-making and planning processes, but they are not used to their full potential. We found that states too often view such opportunities not as a way to meaningfully inform federal decision making, but as a political platform to challenge federal authority. As we see it, intergovernmental cooperation is a two-way street, and while federal agencies must provide opportunities for state participation in federal planning processes, the states should reciprocate by providing opportunities for federal entities to participate meaningfully in state wildlife management decision making and, in appropriate cases, to influence the resolution of issues related to wildlife conservation.

To make the research accessible to those who need it most, the Article is accompanied by a set of frequently asked questions that will be available online.³ This resource enables users to find succinct answers to their questions with linkages to the most relevant parts of the Article for additional information.

² 16 U.S.C. §§ 1131–1136 (2012).

³ *Federal Lands & Wildlife*, U. MONT., <http://www.cfc.umt.edu/bolle/federal-lands-wildlife> (last visited Nov. 11, 2017) (FAQs currently under construction).

II. STATE MANAGEMENT CONTEXT AND STATE PERSPECTIVES ON MANAGING WILDLIFE ON FEDERAL LANDS

This Part provides some initial background on state wildlife law and governance. Common state perspectives on wildlife ownership, the wildlife trust, state wildlife commissions, funding, and the North American Model of Wildlife Conservation are reviewed insofar as they pertain to intergovernmental conflict. These issues emerged frequently in several of the disputes we examined. The Part reviews some of the most common claims and arguments made by state wildlife agencies and their representative institutions. Of course, there is no singular state wildlife agency perspective, and readers should appreciate the diversity found amongst the states. To simplify, we emphasize the views and position of AFWA. AFWA represents North America's state fish and wildlife agencies and is a principle actor in the debate over wildlife management on federal lands.⁴ Particular emphasis is placed on AFWA because of its role in negotiating agreements with federal land agencies. We take issue with some of the positions and arguments, as explained below in this Part, and we return to some of the more substantive issues in subsequent Parts of the Article.

A. State Ownership and the Wildlife Trust

Forty-eight states claim sovereign ownership of wildlife.⁵ Sovereign ownership differs from proprietary ownership in that it is constrained by the public interest with the requirement that wildlife be managed for the greater good and the benefit of the public.⁶ Most often referenced by the states in this context is *Geer v. Connecticut*,⁷ in which the Supreme Court of the United States recognized the common state ownership of wildlife and that this power is to be exercised "as a trust for the benefit of the people, and not as a prerogative for the advantage of the government, as distinct from the people, or for the benefit or private individuals as distinguished from the public good."⁸ As we discuss in Part III.A, the Supreme Court subsequently overruled *Geer* in *Hughes v. Oklahoma*, but did so in the context of federal laws preempting state laws (based on claims of state ownership).⁹ States, in

⁴ See *About: Overview*, ASS'N FISH & WILDLIFE AGENCIES, <https://perma.cc/A2ZW-GQSP> (last visited Nov. 11, 2017).

⁵ Michael C. Blum & Aurora Paulsen, *The Public Trust in Wildlife*, 6 UTAH L. REV. 1437, 1462, 1488-1504 (2013).

⁶ *Id.* at 1466-67.

⁷ 161 U.S. 519 (1896), overruled by *Hughes v. Oklahoma*, 441 U.S. 322 (1979).

⁸ *Id.* at 529. AFWA considers *Geer* as "provid[ing] the single strongest statement of state public trust ownership of fish and wildlife in the Court's jurisprudence." Brief for Ass'n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners at 11, *Wisconsin v. Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wis.*, 135 S. Ct. 1842 (2015) (No. 14-792), 2015 WL 527525, at *11. *Geer* traces the idea to *Martin v. Waddell's Lessee*, 41 U.S. (16 Pet.) 367 (1842). *Geer*, 161 U.S. at 529.

⁹ *Hughes*, 441 U.S. 325-26. The erosion of *Geer* began with *Missouri v. Holland*, 252 U.S. 416 (1920). There, the Court upheld the constitutionality of the Migratory Bird Treaty Act and

other words, cannot discriminate against interstate commerce based on claims of state ownership of wildlife.¹⁰ The general rule adopted in *Hughes* “makes ample allowance for preserving, in ways not inconsistent with the Commerce Clause, the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership.”¹¹

Assertions of sovereign ownership provide the basis for states claiming a “public trust” in wildlife. In their analysis, Blumm and Paulsen find that “courts and legislatures in at least twenty-two states have expressly employed the words ‘trust’ or ‘trustee’ when discussing state management of wildlife” and that “courts and legislatures of at least twenty-two other states use trust-like language . . . in proclaiming state ownership of wildlife.”¹² The public trust in wildlife is most often invoked by states when declaring broad power and authority to regulate fish and wildlife resources.¹³ Less clear is what affirmative conservation duties go along with this trust responsibility. In other words, what must states do, and not do, in order to meet the responsibilities of the wildlife trust?¹⁴ There is relatively little case law on this matter, and states have generally done little to fill in the details.¹⁵ As is the case with the public trust doctrine more broadly, there are many unanswered questions about the exact parameters and possible applications of a “wildlife trust,” if the term is to be taken literally.¹⁶ But for purposes

rejected state claims of “exclusive authority” to manage wildlife under the state ownership doctrine. *Id.* at 434. As eloquently stated by the Court: “the state may regulate the killing and sale of such birds, but it does not follow that its authority is exclusive of paramount powers. To put the claim of the State upon title is to lean upon a slender reed.” *Id.*; see *infra* notes 187–190 and accompanying text.

¹⁰ *Hughes*, 441 U.S. at 335.

¹¹ *Id.* at 335–36.

¹² Blumm & Paulsen, *supra* note 5, at 1471, 1473. “Of the fifty states, only Nevada and Utah have yet to make some acknowledgement of the public trust in wildlife.” *Id.* at 1477. Similarly, AFWA emphasizes that “[s]tates, as public trustees, hold wildlife in trust for their citizens.” Brief for Ass’n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners, *supra* note 8, at 10.

¹³ Blumm & Paulsen, *supra* note 5, at 1466, 1471–73.

¹⁴ See generally Susan Morath Horner, *Embryo, Not Fossil: Breathing Life Into the Public Trust in Wildlife*, 35 LAND & WATER L. REV. 23, 24 (2000) (“[P]ractitioners have not been left with any clear authority either as to the resources to which the doctrine should apply, or its necessary features.”); Gary D. Meyers, *Variation on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife*, 19 ENVTL. L. 723, 733 (1989) (“Professor Stone’s proposal focuses on the practical aspects of such a change, namely that natural objects would be recognized at law, could institute—through a guardian—legal action to prevent or redress harm to the natural objects, and receive direct injunctive or monetary relief.”); Patrick Redmond, *The Public Trust in Wildlife: Two Steps Forward, Two Steps Back*, 49 NAT. RESOURCES J. 249, 253 (2009) (“This distinction between proscriptive authority and affirmative duties has evoked numerous subtle philosophical and ethical discussions of the difference between a purely regulatory relationship between the state and its natural resources and a more trust-oriented relationship based on a stewardship ethic or ‘duty-based environmentalism.’”).

¹⁵ See Blumm & Paulsen, *supra* note 5, at 1471; Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past and Charting Its Future*, 45 U.C. DAVIS L. REV. 665, 678 (2012); see also discussion *infra* Part IV.B.1.

¹⁶ Horner, *supra* note 14, at 25.

here, it is enough to note how the open-ended nature and ambiguity of the wildlife trust doctrine is used by the states to assert jurisdictional powers and control over wildlife. We return to the important issues of wildlife ownership and trust management in Part IV.A.2.

B. State Wildlife Laws, Decision Making, and Funding

State wildlife agencies implement their wildlife trust duties through an array of state wildlife laws and regulations. Some of the most common categories found in state codes pertain to protected species, hunting, fishing and trapping, animal damage control, habitat protection, tribal provisions, law enforcement, and hunter-harassment interference.¹⁷ Twenty-one states also have "right to hunt" constitutional provisions.¹⁸ These vary in terms of substance and effect.¹⁹

Some simply recognize a hunting heritage in a state²⁰ and the opportunity to harvest wild fish and game subject to state law and regulation,²¹ while others create more explicit rights that are nonetheless subject to state management.²² All but one of these amendments (Vermont's) passed since the mid-1990s, and collectively, they reflect some fear that state hunting traditions are under threat.²³ As we discuss below, they also signify the importance of hunting to state wildlife management.

While state fish and wildlife agencies are structured in numerous ways, a commonality that most share is that the director or head of the agency is responsible to some sort of politically appointed fish and wildlife commission, board, or advisory council.²⁴ The powers granted to state wildlife commissions vary, from setting fish and game seasons and bag limits

¹⁷ See RUTH S. MUSGRAVE & MARY ANNE STEIN, CTR. FOR WILDLIFE LAW, STATE WILDLIFE LAWS HANDBOOK 14, 18 (1993); see also *Animal Legal and Historical Center Web Site*, MICH. ST. U., <https://perma.cc/4EUU-D9VX> (last visited Nov. 11, 2017) (providing searchable database of hunter harassment and interference laws).

¹⁸ See *State Constitutional Right to Hunt and Fish*, NAT'L CONF. ST. LEGISLATURES (Apr. 20, 2017), <https://perma.cc/W53P-J3QQ>.

¹⁹ See generally Stacey L. Gordon, *A Solution in Search of a Problem: The Difficulty with State Constitutional "Right to Hunt" Amendments*, 35 PUB. LAND & RESOURCES L. REV. 3 (2014) (discussing the different state constitutions that guarantee a right to hunt.).

²⁰ See, e.g., MONT. CONST. art. IX, § 7 ("The opportunity to harvest wild fish and wild game animals is a heritage that shall forever be preserved to the individual citizens of the state and does not create a right to trespass on private property or diminution of other private rights.").

²¹ See, e.g., WYO. CONST. art. I, § 39 ("The opportunity to fish, hunt and trap wildlife is a heritage that shall forever be preserved to the individual citizens of the state, subject to regulation as prescribed by law, and does not create a right to trespass on private property, diminish other private rights or alter the duty of the state to manage wildlife.").

²² See, e.g., VA. CONST. art. XI, § 4 ("The people have a right to hunt, fish, and harvest game, subject to such regulations and restrictions as the General Assembly may prescribe by general law").

²³ *State Constitutional Right to Hunt and Fish*, *supra* note 18.

²⁴ See Martin Nie, *State Wildlife Policy and Management: The Scope and Bias of Political Conflict*, 64 PUB. ADMIN. REV. 221, 222 (2004).

to charting broader management goals and objectives for the states.²⁵ Members are typically appointed by the governor and subject to state legislative approval.²⁶ Most states also have requirements for commission membership, such as a general knowledge of wildlife issues, political and geographic balance, or requiring that they hold a sporting license.²⁷ The commission framework stems from sport hunters and conservationists wanting to secure their hard-fought protections for fish and game; thus, commissions were created so that sport hunters had a voice in preventing a return of widespread market hunting.²⁸ More recently, however, state wildlife commissions have been criticized, mostly because some interests believe that their memberships do not adequately represent the diverse values and interests of those people who do not hunt, fish, or trap.²⁹

Funding for state wildlife management generally comes from the sale of hunting, fishing, and trapping licenses at the state level and from federal funds generated through targeted excise taxes.³⁰ The result is that hunting, fishing, and trapping-derived revenue "comprise between 60 and 90 percent of the typical state fish and wildlife agency budget."³¹ This arrangement is often referred to as a "user-pay, user-benefit" funding model because states apply most of these funds to the management of sport fish and game species.³² This funding mechanism serves to reinforce the complaint of non-hunters that their values and interests are not adequately considered in management decisions.³³ As we discuss below, this funding model helps us better understand the position of states in some intergovernmental disputes, as decisions made by federal land agencies can have implications for state wildlife agency budgets that are so dependent on fish and game-generated revenue.³⁴

Another initial observation is that the "user-pay, user-benefit" moniker is more complicated than generally stated. A case can be made, for example, that taxpayers, including the non-hunting and non-fishing public, do indeed pay for wildlife *conservation* through the acquisition and management of wildlife *habitat*, both public and private.³⁵ This takes the form of funding for federal lands, state lands, and contributions to private land conservation.³⁶

²⁵ See, e.g., ERIN SEILER, OR. LEGISLATIVE COMM. SERVS., EXECUTIVE APPOINTMENTS LEGISLATIVE REVIEW (2016), <https://perma.cc/FKC9-VUJJ>.

²⁶ See, e.g., *id.*

²⁷ See, e.g., *id.*

²⁸ See JOHN F. REIGER, AMERICAN SPORTSMEN AND THE ORIGINS OF CONSERVATION 80 (3d ed. 2001).

²⁹ Nie, *supra* note 24, at 223.

³⁰ *Id.*

³¹ J.F. ORGAN ET AL., THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION: TECHNICAL REVIEW 12-04, at 9 (Theodore A. Bookhout ed., 2012), <https://perma.cc/68VB-FJ7F>.

³² See *id.*

³³ See Nie, *supra* note 24, at 223–24.

³⁴ See ORGAN ET AL., *supra* note 31, at 10 (providing examples of federal agency influence on funding).

³⁵ See *id.* at 27 (explaining contributions of public and private land management to habitat conservation).

³⁶ See *id.*

But in more precise terms of funding wildlife *management* and state wildlife agencies, the user-pay, user-benefit model is less disputed.

The history of the user-pay, user-benefit funding model illustrates the cooperative relationship between federal and state governments in the management of wildlife. Prior to 1937, many states regularly diverted game license revenue to general governmental purposes, other than fish and wildlife management.³⁷ The Pittman-Robertson Wildlife Restoration Act,³⁸ more commonly known as the Federal Aid in Wildlife Restoration Act, put an end to this practice.³⁹ The program put in place by the Act provides federal assistance to states for wildlife restoration projects and plans and hunter education.⁴⁰ In order to secure a more certain and predictable stream of funding for wildlife, the Act (and subsequent amendments to it) created a fund from taxes imposed on firearms, ammunition, and archery equipment.⁴¹ However, in order to receive federal funding, the law requires states to prohibit "the diversion of license fees paid by hunters for any other purpose than the administration of [the] State fish and game department."⁴² In other words, the law conditions federal funding on states using state game license revenue for wildlife management and conservation.

A similar program focused on fisheries emerged from Congress in 1950. The Dingell-Johnson Sport Fish Restoration Act,⁴³ also referred to as the Federal Aid in Fish Restoration Act, funds sport fish restoration through excise taxes on fishing equipment, motorboat/small engine fuel, and baits.⁴⁴ It similarly includes a predicate for federal funding: states receiving Dingell-Johnson money must apply it to the administration of state fish and game departments.⁴⁵ Funding is used for fish restoration and management projects, defined in the law as "the restoration and management of all species of fish which have material value in connection with sport or recreation in the marine and/or fresh waters of the United States."⁴⁶

The Pittman-Robertson and Dingell-Johnson Acts primarily focus on sport fish and game species. State funding for nongame species has not fared as well. Congress addressed this issue in passing the Fish and Wildlife Conservation Act of 1980.⁴⁷ Frequently referred to as the "Non-Game Act," this law recognizes that the traditional focus on "recreationally and

³⁷ See Hal Herring, *In Current Rush to Buy Guns and Ammo, Pittman-Robertson Funds Break All Records*, FIELD & STREAM (May 9, 2013), <https://perma.cc/DV5X-889Y>.

³⁸ 16 U.S.C. §§ 669–669i (2012).

³⁹ See *id.* § 669.

⁴⁰ *Id.* §§ 669b, 669c, 669h–1.

⁴¹ See M. LYNNE CORN & JANE G. GRAVELLE, CONG. RESEARCH SERV., R42992, GUNS, EXCISE TAXES, AND WILDLIFE RESTORATION 2 fig.1 (2013) (providing yearly data of Pittman-Robertson receipts and distributions).

⁴² 16 U.S.C. § 669.

⁴³ *Id.* §§ 777–777m.

⁴⁴ *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service: Federal Aid in Sport Fish Restoration Act*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/UG7W-QUMS> (last visited Nov. 11, 2017).

⁴⁵ 16 U.S.C. § 777(a).

⁴⁶ *Id.* § 777a(1).

⁴⁷ *Id.* §§ 2901–2912.

commercially important species” and “traditional financing mechanisms are neither adequate nor fully appropriate to meet the conservation needs of nongame fish and wildlife.”⁴⁸ The purpose of the Act is to fix this problem by providing “financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife.”⁴⁹ Promise notwithstanding, this law never achieved its stated purpose because unlike the Pittman-Robertson and Dingell-Johnson Acts, it does not include an independent and more secure funding mechanism.⁵⁰ Instead, the law relied on funding from general congressional appropriations, which to date, Congress never provided to the program.⁵¹

Several initiatives have been waged in the past, at both national⁵² and state⁵³ levels, to deal with the lack of funding for nongame species management, and a related campaign is currently underway.⁵⁴ AFWA is part of a broad coalition seeking a solution to the problem of nongame funding.⁵⁵ We return to this issue in Part IV, as we believe it is imperative that states have the capacity and incentives to manage nongame species. Providing these resources will build trust and capacity at the state level, and help harmonize federal-state responsibilities over wildlife on federal lands.

C. The North American Model of Wildlife Conservation

The North American Model of Wildlife Conservation figures prominently in state claims and positions regarding wildlife management on federal lands. The Model was formally adopted by AFWA in 2002, and it views the Model (along with the public trust doctrine) as “the basis for state wildlife law.”⁵⁶ While the Model has no independent legal authority, it is referenced extensively in AFWA’s legal and educational materials, and is

⁴⁸ *Id.* § 2901(a)(4).

⁴⁹ *Id.* § 2901(b)(1).

⁵⁰ Removing Regulations Implementing the Fish and Wildlife Conservation Act, 75 Fed. Reg. 51,420, 51,420–21 (Aug. 20, 2010) (to be codified at 50 C.F.R. pt. 83).

⁵¹ See *id.* at 51,420 (removing regulations that implement the Fish and Wildlife Conservation Act because “funds never became available to carry out the Act”).

⁵² One of the more memorable campaigns was the unsuccessful effort in passing the Conservation and Reinvestment Act (CARA) of 2000. H.R. 701, 106th Cong. (2000).

⁵³ See Cindy McKinney et al., *Investing in Wildlife: State Wildlife Funding Campaigns* 20 fig.1 (Apr. 2005) (unpublished M.S. thesis, University of Michigan), <https://perma.cc/NSG4-TPD2>.

⁵⁴ See generally ASS’N OF FISH & WILDLIFE AGENCIES, *SUSTAINING AND CONNECTING PEOPLE TO FISH AND WILDLIFE: A LOOMING CRISIS CAN BE AVOIDED*, <https://perma.cc/BH9H-Z4NN> (last visited Nov. 11, 2017) (discussing incomplete fish and wildlife funding).

⁵⁵ *Id.*

⁵⁶ ASS’N OF FISH & WILDLIFE AGENCIES, *WILDLIFE MANAGEMENT AUTHORITY: THE STATE AGENCIES’ PERSPECTIVE* 13 (2014), <https://perma.cc/CR2T-U8A2> [hereinafter AFWA TASK FORCE REPORT]; *About: North American Model of Wildlife Conservation*, ASS’N FISH & WILDLIFE AGENCIES, <https://perma.cc/NE8Q-38ZM> (last visited Nov. 11, 2017).

also invoked frequently by state wildlife agencies and other institutions.⁵⁷ While it is beyond the scope of this Article to provide a thorough accounting and analysis of the Model, it plays a significant role in how states frequently frame issues and view their political and legal authority over wildlife.⁵⁸ We discuss the Model again in Part IV.B.2 by explaining how it can exacerbate conflict between federal and state governments.

First articulated by University of Calgary biologist Valerius Geist in the mid-1990s, the Model is a set of seven broadly stated principles, which include the following: 1) wildlife resources are a public trust; 2) markets for game are eliminated; 3) allocation of wildlife is by law; 4) wildlife can be killed only for a legitimate purpose; 5) wildlife is considered an international resource; 6) science is the proper tool to discharge wildlife policy; and 7) democracy of hunting is standard.⁵⁹

Embedded within each principle is a descriptive-historical accounting of wildlife conservation and a more normative-prescriptive component. The Model places extraordinary emphasis on the role played by hunters in American wildlife conservation, while paying relatively little regard to the preservation movement or the role played by federal lands and federal environmental law more generally.⁶⁰ Conspicuously missing from the Model, for example, is a principle focused on wildlife habitat, of which federal lands would be of obvious significance.

The normative and prescriptive part of the Model is more difficult to assess because of how differently actors interpret and use it. Some proponents of the Model, for example, claim that it "has often been interpreted to be more than its original articulators' intention to describe key components of the philosophy and approach to wildlife conservation that developed in North America."⁶¹ Critics of the Model, by contrast, see it as more than just a description of the past but rather as a narrow set of guiding principles for future wildlife conservation.⁶² This is because most references

⁵⁷ See, e.g., ARIZ. GAME & FISH DEPT., NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/Z2XW-X2X3> (last visited Nov. 11, 2017) ("The North American Model of Wildlife Conservation is the world's most successful."); WILDLIFE SOC'Y, STANDING POSITION: THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/R4U9-6LBV> (last visited Nov. 11, 2017) (explaining that the policy of The Wildlife Society is to "[p]romote and support adherence to the seven core components [of the Model], identified by the Society, as the bedrock of the Model, by state, provincial, and federal governments").

⁵⁸ See generally David Wilms & Anne Alexander, *The North American Model of Wildlife Conservation in Wyoming: Understanding It, Preserving It, and Funding Its Future*, 14 WYO. L. REV. 659 (2014).

⁵⁹ Valerius Geist et al., *Why Hunting Has Defined the North American Model of Wildlife Conservation*, in TRANSACTIONS OF THE 66TH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 175, 176-80 (2001), <https://perma.cc/C63S-CTCS> (citing earlier references and antecedents to the Model).

⁶⁰ See *id.*

⁶¹ John F. Organ et al., *Public Trust Principles and Trust Administration Functions in the North American Model of Wildlife Conservation: Contributions of Human Dimensions Research*, 19 HUM. DIMENSIONS WILDLIFE 407, 408 (2014).

⁶² See Susan G. Clark & Christina Milloy, *The North American Model of Wildlife Conservation: An Analysis of Challenges and Adaptive Options*, in LARGE CARNIVORE CONSERVATION: INTEGRATING SCIENCE AND POLICY IN THE NORTH AMERICAN WEST 289, 301 (Susan

to the Model, as discussed further below, go beyond description and use it to justify various positions or decisions made by state wildlife agencies.⁶³ Clark and Milloy summarize: “Functionally, the model’s doctrine (principles) and formula (rules to implement the doctrine) guide current decision making about wildlife; they dictate how decisions are made, by whom, and for what purposes.”⁶⁴ What is striking to us about the Model is how little academic and professional scrutiny has been applied to it, as it is clearly but one possible accounting of wildlife conservation—past, present, and future.

Whatever might be its strengths and limitations, the Model clearly has political and policy influence, and helps us understand state positions on wildlife management, though often indirectly. Of most relevance here is the Model’s emphasis on the public trust doctrine, state primacy, and the importance of hunting to wildlife conservation. The public trust doctrine, as applied to wildlife, is regarded as the Model’s cornerstone.⁶⁵ Asserting that public trust principles relating to wildlife are most clearly found in state law, AFWA references the Model to “[a]dvocate for the primacy of state management authority for resident wildlife.”⁶⁶ Again, AFWA’s emphasis is that states have authority to manage fish and wildlife resources through a public trust and that it “assigns trustee ownership of fish and wildlife to the states.”⁶⁷ Access to public resources is commonly asserted in public trust cases (e.g., to oysters, tidelands, or streams), and state wildlife agencies and AFWA make similar linkages between states owning wildlife in trust, which necessitates providing public access to fish and wildlife.⁶⁸ We return to the public trust in wildlife issue in Part IV.A.2.

Also of relevance is the Model’s emphasis on hunting. As explained by the Model’s originators, though other interest groups such as bird enthusiasts played roles in the conservation movement, “[i]t is hunters, however, or, more accurately, *hunting*, that led to development of the [Model’s principles and] form[s] the foundation for North American wildlife

G. Clark & Murray B. Rutherford eds., 2014) (questioning “whether the model is capable of conserving wildlife and ecosystems into the future without major adaptations”); see also Michael P. Nelson et al., *An Inadequate Construct? North American Model: What’s Flawed, What’s Missing, What’s Needed*, WILDLIFE PROF., Summer 2011, at 58, 58 (arguing that “the rise in the Model’s popularity is worrisome in both its descriptive and prescriptive modes: One rests upon an inadequate account of history and the other on an inadequate ethic”).

⁶³ See, e.g., *infra* note 66 and accompanying text; see also discussion *infra* Part II.D.

⁶⁴ Clark & Milloy, *supra* note 62, at 312.

⁶⁵ See Organ et al., *supra* note 61, at 408; see also WILDLIFE SOC’Y, THE PUBLIC TRUST DOCTRINE: IMPLICATIONS FOR WILDLIFE MANAGEMENT AND CONSERVATION IN THE UNITED STATES AND CANADA 9 (2010), <https://perma.cc/5N5W-KG2S>.

⁶⁶ M. CAROL BAMBERY & MARTIN BUSHMAN, ASS’N OF FISH & WILDLIFE AGENCIES, THE STATES: TRUSTEES OF AMERICA’S WILDLIFE 13 (on file with authors).

⁶⁷ *Federal Interactions with State Management of Fish and Wildlife: Hearing Before the Subcomm. on Fisheries, Water, and Wildlife of the S. Comm. on Environment and Public Works*, 114th Cong. 9 (2016) [hereinafter *Hearing*] (statement of Ronald J. Regan, Executive Director, Association of Fish and Wildlife Agencies).

⁶⁸ See WILDLIFE SOC’Y, *supra* note 65, at 9 (emphasizing the importance of access to the public trust doctrine, including fishing, hunting, trapping, and travel routes).

conservation.”⁶⁹ AFWA similarly states that “[h]unting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation.”⁷⁰ In this vein, proponents of the Model often speak to the importance of sportsmen and women-derived funds to state fish and wildlife agency budgets.⁷¹ This is not to suggest, however, that all proponents of the Model are necessarily endorsing an exclusive “user-pay, user-benefit” model of funding for the future. In fact, some proponents are actively searching for ways to increase funding for nongame species and want the Model applied to the conservation of biodiversity more broadly.⁷² However malleable the Model may prove itself to be in the future, at this point, it is very much hunting-centric, and this helps explain a common position of the states in various disputes, such as when federal agencies make decisions to restrict types of hunter access or when states advocate for more “active management” of wildlife on federal lands.⁷³

D. The 2014 AFWA Task Force Report

In 2014, AFWA commissioned a task force to investigate how state wildlife agency directors “perceive the relationship between state and federal agencies, by determining the relationship’s implications on states’ authority to manage wildlife, and by making recommendations to strengthen the relationship between state and federal conservation agencies.”⁷⁴ The Task Force Report illuminates how several state directors view the relationship between federal and state governments and the perceived legal sources of tension. Furthermore, many of the recommendations made by the Task Force are made by AFWA in other contexts, and the document was approved by state membership.⁷⁵

The report begins by invoking the North American Model of Wildlife Conservation, the wildlife trust doctrine, and the Tenth Amendment of the

⁶⁹ Geist et al., *supra* note 59, at 179; see also James R. Heffelfinger et al., *The Role of Hunting in North American Wildlife Conservation*, 70 INT’L J. ENVTL. STUD. 399, 399 (2013) (“Regulated hunting is the foundation of the North American Model of Wildlife Conservation.”).

⁷⁰ *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷¹ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 30; *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷² See, e.g., Organ et al., *supra* note 61, at 408 (recommending that all wildlife be managed under the principles of the Model and that it is not synonymous with the user-pay, user-benefit funding model); Willms & Alexander, *supra* note 58, at 659–61 (recommending alternative funding sources for wildlife management).

⁷³ For example, AFWA states that the Model “is the world’s most successful system of policies and laws to restore and safeguard fish and wildlife and their habitats through sound science and active management.” *About: North American Model of Wildlife Conservation*, *supra* note 56 (emphasis added); see also Joanna Prukop & Ronald J. Regan, *In My Opinion: The Value of the North American Model of Wildlife Conservation—An International Association of Fish and Wildlife Agencies Position*, 33 WILDLIFE SOC’Y BULL. 374, 376 (2005) (linking the Model to the importance of state primacy and the issue of access to wildlife resources).

⁷⁴ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁷⁵ See *Hearing*, *supra* note 67, at 60–61 (statement of Executive Director Regan).

U.S. Constitution, which it asserts, "relegates to the states the responsibility of managing wildlife."⁷⁶ To make the Model work, says the report, "[a] productive relationship between federal and state agencies" is necessary.⁷⁷ Unfortunately, the report finds that "[s]tate wildlife agency leadership harbors growing concern about the increasingly strained relationship between state wildlife agencies and their federal partners" and that there is "considerable and widespread frustration with the interface between federal and state efforts to conserve wildlife."⁷⁸

Survey respondents were asked to identify specific laws, regulations, or policies that they believed were successful or challenging.⁷⁹ Most frequently identified as a challenge to the states was the Endangered Species Act⁸⁰ (ESA), which is perceived by some state agency directors "as a vehicle for federal overreach, or of inappropriate reallocation of states' wildlife management duties into federal hands."⁸¹ Also standing out in the survey were respondents citing the National Environmental Policy Act⁸² (NEPA) as a "hindrance to states' efforts to manage wildlife"⁸³ due to threats of NEPA-based litigation and the "continued exclusion of states from meaningful partnerships in planning, decision-making, and management, except in the most cursory of consultative efforts."⁸⁴

Of relevance to Part III.B of this Article are some state views on federal land laws in general. Emphasized in the report are the perceived problems associated with the open-ended nature of federal land laws that are believed to be interpreted in a preservationist "hands-off" fashion that makes active management of wildlife more difficult.⁸⁵ The task force report summarizes:

These laws leave room for loose interpretations of land management agency authority. The ambiguity allows local land managers latitude in their decision-making, and they often implement preservationist interpretations that encroach on state authorities. These interpretations, often based on unwritten values, drive agency decisions that are typically contrary to principles of wildlife, fisheries, and habitat management critical for state management.⁸⁶

The Federal Land Policy Management Act⁸⁷ (FLPMA) and the National Forest Management Act⁸⁸ (NFMA) are discussed in this context, with both

⁷⁶ AFWA TASK FORCE REPORT, *supra* note 56, at 5.

⁷⁷ *Id.* at 2, 4.

⁷⁸ *Id.* at 2.

⁷⁹ *Id.* at 6.

⁸⁰ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2012).

⁸¹ AFWA TASK FORCE REPORT, *supra* note 56, at 2, 8.

⁸² National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4370h (2012).

⁸³ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁸⁴ *Id.* at 11.

⁸⁵ *Id.* at 9.

⁸⁶ *Id.*

⁸⁷ Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701–1787 (2012).

⁸⁸ National Forest Management Act of 1976, 16 U.S.C. §§ 472a, 521b, 1600, 1611–1614 (2012) (amending Forest and Rangeland Renewable Resources Planning Act of 1974, Pub. L. No. 93-378, 88 Stat. 476).

laws often viewed as presenting obstacles to the management of "state trust species."⁸⁹ These laws were not identified as inherently problematic, rather respondents focused on the "subjective and inconsistent application of their precepts."⁹⁰

The AFWA Task Force makes a number of recommendations for improving relations between federal and state governments, most of which revolve around strengthening the position of state agencies in managing wildlife on federal lands.⁹¹ It also initiated a "legal strategy" in 2013 to enable state agencies "to act in concert to address challenges to their statutory authority to manage wildlife."⁹² In short, AFWA aims to clarify—in law, regulation, policy, and public perception—what it sees as the rightful role of the states in managing wildlife on federal lands. Some of these recommendations are offered by AFWA and the Western Association of Fish and Wildlife Agencies (WAFWA) in other contexts,⁹³ such as recent congressional testimony.⁹⁴ For now, we simply summarize the core recommendations of the Task Force and provide the requisite background in other parts of the Article. We return and respond to AFWA's recommendations in Part IV.

The AFWA Task Force begins by recommending training state and federal line managers "on the historic, principled underpinnings of state-federal authority and jurisdiction for managing fish and wildlife in the United States."⁹⁵ The proposed training initiative is to be implemented through a Memorandum of Understanding (MOU).⁹⁶ A public affairs strategy "to market and defend state wildlife authority interests" is also envisioned as part of this educational effort.⁹⁷ Establishing a mediation team to more constructively resolve conflict between federal and state agencies is also recommended.⁹⁸

Driving some of the Task Force's recommendations is a concern that federal land agencies are evolving in a way that is inconsistent with their organic legislation.⁹⁹ According to the Task Force, "[a]s conservation becomes more focused on landscape scale efforts, it is important that federal agencies integrate their conservation programs with the state agency

⁸⁹ AFWA TASK REPORT, *supra* note 56, at 9, 12.

⁹⁰ *Id.* at 2.

⁹¹ See *infra* notes 95–107 and accompanying text.

⁹² ASS'N OF FISH & WILDLIFE AGENCIES, PROTECTING STATE AUTHORITY FOR FISH AND WILDLIFE MANAGEMENT, <https://perma.cc/M3RG-8QEM> (last visited Nov. 11, 2017).

⁹³ See, e.g., W. ASS'N OF FISH & WILDLIFE AGENCIES COMM'RS' STATE AUTH. SUBCOMM., WHITE PAPER: WILDLIFE MANAGEMENT SUBSIDIARITY 4 (2011) ("WAFWA recommends that Congress adopt new provisions that clearly establish state fish and wildlife management authority and direct that all federal regulations and policies be consistent with congressional intent.").

⁹⁴ See *Hearing*, *supra* note 67, at 5–7 (statement of Executive Director Regan).

⁹⁵ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

⁹⁶ *Id.*

⁹⁷ *Id.* at 29.

⁹⁸ *Id.* at 28–29.

⁹⁹ See, e.g., *id.* at 21 ("The [FWF's] shift in focus has changed from direct fish and wildlife management with the protection and restoration of either single species or population to the maintenance of ecosystems and biodiversity.").

programs and not get out ahead of the states and the public we serve.”¹⁰⁰ The Task Force elaborates:

[W]e must remember that the foundation for our fish and wildlife programs continues to be the people who enjoy our sports and continue to pay the lion's share of the costs that provide these services. Many state fish and wildlife programs across our nation do not receive either state or federal general appropriations and as such must answer to a narrow constituency of supporters.¹⁰¹

This concern leads to the Task Force recommending more substantive legislative changes. The first is to modify the Sikes Act¹⁰² so that management by the Departments of the Interior and Agriculture comport with the law's section pertaining to fish and wildlife management on lands administered by the Department of Defense.¹⁰³ This law, often referred to as the “Sikes Act Extension,” requires the Secretaries of Interior and Agriculture to “plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game.”¹⁰⁴ The military section of the Sikes Act requires the cooperative preparation of natural resource management plans and that these plans “shall reflect the mutual agreement of the [federal and state] parties concerning conservation, protection, and management of fish and wildlife resources.”¹⁰⁵ There is no such language in the law pertaining to “mutual agreement” in the sections pertaining to the Departments of the Interior and Agriculture.¹⁰⁶ The Task Force would like the statute changed to include the following language: “The conservation plans and resulting programs shall reflect the mutual

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² 16 U.S.C. §§ 670–670m (2012).

¹⁰³ *Id.* §§ 670f–670h; AFWA TASK FORCE REPORT, *supra* note 56, at 22.

¹⁰⁴ 16 U.S.C. § 670g(a).

¹⁰⁵ *Id.* § 670a(a)(2).

¹⁰⁶ Instead, the Sikes Act makes clear:

Conservation and rehabilitation programs developed and implemented pursuant to this subchapter shall be deemed as *supplemental* to wildlife, fish, and game-related programs conducted by the Secretary of the Interior and the Secretary of Agriculture pursuant to other provisions of law. Nothing in this subchapter shall be construed as limiting the authority of the Secretary of the Interior or the Secretary of Agriculture, as the case may be, to manage the national forests or other public lands for wildlife and fish and other purposes in accordance with the Multiple-Use Sustained-Yield Act of 1960 or other applicable authority.

Id. § 670h(c)(1)(C) (emphasis added) (citation omitted). Furthermore, any wildlife conservation and rehabilitation plans prepared pursuant to the Sikes Act must be consistent with applicable USFS or BLM land management plans. *See id.* § 670h(b); *see also* Michael J. Bean, *The Developing Law of Wildlife Conservation on the National Forest and National Resource Lands*, 4 J. CONTEMP. L. 58, 65 (1977) (finding the Sikes Act Extension to offer “no resolution, indeed no guidance for the resolution, of conflicts involving wildlife conservation and other uses of the public lands” and that “it does nothing to narrow the broad discretion which the federal land management agencies have traditionally exercised in fulfilling their multiple use mandates”).

agreement of the parties concerning conservation, protection, and management of fish and wildlife resources."¹⁰⁷

As we explain later, federal land laws often include a "savings" clause addressing the relationship between federal and state powers.¹⁰⁸ AFWA emphasizes the importance of these provisions and makes a recommendation to "[s]trengthen existing Savings Clauses, expand new Savings Clauses to new congressional legislation as opportunities arise, and vigorously defend savings clauses to establish legal precedent."¹⁰⁹

The Task Force expresses frustration in how the courts have viewed wildlife savings clauses in the past, most notably in the case of managing wildlife in the National Elk Refuge in Wyoming.¹¹⁰ As AFWA sees it, these savings clauses should be viewed as unambiguous and represent the clear intention of Congress to "reserve" state power and authority over wildlife on federal lands as "a necessary incident of state sovereignty."¹¹¹ To fix this problem, the Task Force recommends replacing existing savings provisions with the following language:

Nothing in the Act shall be construed as affecting or intending to interfere with the laws of the several states to regulate hunting and fishing or to supersede, abrogate or otherwise impair the state's primary jurisdiction to manage or control fish and resident wildlife in a manner not inconsistent with the purpose of this Act. The Secretary, in carrying out this Act, shall proceed in conformity with such applicable state laws, policies and management plans and shall cooperate with the states and develop jointly agreed upon wildlife management plans.¹¹²

This proposal is a fundamental reinterpretation of existing wildlife law, and we explain why it should be rejected in Part IV. We discuss savings clauses again in the context of federal preemption and in each section reviewing federal land laws.

¹⁰⁷ AFWA TASK FORCE REPORT, *supra* note 56, at 23.

¹⁰⁸ See Robert L. Fischman & Angela M. King, *Savings Clauses and Trends in Natural Resources Federalism*, 32 WM. & MARY ENVTL. L. & POL'Y REV. 129, 145 (2007) (describing how these provisions "delimit the degree to which a federal agency should pursue national objectives at the expense of a state's different view" and can provide "a statement, and sometimes a mechanism, for incorporating state interests notwithstanding a statute that seeks to implement a uniform federal program").

¹⁰⁹ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

¹¹⁰ *Id.* at 17-18 (citing *Wyoming v. United States*, 279 F.3d 1214 (2002)).

¹¹¹ Brief of Amicus Curiae International Ass'n of Fish & Wildlife Agencies in Support of Plaintiff-Appellants & Reversal of the Decision Below at 8, *Wyoming*, 279 F.3d 1214 (10th Cir. 2002) (No. 99-8089) (citing *Ward v. Race Horse*, 163 U.S. 504, 510 (1896)).

¹¹² AFWA TASK FORCE REPORT, *supra* note 56, at 27.

III. THE LEGAL CONTEXT OF WILDLIFE MANAGEMENT ON FEDERAL LANDS

A. Constitutional Context

The U.S. Constitution provides the framework for federal-state relations and power-sharing arrangements, as well as individual obligations and limitations on authority for each level of government. Key provisions include the Property Clause,¹¹³ Treaty Clause,¹¹⁴ Commerce Clause,¹¹⁵ Supremacy Clause,¹¹⁶ and the Tenth Amendment.¹¹⁷ This Subpart explains the relevant constitutional clauses and legal precedents regarding federal powers and duties for wildlife management, and consequent implications for state authority.

1. The Property Clause

The United States' vast landholdings are concentrated in the American West and Alaska, but federal land can be found in all fifty states.¹¹⁸ As a landowner, the United States has proprietary interests over its lands and resources; as a government, it also has sovereign powers over its lands and resources.¹¹⁹ This Section focuses on the proprietary nature of the federal interest in public lands and wildlife.

a. The Nature and Scope of the Property Clause

The Property Clause gives Congress the "Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States."¹²⁰ Although the Supreme Court has found that the "full scope of this paragraph has never been definitely settled," it has held that "[p]rimarily, at least, it is a grant of power to the United States of control over its property."¹²¹ In theory, this plenary power is tempered by special duties regarding the administration of public lands and resources. "Executive branch officials, while having wide latitude to make all needful rules regarding the public lands, may have a countervailing trust-like responsibility to protect those resources on behalf of the public."¹²² While the

¹¹³ U.S. CONST. art. IV, § 3, cl. 2.

¹¹⁴ *Id.* art. II, § 2, cl. 2.

¹¹⁵ *Id.* art. I, § 8, cl. 3.

¹¹⁶ *Id.* art. VI, cl. 2.

¹¹⁷ *Id.* amend. X.

¹¹⁸ CAROL HARDY VINCENT ET AL., CONG. RESEARCH SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 7-9 tbl.1 (2017), <https://perma.cc/FH94-GG8R>.

¹¹⁹ See *Concessions Co. v. Morris*, 186 P. 655, 658, 660 (Wash. 1919) (discussing the holding of *Fort Leavenworth R.R. Co. v. Lowe*, 114 U.S. 525 (1885)).

¹²⁰ U.S. CONST. art. IV, § 3, cl. 2.

¹²¹ *Kansas v. Colorado*, 206 U.S. 46, 89 (1907).

¹²² Sandra B. Zellmer, *The Devil, the Details, and the Dawn of the 21st Century Administrative State: Beyond the New Deal*, 32 ARIZ. ST. L.J. 941, 1032 (2000); accord *In re Stewart Transp. Co.*, 495 F. Supp. 38, 40 (E.D. Va. 1980) ("Under the public trust doctrine, the State of Virginia and

Supreme Court and several other federal courts have alluded to a federal trust responsibility for public lands and resources, the contours of such a responsibility are ill-defined.¹²³ The contours of the Property Clause power, however, are relatively clear.¹²⁴

*United States v. Grimaud*¹²⁵ was one of the first tests of the Property Clause power to protect federal public lands.¹²⁶ The Forest Reserve Act of 1897¹²⁷ authorized the Secretary of the Interior to

the United States have the right and the duty to protect and preserve the public's interest in natural wildlife resources. Such right does not derive from ownership of the resources but from a duty owing to the people." (emphasis added)).

¹²³ See, e.g., *Light v. United States*, 220 U.S. 523, 536 (1911) (identifying a duty "to protect the public domain from trespass and unlawful appropriation" (quoting *United States v. Beebe*, 127 U.S. 338, 342 (1888))); *W. Va. Div. of the Izaak Walton League of Am., Inc. v. Butz*, 522 F.2d 945, 950-55 (4th Cir. 1975) (noting the historic role of USFS as "custodian and protector" of forest reserves); *High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1246 (D. Colo. 2006) (finding a duty to assert federal reserved water rights for the Black Canyon of the Gunnison). In a series of cases involving Redwood National Park, the trust doctrine was invoked to require affirmative action to protect park resources from external threats posed by logging. See *Sierra Club v. Dep't of the Interior (Redwoods II)*, 398 F. Supp. 284, 293-94 (N.D. Cal. 1975), modified, *Sierra Club v. Dep't of the Interior (Redwoods III)*, 424 F. Supp. 172 (N.D. Cal. 1976); *Sierra Club v. Dep't of the Interior (Redwoods I)*, 376 F. Supp. 90, 95-96 (N.D. Cal. 1974).

¹²⁴ It is important to note that federal enclaves are distinct from federal public lands. Under the Enclave Clause, "Congress may acquire derivative legislative power from a State . . . by consensual acquisition of land, or by nonconsensual acquisition followed by the state's cession of authority over the land." *Kleppe v. New Mexico*, 426 U.S. 529, 542 (1976) (citation omitted). Specifically, the Clause gives Congress power "[t]o exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful buildings." U.S. CONST. art. I, § 8, cl. 17. In addition to giving Congress exclusive authority over the seat of federal government (Washington, D.C.), the Enclave Clause provides authority to purchase state land for a variety of federal purposes. See GEORGE CAMERON COGGINS & ROBERT L. GLICKSMAN, PUBLIC NATURAL RESOURCES LAW § 3:7 (2d ed. 2017) (noting that "Needful Buildings" . . . include[s] most federal purposes, including locks and dams, national parks, and national forests" (footnotes omitted)). Congress's power over federal enclaves is highly nuanced. See Spencer Driscoll, *Utah's Enabling Act and Congress's Enclave Clause Authority: Federalism Implications of a Renewed State Sovereignty Movement*, 2012 BYU L. REV. 999, 1000. If the state legislature expressly cedes jurisdiction over an enclave purchased by the United States, the United States exercises all legislative powers over the parcel to the exclusion of state authority. *Kleppe*, 426 U.S. at 542; *Fort Leavenworth R.R. Co.*, 114 U.S. at 532, 537-38. Otherwise, the federal and state governments are free to make whatever jurisdictional arrangements they choose regarding wildlife, transportation, and other civil and criminal laws. See *Fort Leavenworth R.R. Co.*, 114 U.S. at 533-42; see also *Kleppe*, 426 U.S. at 542 ("[T]he legislative jurisdiction acquired may range from exclusive federal jurisdiction with no residual state police power, to concurrent, or partial, federal legislative jurisdiction, which may allow the State to exercise certain authority." (citation omitted)); *United States v. Parker*, 36 F. Supp. 3d 550, 575-76, 584-85 (W.D.N.C. 2014) (holding that, where both the United States and North Carolina had concurrent jurisdiction within a forest enclave, the federal court had authority over a prosecution for the illegal taking of wildlife). Once agreed upon, states cannot unilaterally amend or cancel cession agreements. *United States v. Armstrong*, 186 F.3d 1055, 1061 (8th Cir. 1999).

¹²⁵ 220 U.S. 506 (1911).

make provisions for the protection against destruction by fire and depredations upon the public forests and forest reservations... and... such rules and regulations... as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.¹²⁶

With this authority, the Secretary of Agriculture¹²⁷ issued rules requiring ranchers to secure permits to graze livestock in forest reserves.¹²⁸

The defendants were charged with grazing sheep in a forest reserve without a permit.¹²⁹ They argued that the Act was unconstitutional insofar as it delegated power to make regulations to the Secretary.¹³⁰ The Supreme Court was unsympathetic. It held: "Each reservation had its peculiar and special features," and Congress properly wielded the Property Clause to give the Secretary power to consider local conditions and "to fill up the details" of regulating "occupancy and use... to preserve the forests from destruction."¹³¹

The United States Court of Appeals for the Ninth Circuit reached a similar conclusion in a recent case involving rancher Wayne Hage, who gained a good deal of notoriety for his repeated trespasses on federal public lands in Nevada.¹³² The court rejected Hage's argument that state-sanctioned water rights entitled him to any additional easements or appurtenances to graze livestock on federal lands.¹³³

The Property Clause power to protect the public lands may also be used to protect natural resources that are intimately associated with the public lands, such as wildlife, water, and air.¹³⁴ In *Hunt v. United States*,¹³⁵ the Supreme Court held that the Property Clause included the power to thin overpopulated herds of deer on federal lands in order to protect forest

¹²⁶ *Id.* at 521-22; see Peter A. Appel, *The Power of Congress "Without Limitation": The Property Clause and Federal Regulation of Private Property*, 86 MINN. L. REV. 1, 58-62 (2001) (discussing the Supreme Court's broad interpretations of congressional authority under the Property Clause).

¹²⁷ Act of June 4, 1897, ch. 2, 30 Stat. 11 (1899).

¹²⁸ *Id.*, ch. 2, 30 Stat. at 35 (codified as amended at 16 U.S.C. § 551).

¹²⁹ In 1905, the authority changed from the Secretary of the Interior to the Secretary of Agriculture. See Act of Feb. 1, 1905, ch. 288, 33 Stat. 628 (1905).

¹³⁰ See *Grimaud*, 220 U.S. at 509-10 (discussing, for example, Regulation 45).

¹³¹ *Id.* at 509.

¹³² *Id.* at 510, 513-14.

¹³³ *Id.* at 515-17, 522 (citing *Wayman v. Southard*, 23 U.S. (10 Wheat.) 1, 42 (1825)); accord *Light*, 220 U.S. 523, 536 (1911) (enjoining grazing on a national forest without a permit and stating that "[t]he United States can prohibit absolutely or fix the terms on which its property may be used").

¹³⁴ *United States v. Estate of Hage*, 810 F.3d 712, 716-18 (9th Cir. 2016) (citing, inter alia, *Light*, 220 U.S. at 536); see Jason Dearen, *Central 'Sagebrush Rebellion' Case Suffers Defeat*, SAN DIEGO UNION-TRIB. (Sept. 1, 2012), <https://perma.cc/PNK5-UX85>.

¹³⁵ See *Hage*, 810 F.3d at 715, 717-18.

¹³⁶ See *Kleppe*, 426 U.S. 529, 530 (1976) ("Congress' complete authority over the public lands includes the power to regulate and protect the wildlife living there.").

¹³⁷ 278 U.S. 96 (1928).

resources, even if the federal action was contrary to state law.¹³⁸ The Court subsequently construed *Hunt* quite broadly in *Kleppe v. New Mexico*, stating that, while *Hunt* found that "damage to the land is a sufficient basis for regulation; it contains no suggestion that it is a necessary one."¹³⁹

Kleppe upheld the Wild Free-Roaming Horses and Burros Act,¹⁴⁰ which prohibited the capture and destruction of unclaimed horses and burros on public lands.¹⁴¹ When BLM invoked the Act to prevent New Mexico from capturing and selling burros, the state asserted that BLM lacked authority because the burros were neither moving in interstate commerce nor damaging public land.¹⁴² The issue was whether, under the Property Clause, BLM's jurisdiction over burros was a "needful" regulation "respecting" public lands.¹⁴³

The district court below had found that the Act was unconstitutional and opined that the Property Clause authorized the regulation of wild animals only if necessary to protect the public lands from damage.¹⁴⁴ The Supreme Court disagreed, stating that the Property Clause power "necessarily" includes protection of wildlife "integral" to the public lands.¹⁴⁵ The Court noted that in passing the Wild Free-Roaming Horses and Burros Act, "Congress deemed [these] animals 'an integral part of the natural system of the public lands,' and found that federal management was necessary 'for achievement of an ecological balance on the public lands.'"¹⁴⁶ According to Congress, these animals, if preserved in their native habitats, "contribute to the diversity of life forms within the Nation and enrich the lives of the American people."¹⁴⁷

In reaching its conclusion, the Court explicitly rejected the district court's rationale that federal power over wild horses and burros "conflicts with . . . the traditional doctrines concerning wild animals."¹⁴⁸ It explained that, while "the States have broad trustee and police powers over wild animals within their jurisdictions . . . , those powers exist only 'in so far as [their] exercise may be not incompatible with, or restrained by, the rights conveyed to the Federal government by the Constitution.'"¹⁴⁹ The Court clarified the balance of power between the federal and state governments:

¹³⁸ *Id.* at 100.

¹³⁹ *Kleppe*, 426 U.S. at 537.

¹⁴⁰ 16 U.S.C. §§ 1331-1340 (2012).

¹⁴¹ *Id.* § 1338(a). See generally Robert L. Fischman & Jeremiah I. Williamson, *The Story of Kleppe v. New Mexico: The Sagebrush Rebellion as Un-Cooperative Federalism*, 83 U. COLO. L. REV. 123 (2011) (providing the legal history and political implications of this decision).

¹⁴² *Kleppe*, 426 U.S. at 533.

¹⁴³ *Id.* at 536.

¹⁴⁴ See *id.* at 534 (citing *New Mexico v. Morton*, 406 F. Supp. 1237, 1239 (D.N.M. 1975)).

¹⁴⁵ *Id.* at 535, 540-41, 546.

¹⁴⁶ *Id.* at 535 (quoting 16 U.S.C. § 1331; H.R. REP. NO. 92-681, at 5 (1971) (Conf. Rep.)).

¹⁴⁷ 16 U.S.C. § 1331.

¹⁴⁸ *Kleppe*, 426 U.S. at 534-35 (omission in original) (quoting *Morton*, 406 F. Supp. at 1238).

¹⁴⁹ *Id.* at 545 (alteration in original) (quoting *Geer*, 161 U.S. 519, 528 (1896), overruled by *Hughes*, 441 U.S. 322 (1979)).

"No doubt it is true that as between a State and its inhabitants the State may regulate the killing and sale of [wildlife], but it does not follow that its authority is exclusive of paramount powers." . . . *We hold today that the Property Clause also gives Congress the power to protect wildlife on the public lands, state law notwithstanding.*¹⁵⁰

In *Wyoming v. United States*,¹⁵¹ Wyoming challenged the refusal of FWS to permit the state to vaccinate elk on the National Elk Refuge (NER).¹⁵² The United States Court of Appeals for the Tenth Circuit stated that the Property Clause gives Congress the power to choose: "(1) to assume all management authority over the [National Wildlife Refuge System], including the NER, (2) to share management authority over those federal lands with the States, or (3) to preserve to its fullest extent the States' historical role in the management of wildlife within their respective borders."¹⁵³ The court held that federal law would preempt state management in the event of an actual conflict "or where state management . . . stand[s] as an obstacle to the accomplishment" of federal objectives.¹⁵⁴

States often assert their police powers to regulate the public health and welfare through measures that protect natural resources within the state, such as game species, trees, and water.¹⁵⁵ Although there is no explicit "Property Clause" authority in the U.S. Constitution extending to state interests in wildlife, water, or other natural resources, states occasionally assert an ownership interest as an additional source of their authority.¹⁵⁶ The Supreme Court has repeatedly rejected this theory, at least as it relates to wildlife and migratory birds: "To put the claim of . . . State [authority] upon

¹⁵⁰ *Id.* at 545–46 (alteration in original) (emphasis added) (quoting *Missouri*, 262 U.S. 416, 434 (1920)).

¹⁵¹ 279 F.3d 1214 (10th Cir. 2002).

¹⁵² *Id.* at 1218.

¹⁵³ *Id.* at 1230.

¹⁵⁴ See *id.* at 1234. According to the court, Congress "rejected complete preemption of state wildlife regulation" in the National Wildlife Refuge System, but rather "intended ordinary principles of conflict preemption to apply." *Id.* The United States District Court for the District of California followed *Wyoming* in holding that a state ballot proposition that banned the use of certain kinds of traps and poisons on federal lands was preempted by the Property Clause. *Nat'l Audubon Soc'y, Inc. v. Davis*, 144 F. Supp. 2d 1160, 1180–81 (N.D. Cal. 2000), *aff'd in part and rev'd in part*, 307 F.3d 835, 837 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002). The Ninth Circuit did not reach the Property Clause issue, instead holding that the proposition was preempted by the National Wildlife Refuge System Administration Act. *Nat'l Audubon Soc'y, Inc. v. Davis*, 307 F.3d at 854; accord *Defs. of Wildlife v. Salazar*, 651 F.3d 112, 118 (D.C. Cir. 2011) ("tak[ing] the Secretary at his word that Wyoming has no veto over the Secretary's duty to end a practice that is concededly at odds with the long-term health of the elk and bison in the Refuge," while pointing out Wyoming's brief "agreeing that Wyoming does not have a veto").

¹⁵⁵ See, e.g., *Maine v. Taylor*, 477 U.S. 131, 151 (1986) ("[Each state] retains broad regulatory authority to protect . . . the integrity of its natural resources" such as fisheries.); *Miller v. Schoene*, 276 U.S. 272, 280–81 (1928) (upholding Virginia's decree to cut down infected cedars that were fatal to nearby apple orchards).

¹⁵⁶ See, e.g., *Geer*, 161 U.S. 519, 635 (1896) (claiming that ownership of all wild game taken within the state allowed the state to prohibit its removal from the state), *overruled by Hughes*, 441 U.S. 322 (1979)).

title is to lean upon a slender reed."¹⁵⁷ Even absent title, states have "ample allowance for preserving . . . the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership,"¹⁵⁸ but as noted in *Kleppe, Wyoming*, and numerous other cases, state law may not contravene federal law.¹⁵⁹

b. Property Clause Power to Protect Federal Lands and Resources from External Threats

Not only does the Property Clause supply authority to regulate activities that occur on federal lands, but in certain cases, it also authorizes federal regulation of activities outside of the federal boundaries where necessary to protect the public lands and resources. In *Camfield v. United States*,¹⁶⁰ the owner of several sections of private land acquired from the Union Pacific Railroad fenced his land in a way that also enclosed about 20,000 acres of public lands.¹⁶¹ When the United States sought to remove the fence under the Unlawful Enclosures Act of 1885,¹⁶² Camfield argued that the United States had no power to control private land use.¹⁶³ The Supreme Court upheld the application of the Act to Camfield's property, explaining that under the Property Clause, the federal government "doubtless has a power over its own property analogous to the police power of the several States, and the extent to which it may go in the exercise of such power is measured by the exigencies of the particular case."¹⁶⁴

The courts have consistently upheld "broad [federal] power to control extraterritorial private activities that might adversely affect federal property."¹⁶⁵ For instance, federal restrictions on businesses situated outside of a national park have been upheld when those business enterprises

¹⁵⁷ *Missouri*, 252 U.S. 416, 434 (1920); see also *Hughes*, 441 U.S. at 332.

¹⁵⁸ *Hughes*, 441 U.S. at 335.

¹⁵⁹ *Kleppe*, 426 U.S. 529, 545 (1976); *Wyoming*, 279 F.3d 1214, 1227; see also, e.g., *Hughes*, 441 U.S. at 338-39.

¹⁶⁰ 167 U.S. 518 (1897).

¹⁶¹ *Id.* at 519.

¹⁶² 43 U.S.C. §§ 1061-1066 (2012).

¹⁶³ *Camfield*, 167 U.S. at 522.

¹⁶⁴ *Id.* at 525; see *Utah Div. of State Lands v. United States*, 482 U.S. 193, 201 (1987) ("The Property Clause grants Congress plenary power to regulate and dispose of land within the Territories . . ."); *United States v. Midwest Oil Co.*, 236 U.S. 459, 483 (1915) (upholding president's decision to withdraw land to preserve oil reserves); *Light*, 220 U.S. 523, 536 (1911) ("The United States can prohibit absolutely or fix the terms on which its property may be used."); see also *Organized Fisherman of Fla. v. Hodel*, 775 F.2d 1544, 1549 (11th Cir. 1985) (finding that Florida law provided no vested property right for commercial fishing in a national park); *Organized Fisherman of Fla. v. Andrus*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (refusing to enjoin enforcement of federal regulations restricting fishing in a national park given Congress's "complete power" over public lands which "necessarily includes the power to regulate and protect the wildlife living there" (citing *Kleppe*, 426 U.S. at 540-41)).

¹⁶⁵ Appel, *supra* note 126, at 77-78.

affected neighboring parklands.¹⁶⁶ Moreover, federal regulation of activities on state-owned waters was upheld as a valid exercise of Property Clause power to manage the Boundary Waters Canoe Area Wilderness.¹⁶⁷

Beyond the land itself, it is fair to ask how far federal authority over wildlife and other migratory resources “integral” to the public lands goes when those resources are found outside of the boundaries of the public lands. In *Kleppe*, the contested issue involved the federal regulation of nonfederal activity on federal land (i.e., the State of New Mexico captured wild burros on a grazing allotment), and while the Act in question reached nonfederal land as well, the Supreme Court was not required to address the regulation of state or private activities on nonfederal land.¹⁶⁸

Other than *Kleppe*, few cases touch upon the Property Clause power to regulate “integral” wildlife outside of the boundaries of the federal lands, perhaps because federal agencies and their employees tend to be reluctant to exercise their power aggressively.¹⁶⁹

2. The Treaty Clause

The Treaty Clause provides that: “[The President] shall have the Power . . . to make Treaties, provided two thirds of the Senators present

¹⁶⁶ See, e.g., *Armstrong*, 186 F.3d 1055, 1061–62 (8th Cir. 1999) (“[R]egulation requiring that commercial tour boat operators obtain a permit before operating . . . within [Voyageurs National Park] is well within the authority of the NPS.”); *United States v. Richard*, 636 F.2d 236, 240 (8th Cir. 1980) (“[F]ederal regulation may exceed federal boundaries when necessary for the protection of human life or wildlife or government forest land or objectives.”).

¹⁶⁷ See, e.g., *Minnesota v. Block*, 660 F.2d 1240, 1249 (8th Cir. 1981) (“Congress’ power must extend to regulation of conduct on or off the public land that would threaten the designated purpose of federal lands.”); *United States v. Brown*, 552 F.2d 817, 822 (8th Cir. 1977) (stating that “congressional power over federal lands . . . include[s] the authority to regulate activities on non-federal public waters in order to protect wildlife and visitors on the lands”); see also *Stupak-Thrall v. United States*, 89 F.3d 1269, 1269, 1272 (6th Cir. 1996) (en banc) (an equally divided court affirmed district court in that the federal government could regulate private activities that occurred on the surface of a lake even if the surface was private property); *Organized Fisherman of Fla.*, 775 F.2d 1544, 1549 (11th Cir. 1985) (upholding federal restrictions on fishing on waters within Everglades National Park, some of which were presumably under state jurisdiction); *United States v. Lindsey*, 595 F.2d 5, 6 (9th Cir. 1979) (stating that the Property Clause “grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters”); *Grand Lake Estates Homeowners Ass’n v. Veneman*, 340 F. Supp. 2d 1162, 1167–69 (D. Colo. 2004) (holding USFS could require special use permits on docks and marinas on Association’s land if reasonably necessary to protect the environment and water quality of Arapaho National Recreation Area).

¹⁶⁸ *Kleppe*, 426 U.S. at 546 (“We need not, and do not, decide whether the Property Clause would sustain the Act in all of its conceivable applications.”).

¹⁶⁹ See generally Joseph L. Sax & Robert B. Keiter, *Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations*, 14 *ECOLOGY L.Q.* 207, 226, 260 (1987) (describing how NPS’s “distaste for confrontation makes it timid,” and how “constrained by bureaucratic prudence and timidity . . . [NPS] is reluctant to use the law; highly deferential to the traditional turf prerogatives of its neighbors; and hesitant to subject itself to criticism by speaking out forcefully on transboundary issues”).

concur."¹⁷⁰ In recognition of the international nature of wildlife conservation, the United States has entered into several landmark wildlife treaties within the past century, which Congress has implemented through domestic legislation.¹⁷¹ With respect to the management of wildlife on federal lands, the most notable of these include the Migratory Bird Treaty of 1916¹⁷² and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹⁷³ Other international provisions include the Agreement on the Conservation of Polar Bears,¹⁷⁴ the Pacific Salmon Treaty,¹⁷⁵ the Northwest Atlantic Fisheries Treaty,¹⁷⁶ the Migratory Bird and Game Mammal Treaty with Mexico,¹⁷⁷ and the International Convention for the Regulation of Whaling.¹⁷⁸ These treaties are implemented through the Marine Mammal Protection Act,¹⁷⁹ the Magnuson-Stevens Fishery Conservation and Management Act,¹⁸⁰ the Whaling Convention Act,¹⁸¹ and other pieces of domestic legislation.¹⁸² The next Section of the Article focuses on the Migratory Bird Treaty's implementing legislation.

¹⁷⁰ U.S. CONST. art. II, § 2, cl. 2.

¹⁷¹ See, e.g., Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087 ("Recognizing . . . that international cooperation is essential for the protection of . . . wild fauna and flora.").

¹⁷² Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, Gr. Brit.-U.S., Aug. 16, 1916, 39 Stat. 1702 (codified as amended at 16 U.S.C. §§ 703-712 (2012)).

¹⁷³ Convention on International Trade in Endangered Species of Wild Fauna and Flora, *supra* note 171. CITES is implemented in the United States through the ESA, which, like CITES, controls imports and exports of protected species. 16 U.S.C. § 1531(a)(4)(F); *id.* § 1538(a)(1)(A), (a)(2)(A), (c)-(d); see *Safari Club Int'l v. Jewell*, 960 F. Supp. 2d 17, 67-68 (D.D.C. 2013) (noting that conserving species within their ecosystems is one purpose of the ESA, "but other purposes are 'to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a)[,]' including the CITES" (alteration in original)). As such, the ESA finds its constitutional basis in part in the Treaty Clause, though other provisions of the ESA are more firmly founded on the Commerce Clause. See *infra* discussion Part III.A.3.c.

¹⁷⁴ Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918.

¹⁷⁵ Treaty Between the United States of America and the Canada Concerning Pacific Salmon, Can.-U.S., Jan. 28, 1985, T.I.A.S. No. 11,091.

¹⁷⁶ International Convention for the Northwest Atlantic Fisheries, Jul. 3, 1950, 64 Stat. 1067, 1 U.S.T. 477 (codified at 16 U.S.C. §§ 981-991)).

¹⁷⁷ Convention Between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, Mex.-U.S., Mar. 10, 1972, 23 U.S.T. 260.

¹⁷⁸ International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, T.I.A.S. No. 1849. For an assessment of wildlife and biodiversity related treaties that have not yet been ratified by the United States, including the Convention on Biological Diversity, see MARY JANE ANGELO ET AL., CTR. FOR PROGRESSIVE REFORM, WHITE PAPER NO. 1201, RECLAIMING GLOBAL ENVIRONMENTAL LEADERSHIP: WHY THE UNITED STATES SHOULD RATIFY TEN PENDING ENVIRONMENTAL TREATIES (2012), <https://perma.cc/5NB3-6ZEE>.

¹⁷⁹ Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361-1421h.

¹⁸⁰ *Id.* §§ 1801-1891d.

¹⁸¹ Whaling Convention Act of 1949, *id.* §§ 916-916f.

¹⁸² See ANGELO ET AL., *supra* note 178, at 2; David M. Golove, *Treaty-Making and the Nation: The Historical Foundations of the Nationalist Conception of the Treaty Power*, 98 MICH. L. REV. 1075, 1313-15 (2000) (advocating a federalist approach to implementing domestic treaties).

a. Migratory Bird Treaty of 1916

In 1916, the United States entered into a treaty with Great Britain (on behalf of Canada) to ensure the preservation of “such migratory birds as are either useful to man or harmless.”¹⁸³ The Migratory Bird Treaty Act of 1918¹⁸⁴ (MBTA) ratified the treaty and imposed stringent prohibitions on the taking, capturing, hunting, and killing of protected birds.¹⁸⁵ According to George Cameron Coggins, “[t]he origins of modern federal wildlife law may be traced back to the MBTA.”¹⁸⁶

Almost immediately after ratification and enactment, the states challenged the constitutionality of the treaty and the MBTA.¹⁸⁷ Today, the Supreme Court’s opinion in *Missouri v. Holland* remains a significant benchmark for federal Treaty Clause authority.¹⁸⁸ The case involved a suit brought by the State of Missouri to enjoin a federal game warden from enforcing the MBTA, which implements the 1916 treaty by prohibiting any person from pursuing or killing migratory birds except as authorized by regulations issued by the Secretary of Agriculture.¹⁸⁹ More specifically, the MBTA states that it is:

unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship,

¹⁸³ Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, *supra* note 172, at 1702.

¹⁸⁴ 16 U.S.C. §§ 710–711.

¹⁸⁵ *Id.* § 703(a).

¹⁸⁶ George Cameron Coggins, *Federal Wildlife Law Achieves Adolescence: Developments in the 1970s*, 1978 DUKE L.J. 753, 764; see also Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the Migratory Bird Treaty Act: A Way Forward*, 38 ENVTL. L. 1167, 1179 (2008).

¹⁸⁷ See, e.g., *Missouri*, 252 U.S. 416, 432–35 (1920) (holding that the MBTA is constitutional under Congress’s express and exclusive Constitutional authority to make and ratify treaties). Prior to ratification and passage of the MBTA, an earlier version of a statute to protect migratory birds had been invalidated as beyond constitutional authority. See *United States v. Shauver*, 214 F. 154, 157–60 (E.D. Ark. 1914) (holding that the statute was unconstitutional for, inter alia, its usurpation of the states’ sovereign right to own all animals *ferae naturae*, which are denominated as game, for the benefit of its citizens).

¹⁸⁸ *Missouri*, 252 U.S. at 432.

¹⁸⁹ The MBTA’s prohibitions apply broadly to state actors and others. 16 U.S.C. § 703(a); *Missouri*, 252 U.S. at 430–31. Courts, however, have since reached conflicting results on the MBTA’s ability to restrict federal actors. See *Humane Soc’y of the U.S. v. Glickman*, 217 F.3d 882, 885–87 (D.C. Cir. 2000) (finding that the MBTA applies to federal agencies and federal actors, because the Act enforces a treaty binding upon the United States and, therefore, is binding on the federal agencies); *Audubon Soc’y of Portland v. U.S. Fish & Wildlife Serv.*, No. 04-670-KI, 2005 WL 1713086, at *4 (D. Or. July 21, 2005) (applying the MBTA to federal agencies, but finding that they were not liable for habitat destruction); *Ctr. for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161, 177–78 (D.D.C. 2002) (applying the MBTA to the Department of Defense and holding it in violation), *vacated as moot sub nom.*, *Ctr. for Biological Diversity v. England*, Nos. 02-5163, 02-5180, 2003 WL 179848 (D.C. Cir. Jan. 23, 2003). But see *Sierra Club v. Martin*, 110 F.3d 1551, 1556 (11th Cir. 1997) (finding that because federal agencies must conserve birds under other statutes, the MBTA does not apply to federal agencies).

export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.¹⁹⁰

In *Missouri v. Holland*, the Supreme Court held that the Treaty Clause provided a viable avenue for federal regulation of wildlife, despite the state's claim of a predominant interest in the wildlife in question.¹⁹¹ Under *Missouri v. Holland*, the test to determine a treaty's validity is two-fold: 1) Is the matter involved of national interest? 2) Does the treaty contravene any specific constitutional prohibition?¹⁹² If the first is answered in the affirmative, and the second in the negative, the treaty is valid.¹⁹³

With respect to the Migratory Bird Treaty, the answer to the first question was a resounding "yes," according to the Supreme Court:

Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter [i.e., migratory birds] is only transitorily within the State and has no permanent habitat therein. But for the treaty and the statute there soon might be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops are destroyed. It is not sufficient to rely upon the States. The reliance is vain.¹⁹⁴

As to the second question, the Court explicitly rejected the state's argument that the Treaty contravened the Tenth Amendment, which reserves power to the states if not delegated to the United States by the Constitution.¹⁹⁵ According to the Court, "[t]he treaty in question does not contravene any prohibitory words to be found in the Constitution," nor is the treaty "forbidden by some invisible radiation from the general terms of the Tenth Amendment."¹⁹⁶ Thus, the state's interest in managing migratory birds covered by the MBTA, whether that interest rested upon some claim of ownership (which the Court disregarded) or on traditional state police

¹⁹⁰ 16 U.S.C. § 703(a).

¹⁹¹ *Missouri*, 252 U.S. at 432-35.

¹⁹² *Id.* at 433.

¹⁹³ See Oona A. Hathaway et al., *The Treaty Power: Its History, Scope, and Limits*, 98 CORNELL L. REV. 239, 266, 279 (2013) (explaining that Treaty Powers are limited by "affirmative guarantees [that] are set forth explicitly in the Bill of Rights' recognition and guarantee of individual rights and in the Constitution's provisions prescribing the structure of the national government . . . [including] the preservation of a continuing role for the states and maintenance of certain areas of state authority and control," but concluding that invalidation is exceedingly rare, so "the real protections against abuse of the treaty power derive from the structural, political, and diplomatic checks on the exercise of the power").

¹⁹⁴ *Missouri*, 252 U.S. at 435.

¹⁹⁵ *Id.* at 433-34.

¹⁹⁶ *Id.*

powers, must give way.¹⁹⁷ It explained, “[v]alid treaties of course ‘are as binding within the territorial limits of the States as they are elsewhere throughout the dominion of the United States.’”¹⁹⁸ In the end, the Court held that the Treaty was lawful, and thus, the MBTA was lawful as well pursuant to the Treaty Clause, the Supremacy Clause, and the Necessary and Proper Clause.

3. *The Tenth Amendment and the Commerce Clause*

The Tenth Amendment often forms the basis of state claims of exclusive jurisdiction over wildlife. The Tenth Amendment states: “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”¹⁹⁹ The Tenth Amendment and the Commerce Clause seem to be inextricably entwined in federal wildlife management discussions, so it is necessary to discuss the interplay of both provisions together.

a. *The Evolution of the Anti-Commandeering Doctrine*

The Tenth Amendment was ratified on December 15, 1791,²⁰⁰ and is similar to an earlier provision of the Articles of Confederation which read: “Each State retains its sovereignty, freedom, and independence, and every power, jurisdiction, and right, which is not by this confederation *expressly* delegated to the United States, in Congress assembled.”²⁰¹ Ultimately, the word “expressly” did not appear in the Tenth Amendment as ratified.

Early in American history, the Supreme Court seemed to assume the Tenth Amendment was a strong and limiting power of the Constitution.²⁰² However, by the early 20th century the Court’s view of the Tenth Amendment shifted significantly. In *United States v. Darby*,²⁰³ the Court stated:

¹⁹⁷ *Id.* at 434.

¹⁹⁸ *Id.* (quoting *Baldwin v. Franks*, 120 U.S. 678, 683 (1887)).

¹⁹⁹ U.S. CONST. amend. X.

²⁰⁰ *The Bill of Rights: A Transcription*, NAT’L ARCHIVES, <https://perma.cc/6WWG-KH2L> (last reviewed Nov. 11, 2017).

²⁰¹ ARTICLES OF CONFEDERATION of 1781, art. II (emphasis added); see *Amendment X: House of Representatives, Amendments to the Constitution*, FOUNDERS’ CONST., <https://perma.cc/7U44-AZQ3> (last visited Nov. 11, 2017) (discussing James Madison objecting to a proposed version of the Tenth Amendment).

²⁰² See *Hammer v. Dagenhart*, 247 U.S. 251, 275–76 (1918) (invalidating federal child labor laws, and remarking upon the “inherent” power of the states to regulate “purely internal affairs”), *overruled in part by* *United States v. Darby*, 312 U.S. 100 (1941); see also *Carter v. Carter Coal Co.*, 298 U.S. 238, 294–95 (1936) (invalidating federal regulation of coal production and stating that the Framers “meant to carve from the general mass of legislative powers, then possessed by the states, only such portions as it was thought wise to confer upon the federal government . . . with the result that what was not embraced by the enumeration remained vested in the states without change or impairment”).

²⁰³ 312 U.S. 100 (1941).

The [Tenth A]mendment states but a truism that all is retained which has not been surrendered. There is nothing in the history of its adoption to suggest that it was more than declaratory of the relationship between the national and state governments as it had been established by the Constitution before the amendment or that its purpose was other than to allay fears that the new national government might seek to exercise powers not granted, and that the states might not be able to exercise fully their reserved powers.²⁰⁴

Since *Darby*, it has become exceedingly uncommon for the Supreme Court to invalidate federal laws under the Tenth Amendment.²⁰⁵ The Anti-Commandeering Doctrine arising from *New York v. United States*²⁰⁶ is the exception. There, the Court invalidated a portion of the Low-Level Radioactive Waste Policy Amendments Act of 1985²⁰⁷ (RWPA).²⁰⁸ The RWPA required states to take title to any undisposed low-level radioactive waste within their borders and made each state liable for all damages directly related to that waste.²⁰⁹ The Court ruled that the imposition of taking title violated the Tenth Amendment, as the federal government could not directly compel states to enforce federal regulations.²¹⁰

In *Printz v. United States*,²¹¹ the Court, again utilizing the Anti-Commandeering Doctrine, found that provisions of the Brady Bill²¹² requiring state and local law enforcement officials to conduct background checks on persons attempting to purchase handguns was a violation of the Tenth Amendment, as the Bill forced participation of the state officials in the administration of a federal program.²¹³ Similarly, in *National Federation of Independent Business v. Sebelius*,²¹⁴ the Court held that the Affordable Care Act²¹⁵ (also known as Obamacare) coerced the states to expand Medicaid.²¹⁶ Although other provisions of the Act were upheld, the Court found that the Medicaid provision effectively forced states to participate by conditioning the continued provision of funds on their agreement to materially alter their Medicaid eligibility criteria.²¹⁷

In the modern era, the Tenth Amendment's primary role in regulating the balance of powers between the federal and state governments is

²⁰⁴ *Id.* at 124.

²⁰⁵ U.S. CONST. amend. X.

²⁰⁶ 505 U.S. 144 (1992).

²⁰⁷ 42 U.S.C. §§ 2021b–2021j (2012).

²⁰⁸ *New York*, 505 U.S. at 149.

²⁰⁹ 42 U.S.C. § 2021e(d)(2)(C).

²¹⁰ *New York*, 505 U.S. at 176–77, 184.

²¹¹ 521 U.S. 898 (1997).

²¹² Brady Handgun Violence Prevention Act, 18 U.S.C. § 922 (2012).

²¹³ *Printz*, 521 U.S. at 933–34 (citing *New York*, 505 U.S. at 188).

²¹⁴ 567 U.S. 519 (2012).

²¹⁵ Patient Protection and Affordable Care Act, Pub. L. No. 111-148, 124 Stat. 119 (2010) (codified in scattered sections of 25, 26, and 42 U.S.C.). The Medicaid expansion is codified at 42 U.S.C. § 1396a(a)(10)(A)(i)(VIII) (2012).

²¹⁶ *Sebelius*, 567 U.S. at 588.

²¹⁷ *Id.*

expressed through the Anti-Commandeering Doctrine.²¹⁸ Commandeering occurs when Congress “require[s] the States in their sovereign capacity to regulate their own citizens,” *not* when federal legislation with an administrative and financial impact on state bureaucracy regulates public and private conduct alike.²¹⁹

b. The Tenth Amendment's Application to Wildlife Management

Prior to 1920, very little judicial activity occurred regarding the interplay of the Tenth Amendment and federal wildlife control.²²⁰ One of the first decisions on the scope of the Tenth Amendment regarding federal wildlife control was *Missouri v. Holland*, which upheld the MBTA.²²¹ As noted above, the Supreme Court flatly rejected Missouri's argument that the MBTA violated the Tenth Amendment, finding that there were no reserved state powers that would stand in the way of federal enforcement of an act arising under the Treaty power.²²²

It was not until *Palila v. Hawaii Department of Land and Natural Resources*²²³ that the courts again took up the issue of the Tenth Amendment's implications for federal wildlife management.²²⁴ There, the Hawaii Department of Land and Natural Resources maintained herds of feral sheep and goats for sport-hunting purposes on state-owned lands.²²⁵ These herds were causing significant habitat modification and destruction within the critical habitat of the Palila bird (*Psittirostra bairdii*), a listed species under the ESA.²²⁶ Conservation groups sought declaratory and injunctive relief requiring Hawaii to adopt a plan to eradicate the feral sheep and goat

²¹⁸ See *Massachusetts v. U.S. Dep't of Health & Human Servs.*, 682 F.3d 1, 12 (1st Cir. 2012) (“Supreme Court interpretations of the Tenth Amendment have varied over the years but those in force today have struck down statutes only where Congress sought to commandeer state governments or otherwise directly dictate the *internal operations* of state government.”).

²¹⁹ *Reno v. Condon*, 528 U.S. 141, 151 (2000); see *Nuclear Energy Inst., Inc. v. Envtl. Prot. Agency*, 373 F.3d 1251, 1305 (D.C. Cir. 2004) (holding that Congress's designation of a federally owned site for a nuclear repository did not commandeer the state legislative process or officials, but rather merely prescribed the use of federal property); *United States v. Washington*, 887 F. Supp. 2d 1077, 1101 (D. Mont. 2012) (rejecting Tenth Amendment challenge to federal prosecution of participants in state-authorized medical marijuana program).

²²⁰ Although it did not address the Tenth Amendment, in *Geer v. Connecticut*, the Court held that “the ownership of wild animals, so far as they are capable of ownership, is in the state, not as a proprietor, but in its sovereign capacity, as a representative and for the benefit of all its people in common.” 161 U.S. 519, 529 (1896) (quoting *State v. Rodman*, 59 N.W. 1098, 1099 (Minn. 1894)), *overruled by Hughes*, 441 U.S. 322 (1979).

²²¹ *Missouri*, 252 U.S. 416, 435 (1920).

²²² *Id.* at 432–33.

²²³ 471 F. Supp. 985 (D. Haw. 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff'd*, 852 F.2d 1106 (9th Cir. 1988).

²²⁴ *Id.* at 995.

²²⁵ *Id.* at 989.

²²⁶ *Id.* at 988–90; see *Native Fish and Wildlife Endangered Species*, 32 Fed. Reg. 4001, 4001 (Mar. 11, 1967).

herds from the Palila's critical habit.²²⁷ Because Palila are only found in Hawaii and because no federal lands or funds were involved, Hawaii argued that the state retained exclusive sovereignty over the Palila's fate under the Tenth Amendment.²²⁸ The United States District Court for the District of Hawaii held that the Tenth Amendment does not constrain enforcement of the ESA given Congress's power "to enact legislation implementing valid treaties and . . . to regulate commerce."²²⁹ It explained:

[A] national program to protect and improve the natural habitats of endangered species preserves the possibilities of interstate commerce in these species and of interstate movement of persons . . . who come to a state to observe and study these species, that would otherwise be lost by state inaction.²³⁰

In *Gibbs v. Babbitt*,²³¹ individuals and several North Carolina counties challenged a FWS regulation prohibiting the taking of red wolves on private property as an infringement on traditional state power over wildlife.²³² The United States Court of Appeals for the Fourth Circuit found that the regulated activity did "not involve an 'area of traditional state concern,' one to which 'States lay claim by right of history and expertise.'"²³³ It reasoned that, while "States have important interests in regulating wildlife and natural resources within their borders," state power over wildlife has long been circumscribed by federal regulatory power.²³⁴ The *Gibbs* court explained that the regulated activity—the taking of wolves—"is not an area in which the states may assert an exclusive and traditional prerogative in derogation of an enumerated federal power," i.e., the Commerce Clause.²³⁵ The court also took note of "the historic power of the federal government to preserve scarce resources in one locality for the future benefit of all Americans."²³⁶

The Tenth Circuit had the opportunity to consider similar Tenth Amendment arguments in *Wyoming v. United States*, where the State of Wyoming tried to compel FWS to allow it to vaccinate elk against brucellosis at the Jackson Hole National Elk Refuge (NER).²³⁷ In response to Wyoming's

²²⁷ *Palila*, 471 F. Supp. at 987.

²²⁸ *Id.* at 992.

²²⁹ *See id.* at 995.

²³⁰ *Id.* For a detailed discussion of the Commerce Clause and the ESA, see *infra* Part III.A.3.c.

²³¹ 214 F.3d 483 (4th Cir. 2000).

²³² *Id.* at 499; see 50 C.F.R. § 17.84(c)(2) (2016).

²³³ *Gibbs*, 214 F.3d at 486 (citing *United States v. Lopez*, 514 U.S. 549, 580, 583 (1995) (Kennedy, J., concurring)); see also *id.* at 501 ("[T]he federal government possesses a historic interest in such regulation—an interest that has repeatedly been recognized by the federal courts.").

²³⁴ *Id.* at 499 (quoting *Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172, 204 (1999)); see also *id.* at 501 ("[I]t is clear from our laws and precedent that federal regulation of endangered wildlife does not trench impermissibly upon state powers.").

²³⁵ *Id.* at 499.

²³⁶ *Id.* at 492. The portion of the court's opinion rejecting the Commerce Clause challenge is discussed below. See *infra* note 264 and accompanying text.

²³⁷ *Wyoming*, 279 F.3d 1214, 1218, 1222 (10th Cir. 2002).

argument that the Tenth Amendment reserved the sovereign authority to manage wildlife to the states, the court explained that, while states have historically had broad authority to regulate the wildlife within their borders, that authority is not constitutionally derived.²³⁸ Moreover, given the strength and breadth of the federal Property Clause power, the court found it “painfully apparent that the Tenth Amendment does not reserve to the State of Wyoming the right to manage wildlife, or more specifically vaccinate elk, on the NER, regardless of the circumstances.”²³⁹

Subsequently, in *Wyoming v. U.S. Department of the Interior*,²⁴⁰ the State of Wyoming argued that federal regulation of wolves violated the Anti-Commandeering Doctrine.²⁴¹ Wyoming objected to having only two choices: 1) to change state law to eliminate its predator classification for wolves and commit to maintaining at least fifteen packs of wolves, or 2) to endure the restrictions imposed by the continued protection of wolves under the ESA.²⁴² The court held that Wyoming had failed to show a violation of the Tenth Amendment through commandeering or otherwise.²⁴³ It explained: “Wyoming is under no mandate to regulate gray wolves. . . . If Wyoming chooses to ignore the [federal requirement], the State simply will find itself perpetually pre-empted from regulating the gray wolf.”²⁴⁴

In sum, except for those rare instances when the Anti-Commandeering Doctrine is successfully invoked, attempts to use the Tenth Amendment as a basis for state sovereignty over federally protected wildlife have generally failed, from *Missouri v. Holland* to present.

c. The Commerce Clause and Federal Wildlife Management

The federal courts did not immediately support federal wildlife control based on the Commerce Clause. In an early case, *Geer v. Connecticut*, the Supreme Court held that game killed within the state concerned internal state commerce rather than interstate commerce.²⁴⁵ In subsequent years, several district court opinions followed suit.²⁴⁶

²³⁸ *Id.* at 1226–27 (citing 43 C.F.R. § 24.3 (2016)).

²³⁹ *Id.* at 1227.

²⁴⁰ 360 F. Supp. 2d 1214 (D. Wyo. 2005), *aff’d*, 442 F.3d 1262 (10th Cir. 2006).

²⁴¹ *Id.* at 1238.

²⁴² *Id.* at 1240.

²⁴³ *Id.* at 1240, 1244.

²⁴⁴ *Id.* at 1240–41. *But see* N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, No. CV 16-00462 WJ/KBM, 2016 WL 4536465, at *9 (D.N.M. June 10, 2016) (distinguishing *Wyoming* and noting that FWS’s own regulation required FWS to release wolves in compliance with state permit requirements), *rev’d*, 854 F.3d 1236 (10th Cir. 2017).

²⁴⁵ *Geer*, 161 U.S. 519, 534–35 (1896), *overruled by Hughes*, 441 U.S. 322 (1979).

²⁴⁶ *See, e.g.*, *United States v. McCullagh*, 221 F. 288, 292 (D. Kan. 1915) (“The power of the states, by their laws in the protection of their trust title for the common good of all the inhabitants of the state, to exclude wild bird and animal life lawfully reduced to the exclusive possession of the individual from the operation of the commerce clause of the national Constitution, as was held in *Geer* . . . , has been uniformly maintained by the courts of this country.”); *Shauver*, 214 F. 154, 160 (E.D. Ark. 1914) (following *Geer* and setting aside an

With the New Deal, however, the federal government's use of the Commerce Clause power began to expand.²⁴⁷ By the 1970s, it was clear that *Geer* had lost favor. In *Douglas v. Seacoast Products, Inc.*,²⁴⁸ the Supreme Court struck down a Virginia statute prohibiting federally licensed vessels owned by nonresidents of Virginia from fishing in Chesapeake Bay, and also prohibiting ships owned by noncitizens to catch fish anywhere in Virginia.²⁴⁹ The Court stated:

While [Virginia] may be correct in arguing that at earlier times in our history there was some doubt whether Congress had power under the Commerce Clause to regulate the taking of fish in state waters, there can be no question today that such power exists where there is some effect on interstate commerce.²⁵⁰

It concluded that the movement of fishing boats within and between states and to processing plants "certainly" affects interstate commerce.²⁵¹

The following year, in *Baldwin v. Fish & Game Commission of Montana*,²⁵² a Montana hunting guide sued the State of Montana for discriminating against out of state hunters in the price it charged for elk tags. The Supreme Court observed that, in recent years,

[t]he Court has recognized that the States' interest in regulating and controlling those things they claim to "own," including wildlife, is by no means absolute. States may not compel the confinement of the benefits of their resources, even their wildlife, to their own people whenever such hoarding and confinement impedes interstate commerce.²⁵³

With this backdrop, it was not surprising when the Supreme Court expressly overruled *Geer* in 1979 in *Hughes v. Oklahoma*.²⁵⁴ In that case, Hughes challenged his conviction for unlawfully transporting minnows that had been procured within Oklahoma waters for sale outside the state.²⁵⁵ The Court held that the state law, which forbade the out-of-state sale of

indictment for violation of a federal migratory bird protection act). Note, however, that the courts upheld Congress's use of the Commerce Clause to regulate interstate trafficking of state-protected wildlife under the Lacey Act, 16 U.S.C. § 701 (2012). See, e.g., *Rupert v. United States*, 181 F. 87, 91 (8th Cir. 1910) (upholding the Lacey Act as a valid exercise of the commerce power).

²⁴⁷ See, e.g., *Wickard v. Filburn*, 317 U.S. 111, 128-29 (1942) (upholding federal Commerce Clause power over wheat grown for home consumption because of its aggregated effects on wheat sold in interstate commerce). For a more recent case with similar reasoning, see *Gonzales v. Raich*, 545 U.S. 1, 19 (2005) (holding that growing marijuana for personal use affects interstate commerce).

²⁴⁸ 431 U.S. 265 (1977).

²⁴⁹ *Id.* at 268-69, 284-85.

²⁵⁰ *Id.* at 281-82 (footnote omitted).

²⁵¹ *Id.* at 282.

²⁵² 436 U.S. 371 (1978).

²⁵³ *Id.* at 385-86.

²⁵⁴ *Hughes*, 441 U.S. 322, 326 (1979), *overruling Geer*, 161 U.S. 519 (1896).

²⁵⁵ See *id.* at 324-25.

commercially significant numbers of minnows, was "repugnant to the Commerce Clause."²⁵⁶

The cases defining the scope of permissible state regulation in areas of congressional silence reflect an often controversial evolution of rules to accommodate federal and state interests. *Geer v. Connecticut* was decided relatively early in that evolutionary process. We hold that time has revealed the error of the early resolution reached in that case, and accordingly *Geer* is today overruled. . . . "The 'ownership' language of cases such as those cited by appellant must be understood as no more than a 19th-century legal fiction expressing 'the importance to its people that a State have power to preserve and regulate the exploitation of an important resource.'"²⁵⁷

Although the Supreme Court began to establish limits on Congress's use of the Commerce Clause in the 1990s, none of its opinions dilute the strength of *Hughes* or related wildlife precedents. In *United States v. Lopez*,²⁵⁸ the federal Gun-Free School Zones Act²⁵⁹ was struck down as "a criminal statute that by its terms has nothing to do with 'commerce' or any sort of economic enterprise, however broadly one might define those terms."²⁶⁰ Similarly, in *United States v. Morrison*,²⁶¹ a provision of the Violence Against Women Act²⁶² was struck down because it attempted to regulate activities that did not substantially affect interstate commerce.²⁶³

The federal courts that have addressed wildlife-related issues since *Lopez* and *Morrison* have had no trouble finding federal Commerce Clause power. In the *Gibbs* case discussed above, the court emphasized the direct relationship between the removal of red wolves and negative effects to interstate commerce, finding no need to "pile inference upon inference" to reach that conclusion:

The taking of red wolves implicates a variety of commercial activities and is closely connected to several interstate markets. The regulation in question is also an integral part of the overall federal scheme to protect, preserve, and rehabilitate endangered species, thereby conserving valuable wildlife resources important to the welfare of our country.²⁶⁴

²⁵⁶ *Id.* at 338.

²⁵⁷ *Id.* at 326, 335 (footnote omitted) (quoting *Seacoast Products, Inc.*, 431 U.S. 265, 284 (1977)).

²⁵⁸ 514 U.S. 549 (1995).

²⁵⁹ Gun-Free School Zones Act of 1990, Pub. L. No. 101-647, 104 Stat. 4944.

²⁶⁰ *Lopez*, 514 U.S. at 561.

²⁶¹ 529 U.S. 598 (2000).

²⁶² Violence Against Women Act of 1994, Pub. L. No. 103-322, 108 Stat. 1902 (codified in scattered sections of 18 and 42 U.S.C.).

²⁶³ *Morrison*, 529 U.S. at 617. Summarizing, the Court noted that the Commerce Clause provides federal power over: 1) the channels of interstate commerce; 2) the instrumentalities of interstate commerce, or persons or things in interstate commerce; and 3) activities that, in the aggregate, have a substantial effect on interstate commerce. *Id.* at 609.

²⁶⁴ *Gibbs*, 214 F.3d 483, 492 (4th Cir. 2000).

Similarly, the United States Court of Appeals for the District of Columbia Circuit rejected a real estate developer's challenge to the application of the ESA to the arroyo toad, stating that the focus of the Commerce Clause inquiry must be on the regulated activity, not just the toad.²⁶⁵ When the regulated activity is commercial development, "both the 'actor,' a real estate company, and its 'conduct,' the construction of a housing development, have a plainly commercial character . . . '[with] a plain and substantial effect on interstate commerce.'"²⁶⁶

It is now well settled that if the Commerce or Property Clauses are successfully invoked by the federal government as the authority to regulate wildlife, then by definition, inconsistent state law is preempted notwithstanding the Tenth Amendment.

4. Federal Preemption and Savings Clauses

The doctrine of federal preemption, derived from the Supremacy Clause of the U.S. Constitution, holds that state law must yield to federal law where the two conflict.²⁶⁷ This can happen expressly, for instance, under the Marine Mammal Protection Act where Congress stated: "No State may enforce . . . any State law or regulation related to the taking of any species . . . of marine mammal."²⁶⁸ Preemption can also be implied. The Supreme Court, in *California Coastal Commission v. Granite Rock Co.*,²⁶⁹ defined the concept of implied preemption:

If Congress evidences intent to occupy a given field, any state law falling within that field is pre-empted. If Congress has not entirely displaced state regulation over the matter in question, state law is still pre-empted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law, or where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress.²⁷⁰

Therefore, preemption can occur where Congress expressly preempts state law, where Congress occupies a field of law, or where state law interferes

²⁶⁵ *Rancho Viejo, LLC v. Norton*, 323 F.3d 1062, 1064, 1072 (D.C. Cir. 2003).

²⁶⁶ *Id.* at 1072-73 (quoting *Nat'l Ass'n of Home Builders v. Babbitt*, 130 F.3d 1041, 1059 (D.C. Cir. 1997)).

²⁶⁷ See U.S. CONST. art. VI, cl. 2 ("This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land."); *Kleppe*, 426 U.S. 529, 543 (1976) (stating that "federal legislation necessarily overrides conflicting state laws under the Supremacy Clause"); *Wyoming*, 279 F.3d 1214, 1227 (10th Cir. 2002) ("If Congress so chooses, federal legislation, together with the policies and objectives encompassed therein, necessarily override and preempt conflicting state laws, policies, and objectives . . .").

²⁶⁸ 16 U.S.C. § 1379(a) (2012).

²⁶⁹ 480 U.S. 572 (1987).

²⁷⁰ *Id.* at 581 (citations omitted). The Court found that a state mining permit requirement was not preempted because the federal land use and state environmental regulations in question could be interpreted to avoid conflict. *Id.* at 594.

with the implementation of federal law.²⁷¹ Federal regulations have the same preemptive effect.²⁷²

Federal law occupies a field of law (also known as field preemption) where a federal statutory scheme is interpreted to be "so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it."²⁷³ Because federal land management and wildlife laws often contain savings clauses acknowledging some level of state authority, field preemption rarely applies in these areas.²⁷⁴ Conflict preemption, on the other hand, arises whenever "compliance with both federal and state regulations is a physical impossibility."²⁷⁵ Conflict preemption is also invoked where state law "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."²⁷⁶ The conflict between federal and state laws may be subtle and yet still trigger preemption, as where state law discourages conduct that federal law attempts to encourage, or vice versa.²⁷⁷ For example, in *National Audubon Society, Inc. v. Davis*,²⁷⁸ California law banned the use of all leg-hold traps, even by federal officials in the course of their duties.²⁷⁹ The Ninth Circuit found that, by eliminating a method of predator control, the ban conflicted with the purposes of the ESA by preventing agencies from protecting listed species.²⁸⁰ Therefore, the state's action prevented the federal law from receiving full effect and was preempted.²⁸¹

Congress may negate or otherwise temper preemption by including a "savings clause" in its legislation. Many federal public health, environmental,

²⁷¹ *Id.* at 581; *Nat'l Audubon Soc'y*, 307 F.3d 835, 851 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷² *Granite Rock Co.*, 480 U.S. at 579–81, 591; see *Hillsborough County v. Automated Med. Labs., Inc.*, 471 U.S. 707, 713 (1985) ("We have held repeatedly that state laws can be pre-empted by federal regulations as well as by federal statutes.").

²⁷³ *Gade v. Nat'l Solid Wastes Mgmt. Ass'n*, 505 U.S. 88, 98, 108–09 (1992) (quoting *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)) (holding that state occupational health and safety regulations were preempted by Occupations Safety and Health Administration, which occupied that field of law).

²⁷⁴ See generally *Fischman & King*, *supra* note 108 (analyzing savings clauses, their uses and trends, and how they incorporate state cooperation).

²⁷⁵ *Fla. Lime & Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 142–43 (1963). For a full treatment of this issue, see Julie Lurman & Sanford P. Rabinowitch, *Preemption of State Wildlife Law in Alaska: Where, When, and Why*, 24 ALASKA L. REV. 145 (2007), and Julie Lurman Joly, *National Wildlife Refuges and Intensive Management in Alaska: Another Case for Preemption*, 27 ALASKA L. REV. 27 (2010).

²⁷⁶ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

²⁷⁷ *Lurman & Rabinowitch*, *supra* note 275, at 161.

²⁷⁸ 307 F.3d 835 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷⁹ *Id.* at 852.

²⁸⁰ *Id.* The court also found that the state's action was preempted by the National Wildlife Refuge Systems Improvement Act because it conflicted with FWS's management authority within national refuges. *Id.* at 854.

²⁸¹ *Id.* at 852; see also *North Dakota v. United States*, 460 U.S. 300, 318 (1983) (stating state statutes that are "plainly hostile to the interests of the United States" will not be applied); *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 211 (1824) ("[T]he act of Congress . . . is supreme; and the law of the State, though enacted in the exercise of powers not controverted, must yield to it.").

and natural resources statutes include savings clauses intended to leave room for state law to provide increased protection consistent with congressional purposes and objectives.²⁸² In public lands and natural resources statutes, Congress has embraced the principle of cooperative federalism through a variety of savings clauses that disclaim an intention to displace state law related to wildlife, water, and other resources, so long as state law does not conflict with or undermine federal prerogatives.²⁸³ These statutory disclaimers are often quite vague, having been included as compromise measures to ensure passage of a piece of legislation.²⁸⁴ As Robert Fischman notes:

Judicial interpretation of a savings clause may elevate or undermine the importance of state interests in federal natural resources programs. Largely, it is the interpretive approach used by a court that determines whether an ambiguous savings clause will compel special consideration not otherwise required under federal law.²⁸⁵

Fischman adds that, "[a]lthough the judiciary places the interpretive fulcrum establishing how much leverage states can expect in federal decision-making, administrative policies have and will play the dominant role in shaping cooperative federalism."²⁸⁶ Other sections of this Article analyze the specific language, agency implementation, and judicial review of savings clauses related to wildlife management on federal lands.

In conclusion, states undoubtedly have well-established historical responsibility over the wildlife within their borders. However, as this Subpart demonstrates, that responsibility is not exclusive, nor dominant, nor constitutionally derived. The U.S. Constitution grants the federal government the authority to manage its own lands and resources, fulfill its treaty obligations, and control interstate commerce, even in the face of objections from the states. And while the Tenth Amendment prevents the federal government from forcing state governments to carry out federal regulatory schemes, it cannot prevent the federal government from implementing those schemes itself.

B. Federal Land Laws and Regulations

This Subpart reviews the laws and regulations of most relevance to wildlife management on federal lands. It begins by explaining how the ESA fundamentally alters the management of all federal land systems. Next, it

²⁸² Fischman & King, *supra* note 108, at 145.

²⁸³ *Id.* at 129–30. Congress has also peppered the organic acts of the federal land management agencies with various directives to cooperate with states in planning and other processes. *Id.* See generally Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179 (2005) (discussing cooperation between state and the federal government in the application of natural resource management).

²⁸⁴ Fischman & King, *supra* note 108, at 159–60.

²⁸⁵ *Id.* at 168.

²⁸⁶ *Id.*

reviews the laws and regulations governing wildlife management in the National Park and National Wildlife Refuge Systems. This is followed by a review of the more contentious management and planning frameworks of USFS and BLM. A concise overview of the special case of Alaska is then provided. The Subpart closes by reviewing wildlife management and the National Wilderness Preservation System.

In Part IV, we return to many of the laws, regulations, and policies introduced here to dispel some of the common myths surrounding wildlife management on federal lands and to explain why federal land agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. The background provided here also shows that multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but Part IV.F explains that they are not generally used to their full potential.

1. The Endangered Species Act

Congress passed the ESA in 1973 “to provide a program for the conservation of . . . endangered species and threatened species” and “to provide a means whereby the ecosystems upon which endangered . . . and threatened species depend may be conserved.”²⁸⁷ The ESA establishes an affirmative obligation for the federal government to use “all methods and procedures which are necessary to bring any [listed] species to the point at which the measures provided in this [Act] are no longer necessary,”²⁸⁸ and states that “all federal departments and agencies shall seek to conserve endangered . . . and threatened species.”²⁸⁹ In defining “conserve” and “conservation,” the ESA establishes an affirmative obligation to use “all methods and procedures which are necessary to bring any endangered . . . or threatened species to the point at which the measures provided” by the statute are no longer necessary.²⁹⁰

A secondary indicator as to the goals of the statute can be found in Congress’s explicit recognition of the “esthetic, ecological, educational, historical, recreational, and scientific value” of rare species.²⁹¹ As Freyfogle and Goble have argued, this list of recognized values suggests that the statute is intended to do more than preserve a remnant population in a zoo or at easily visited locations, though this might meet the needs for the esthetic and recreational values.²⁹² Instead, in order to preserve their ecological and scientific values, species and their habitats must be preserved in many natural locations, potentially including areas where they have been extirpated.²⁹³

²⁸⁷ ESA, 16 U.S.C. § 1531(b) (2012).

²⁸⁸ *Id.* § 1532(3). The goal of the statute is not to “list” species but to recover their populations so that they can be “delisted.”

²⁸⁹ *Id.* § 1531(c).

²⁹⁰ *Id.* § 1532(3).

²⁹¹ *Id.* § 1531(a)(3).

²⁹² ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 233–34 (1st ed. 2009).

²⁹³ *Id.*

To understand the role of the ESA in federal land and wildlife management, three central pieces of the statute are most relevant: 1) the listing determination,²⁹⁴ 2) the obligation for federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat,²⁹⁵ and 3) the take prohibition.²⁹⁶ These sections of the statute detail the government's responsibilities and sources of authority. In addition, several provisions of the ESA address federal-state relations with respect to the conservation and management of listed species.²⁹⁷ Each of the relevant sections is addressed below.

a. Listing Determinations (Section 4)

Only those species listed as threatened or endangered are protected by the ESA.²⁹⁸ Listing a species as threatened or endangered is often the result of a citizen petition requesting the listing, though listings may also stem from direct agency initiative (either FWS or, for anadromous and ocean species, the National Marine Fisheries Service (NMFS)).²⁹⁹ In either case, the species must meet the definition of either "threatened" or "endangered" in order to secure the protections provided under the statute.³⁰⁰ An "endangered" species is one that is "in danger of extinction throughout all or a significant portion of its range," and "threatened" species are "likely to become an endangered species within the foreseeable future."³⁰¹

The decision to list a species as either threatened or endangered must be made "solely on the basis of the best scientific and commercial data available."³⁰² The data hurdles that must be surmounted are formidable, and even if met, the agency may decide that the listing is "warranted but precluded" by other more urgent species' needs given the agency's historically tight funding.³⁰³ However, once species are listed they are entitled to the full protections of the statute regardless of the economic consequences.³⁰⁴

Section 4 includes a number of factors to be considered in the listing decision. One inquiry is to assess "the inadequacy of existing regulatory

²⁹⁴ 16 U.S.C. § 1533.

²⁹⁵ *Id.* § 1536(a).

²⁹⁶ *Id.* § 1538.

²⁹⁷ See, e.g., *id.* § 1535 (cooperation with states); *id.* § 1533(b)(1) (listing criteria); *id.* § 1539(a)(2)(B) (incidental take permits).

²⁹⁸ See *id.* § 1533(d).

²⁹⁹ *Id.* § 1533(b)(3)(A); see FREYFOGLE & GOBLE, *supra* note 292, at 236; *Endangered Species Act: Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/CTB5-GTZ5> (last updated Nov. 1, 2017).

³⁰⁰ 16 U.S.C. § 1533(d).

³⁰¹ *Id.* § 1532(6), (20).

³⁰² *Id.* § 1533(b)(1)(A).

³⁰³ FREYFOGLE & GOBLE, *supra* note 292, at 248–49. These "candidate species" receive no protection under the ESA, but the candidate status may provide an opportunity and an incentive for state and private action to prevent listing. *Id.*

³⁰⁴ See *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174 (1978).

mechanisms.³⁰⁵ This means that state laws and regulations pertaining to wildlife, or the lack thereof, are assessed when making listing determinations. Another factor is particularly relevant when it comes to state involvement in ESA implementation: “[conservation] efforts, if any, being made by any State.”³⁰⁶ Accordingly, state efforts to conserve a species may be deemed to offset other threats, such as habitat destruction, and effectively bring the species below the threshold necessary to warrant a federal listing.³⁰⁷ FWS’s Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) allows FWS to consider conservation efforts that have not yet been implemented so long as FWS evaluates the certainty with which the efforts will be implemented and effective.³⁰⁸ However, courts have found that speculative future plans and voluntary conservation efforts will not suffice to avoid listing.³⁰⁹

³⁰⁵ 16 U.S.C. § 1533(a)(1)(D).

³⁰⁶ *Id.* § 1533(b)(1)(A).

³⁰⁷ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. 15,100, 15,113 (Mar. 28, 2003) (to be codified at 50 C.F.R. ch. 4); *see also* Kevin Cassidy, *Endangered Species’ Slippery Slope Back to the States: Existing Regulatory Mechanisms and Ongoing Conservation Efforts Under the Endangered Species Act*, 32 ENVTL. L. 175, 178–79 (2002) (discussing instances where state and local conservation efforts were invoked to avoid listing).

³⁰⁸ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. at 15,114 (requiring a “high level of certainty that the effort will be implemented and/or effective”); *see also* Permian Basin Petroleum Ass’n v. Dep’t of the Interior, 127 F. Supp. 3d 700, 712 (W.D. Tex. 2015) (invalidating FWS’s decision to list the lesser prairie chicken as inconsistent with PECE), *appeal dismissed*, No. 16-50453 (5th Cir. 2016).

³⁰⁹ *See, e.g.,* Alaska v. Lubchenco, 825 F. Supp. 2d 209, 219–20 (D.D.C. 2011) (rejecting Alaska’s claim that NMFS failed to consider the state’s conservation efforts before listing the beluga whale and concluding that “it is not enough for the State to identify conservation efforts that may be beneficial to a species’ preservation”; instead, “the efforts must actually be in place and have achieved some measure of success in order to count”); *Defs. of Wildlife v. Norton*, 258 F.3d 1136, 1146 (9th Cir. 2001) (rejecting FWS’s reliance on a Conservation Agreement (CA) to justify withdrawing a proposed listing because, in several areas designated as management areas for the species, “the designation process was either incomplete or wholly unstarted” and “[n]owhere d[id] the Secretary account for the effects of failure to implement the CA immediately in those areas where delay was expected”); *see also* Or. Nat. Res. Council v. Daley, 6 F. Supp. 2d 1139, 1154–55 (D. Or. 1998) (“NMFS may only consider conservation efforts that are currently operational”; NMFS cannot rely on voluntary measures to preclude listing because “like those planned in the future, [they] are necessarily speculative.”); *Sw. Ctr. for Biological Diversity v. Babbitt*, 939 F. Supp. 49, 51 (D.D.C. 1996) (“[FWS] cannot use promises of proposed future actions as an excuse for not making a determination based on the existing record.”). *But see* *Defs. of Wildlife v. Zinke*, 849 F.3d 1077, 1084 (D.C. Cir. 2017) (holding that FWS properly relied on future implementation of a wolf management plan by the State of Wyoming because the plan was not speculative but rather was “sufficiently certain to be implemented based on the strength of the State’s incentives”); *Defs. of Wildlife v. Jewell*, 70 F. Supp. 3d 183, 197–98 (D.D.C. 2014) (holding that FWS may consider state programs that are not yet fully implemented, as “implementation and effectiveness are often assessed in relative rather than absolute terms; when faced with regulatory uncertainty and risk to certain species, the Service can still chart a course of action, provided it assesses and controls for that uncertainty and risk”), *aff’d*, 815 F.3d 1 (D.C. Cir. 2016).

b. Federal Obligations (Section 7)

i. Affirmative Duty to Conserve (Section 7(a)(1))

The ESA states that the Departments of Interior and Commerce must utilize all of their programs to promote the statute's goals.³¹⁰ The ESA also mandates that *all* federal agencies utilize their authority in the furtherance of the purposes of the ESA.³¹¹ There are few reported cases directly on point, but at least a handful of courts have found that section 7(a)(1) has substantive "teeth."³¹² In *Defenders of Wildlife v. Andrus*, the advocacy group argued that regulations for bird hunting at twilight failed to protect listed species against misidentification by hunters.³¹³ The United States District Court for the District of Columbia, interpreting this section of the statute, found that the ESA requires that the agency "do far more than merely avoid the elimination of protected species," rather there is "an affirmative duty to increase the population of protected species."³¹⁴

The court came to a similar decision in *Carson-Truckee Water Conservancy District v. Watt*.³¹⁵ The cities of Reno and Sparks, Nevada challenged the Department of the Interior's refusal to release greater quantities of water from the Stampede Dam and Reservoir.³¹⁶ The Department of the Interior cited section 7(a)(1) to support its position that the water levels in the reservoir must be maintained at higher levels in order to preserve the spawning ability of two endangered fish (the cui-ui and the Lahontan cutthroat trout).³¹⁷ Ultimately, the court agreed with the federal government's argument that it had a duty "to replenish the species so that they are no longer endangered or threatened with extinction," rather than merely avoiding jeopardy.³¹⁸

By contrast, several courts have refused to mandate the implementation of specific conservation measures, instead finding that the federal agencies

³¹⁰ 16 U.S.C. § 1536(a)(1). For convenience, we reference FWS throughout this Article, but similar duties are imposed upon NMFS, an agency within the Department of Commerce.

³¹¹ *Id.*

³¹² See *Def. of Wildlife v. Andrus*, 428 F. Supp. 167, 169-70 (D.D.C. 1977) (holding that the ESA clearly implied that FWS must "use all methods necessary" to boost species populations for their removal from the protective class); see also *Tenn. Valley Auth.*, 437 U.S. 153, 173 (1978) ("One would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the [ESA]. Its very words affirmatively command all federal agencies 'to insure that actions authorized, funded, or carried about by them do not jeopardize the continued existence' of an endangered species or 'result in the destruction or modification of habitat of such species.'" (quoting 16 U.S.C. § 1536)).

³¹³ *Andrus*, 428 F. Supp. at 169.

³¹⁴ *Id.* at 170.

³¹⁵ 549 F. Supp. 704, 710 (D. Nev. 1982), *aff'd sub nom.*, *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 262 (9th Cir. 1984).

³¹⁶ *Clark*, 741 F.2d at 259; *Watt*, 537 F. Supp. at 107-08.

³¹⁷ *Clark*, 741 F.2d at 259, 261-62.

³¹⁸ *Watt*, 549 F. Supp. at 708-10; see also *Sierra Club v. Glickman*, 156 F.3d 606, 618 (5th Cir. 1998) (finding that section 7(a)(1) required the United States Department of Agriculture to develop its own conservation program for listed species dependent on the Edwards aquifer).

have a great deal of discretion in the steps that they take to satisfy section 7(a)(1).³¹⁹ For example, in *Defenders of Wildlife v. U.S. Fish & Wildlife*,³²⁰ the court rejected arguments that USFS should develop and implement its own conservation program for the endangered Mexican wolf and deferred to the agency's decision to act in cooperation with FWS's recommendations in furtherance of previously established wolf reintroduction and recovery goals.³²¹ Similarly, in *Defenders of Wildlife v. Babbitt*,³²² the court held that the federal agencies had not violated section 7(a)(1), even though they had not implemented all possible measures for conservation of the endangered Sonoran pronghorn, absent a showing that the agencies had failed entirely to carry out conservation programs.³²³

To summarize, FWS and other federal agencies are obligated to prevent jeopardy and authorized to proactively improve the circumstances of listed species. Additionally, while the ESA creates a duty to increase populations of protected species, it appears that courts are often unwilling to require the implementation of specific conservation measures.

ii. Prohibition Against Jeopardy (Section 7(a)(2))

Federal agencies must also ensure that their actions are "not likely to jeopardize the continued existence" of listed species.³²⁴ In *Tennessee Valley Authority v. Hill*,³²⁵ the Supreme Court established that, instead of balancing interests between wildlife conservation and economic development, the ESA demands that species conservation be elevated above other concerns, which could include state interests in wildlife.³²⁶

In order to ensure that federal actions do not jeopardize listed species, federal agencies undertaking actions that could harm species must formally consult with FWS.³²⁷ For purposes of section 7, "federal actions" include projects that are funded, authorized, or constructed directly by any federal agency, and projects with discretionary involvement or control by any

³¹⁹ See, e.g., *Leatherback Sea Turtle v. Nat'l Marine Fisheries Serv.*, No. 99-00152 DAE, 1999 WL 33594329, at *13-14 (D. Haw. Oct. 18, 1999) (finding that NMFS satisfied its section 7(a)(1) duty by issuing conservation recommendations and biological opinions); *Coal. for Sustainable Res., Inc. v. U.S. Forest Serv.*, 48 F. Supp. 2d 1303, 1306, 1315-16 (D. Wyo. 1999) (rejecting plaintiff's argument that USFS should implement certain timber harvest and snow management programs for the benefit of listed species), *vacated for lack of ripeness*, 259 F.3d 1244 (10th Cir. 2001).

³²⁰ 797 F. Supp. 2d 949 (D. Ariz. 2011).

³²¹ *Id.* at 958-59.

³²² 130 F. Supp. 2d 121 (D.D.C. 2001).

³²³ *Id.* at 135; see also *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of the Navy*, 898 F.2d 1410, 1417-19 (9th Cir. 1990) (holding that section 7(a)(1) did not require the Navy to adopt the "least burdensome alternative" to ensure the conservation of listed species; rather, the Navy retained discretion in meeting the ESA's conservation mandate).

³²⁴ ESA, 16 U.S.C. § 1536(a)(2) (2012).

³²⁵ 437 U.S. 153 (1978).

³²⁶ See *id.* at 184 (noting "[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost").

³²⁷ 16 U.S.C. § 1536(a)(4).

federal agency.³²⁸ If a listed species may be present within the project area, the federal "action agency" must conduct a biological assessment (BA) to identify any such species likely to be affected by the federal action and evaluate the effects.³²⁹ In turn, through its biological opinion (BiOp), FWS must determine whether the potential harm to the species violates section 7(a)(2) and, if so, devise less harmful alternatives or mitigation measures.³³⁰

FWS has interpreted the phrase "jeopardize the continued existence of a species" as any action "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild."³³¹ According to the Ninth Circuit in *National Wildlife Federation v. National Marine Fisheries Service*,³³² an action that may jeopardize a species can be of any magnitude, slight or severe, since the important factor is the degree of risk to the particular species.³³³ Furthermore, the court stated that jeopardy determinations must consider the action's effect on species recovery, not simply species survival.³³⁴ Therefore, even actions that pose only slight dangers may "jeopardize" the species if the effect of that action poses a high degree of risk to the species.

*iii. Prohibition Against Adversely Modifying Critical Habitat
(Section 7(a)(2))*

At the time a species is listed as endangered or threatened, FWS must also designate its critical habitat.³³⁵ Critical habitat is an area where there are "physical or biological features . . . essential to the conservation of the species and . . . which may require special management considerations."³³⁶ Critical habitat designation is based on "the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact."³³⁷ By directing FWS to consider economic impacts, the designation decision involves a much broader inquiry than is required for the listing determinations.

Section 7 prohibits federal agencies from taking actions that may "result in the destruction or adverse modification of [critical] habitat."³³⁸ FWS regulations specify that:

³²⁸ *Id.* § 1536(a); 50 C.F.R. § 402.02 (2016); see *Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1224–25 (9th Cir. 2015).

³²⁹ 16 U.S.C. § 1536(c).

³³⁰ *Id.* § 1536(b)(3).

³³¹ 50 C.F.R. § 402.02.

³³² 524 F.3d 917 (9th Cir. 2008).

³³³ See *id.* at 930.

³³⁴ *Id.* at 931.

³³⁵ 16 U.S.C. § 1533(a)(3)(A), (b)(6)(C).

³³⁶ *Id.* § 1532(6)(A)(i).

³³⁷ *Id.* § 1533(b)(2).

³³⁸ *Id.* § 1536(a)(2).

Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for [both the survival and recovery] of a listed species . . . includ[ing] . . . those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.³³⁹

In *Center for Native Ecosystems v. Cables*,³⁴⁰ the Tenth Circuit held that critical habitat is adversely modified by any actions "that adversely affect a species' recovery and the ultimate goal of delisting."³⁴¹ This interpretation makes the critical habitat protection a significant prohibition.

c. Take Prohibition (Section 9)

The ESA prohibits the "take" of listed species.³⁴² "Take" is defined by Congress as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect."³⁴³ This broad protection has been further enlarged by the Supreme Court's determination that "harm" in this definition includes habitat modification or degradation,³⁴⁴ though a showing that animals have actually been killed or injured may be required to prove that harm has occurred.³⁴⁵ A prohibited take can be either intentional (e.g., hunting and trapping) or unintentional (e.g., poisoning and other contamination).³⁴⁶ Unlike the requirements of section 7, section 9 applies to all persons, not just federal agencies.³⁴⁷

While the take prohibition is unqualified for endangered species, it is up to the agency to determine the breadth of its applicability for threatened species.³⁴⁸ FWS can make the prohibitions of section 9 applicable, either in whole or in part, to threatened species.³⁴⁹ However, FWS's discretion in this area is not without limits. In *Sierra Club v. Clark*,³⁵⁰ the United States Court of Appeals for the Eighth Circuit struck down FWS regulations that permitted the hunting of threatened wolves because the ESA only empowers FWS to issue regulations for the "conservation" of species, and regulated taking is only permissible under "extraordinary" circumstances which were not present in that case.³⁵¹

³³⁹ 50 C.F.R. § 402.02 (2016) (emphasis omitted).

³⁴⁰ 509 F.3d 1310 (10th Cir. 2007).

³⁴¹ *Id.* at 1322.

³⁴² 16 U.S.C. § 1538(a)(1)(B)–(C).

³⁴³ *Id.* § 1532(19).

³⁴⁴ *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 708 (1995) (citing 50 C.F.R. § 17.3).

³⁴⁵ *See id.* at 696 n.7; FREYFOGLE & GOBLE, *supra* note 292, at 266.

³⁴⁶ FREYFOGLE & GOBLE, *supra* note 292, at 236–37.

³⁴⁷ 16 U.S.C. § 1538(a)(1).

³⁴⁸ *Id.* § 1533(d).

³⁴⁹ *Id.*

³⁵⁰ 755 F.2d 608 (8th Cir. 1985).

³⁵¹ *Id.* at 610, 612–13; *see* 16 U.S.C. § 1532(3).

i. Incidental Take Statements and Incidental Take Permits (Section 7(a)(2) and Section 10)

Federal activities covered by a "no jeopardy" BO may be shielded from section 9 "take" liability if FWS has also issued an incidental take statement (ITS) that excuses the actor from liability when a covered species is incidentally taken during the course of an otherwise lawful activity.³⁵² While an ITS provides protection against federal prosecution, it also constitutes a binding agreement with FWS that may include limitations and other prohibitions for the shielded activity.³⁵³ In addition, section 10(a) allows "take" by nonfederal actors under prescribed conditions in exchange for a habitat conservation plan (HCP).³⁵⁴ To issue an incidental take permit (ITP) under section 10(a), FWS must find that:

- (i) the taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii) the applicant will ensure that adequate funding for the plan will be provided;
- (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v) the measures, if any, [that the Secretary may require as being necessary or appropriate for purposes of the plan] will be met.³⁵⁵

In recent years, FWS has utilized its ability to issue ITPs more frequently, in part to alleviate the perceived harshness of the ESA's prohibitions and in part to foster "creative partnerships between the private sector and all levels of government in the interests of protected species and habitat conservation."³⁵⁶ For example, a court upheld an ITP that authorized the State of Utah, Cedar City, and the Paiute Tribe to trap prairie dogs that

³⁵² 16 U.S.C. § 1536(a)(2), (b)(4); *see Ramsey v. Kantor*, 96 F.3d 434, 446 (9th Cir. 1996) (holding that states did not violate the ESA when they issued fishing regulations allowing taking of listed salmon without obtaining a section 10 permit where NMFS issued a section 7 incidental take statement that clearly anticipated the states would promulgate fishing regulations in accordance with its terms).

³⁵³ *See, e.g.*, 50 C.F.R. § 17.32(b)(2) (2016); *see also Endangered Species Permits: HCPs - Frequently Asked Questions*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/Z3PV-WQFC> (last updated Apr. 14, 2015) (describing the binding legal obligations included in Habitat Conservation Plans that are usually required when a party obtains an incidental take permit).

³⁵⁴ 16 U.S.C. § 1539(a)(2)(A).

³⁵⁵ *Id.* § 1539(a)(2)(B).

³⁵⁶ Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 COLUM. J. ENVTL. L. 45, 69, 75-76 (2002).

were damaging private and tribal land, and relocate them to a parcel of land covered by a conservation easement surrounded by BLM lands.³⁵⁷

States have avoided liability for a “take” under both ITSs and ITPs, and both tools have the potential to be used to foster cooperation with states in the interest of species conservation. If either an ITS or an ITP is issued without adequate safeguards for the species, however, the ESA’s conservation objectives may be undermined.

d. Cooperation with States (Section 6)

The ESA carves out a role for the states to assist in achieving the ESA’s protective purposes by providing that, in carrying out the statute, FWS “shall cooperate to the maximum extent practicable with the States.”³⁵⁸ Through this provision, Congress recognized the expertise of state agencies and required FWS to solicit and consider relevant information from them, such as preparing proposed and final rules to designate critical habitat.³⁵⁹ In addition, the ESA empowers FWS to “enter into agreements with [states] for the administration and management of any area established for the conservation of [listed] species.”³⁶⁰ FWS may also enter into cooperative agreements with any state that establishes and maintains an “adequate and active” program for the conservation of listed species.³⁶¹ These programs are enacted statutorily and are referred to as “state endangered species acts.”³⁶²

In addition, the statutory savings clause states that the ESA should not be construed “to void any State law or regulation which is intended to conserve migratory, resident, or introduced fish or wildlife, or to permit or prohibit sale of such fish or wildlife.”³⁶³ However, states may not take measures to protect or enhance non-endangered resident wildlife if such measures would take or otherwise endanger listed species.³⁶⁴

FWS and NFMS also adopted an interagency policy to guide their work with the states in ESA implementation. The policy begins by recognizing that

³⁵⁷ *WildEarth Guardians v. U.S. Fish & Wildlife Serv.*, 622 F. Supp. 2d 1155, 1159, 1168 (D. Utah 2009).

³⁵⁸ 16 U.S.C. § 1535(a).

³⁵⁹ See, e.g., *Alaska Oil & Gas Ass’n v. Salazar*, 916 F. Supp. 2d 974, 997 (D. Alaska 2013) (discussing FWS and state’s various joint efforts and ultimately finding that FWS complied with § 1535(a) in designating polar bear critical habitat).

³⁶⁰ 16 U.S.C. § 1535(b).

³⁶¹ *Id.* § 1535(c)(1). For details, see COGGINS & GLICKSMAN, *supra* note 124, § 29:19.

³⁶² Deborah F. Buckman, Annotation, *Construction and Application of State Endangered Species Acts*, 44 A.L.R. 6th 325 (2009); see 16 U.S.C. § 1535.

³⁶³ 16 U.S.C. § 1535(f).

³⁶⁴ See *Nat’l Audubon Soc’y*, 307 F.3d 835, 853 (9th Cir.) (invalidating California’s prohibition on leghold traps), *amended on denial of reh’g*, 312 F.3d 416, 418 (9th Cir. 2002). Cf. *Animal Prot. Inst. v. Holsten*, 541 F. Supp. 2d 1073, 1080–81 (D. Minn. 2008) (finding that the savings clause did not shield a state hunting program from judicial invalidation or protect the state game agency from liability for violating the ESA’s taking clause); *United States v. Glenn-Colusa Irrigation Dist.*, 788 F. Supp. 1126, 1134 (E.D. Cal. 1992) (“[T]o the extent that [a state’s] law on taking is less protective than the [ESA], it is preempted.”).

"States possess broad trustee and police powers over fish, wildlife and plants and their habitats within their borders [and u]nless preempted by Federal authority, States possess primary authority and responsibility for protection and management of fish, wildlife and plants and their habitats."³⁶⁵

The policy specifies ways in which the states can help carry out the purposes of the ESA, such as by taking prelisting conservation actions and utilizing state expertise and information in the ESA recovery process.³⁶⁶

Section 6 and the interagency policy provisions encourage cooperative federalism to effectuate the purposes of the ESA. Like many other federal environmental statutes, the ESA provides a floor, not a ceiling, for species protection.³⁶⁷ The ESA clearly preempts inconsistent or less restrictive state laws.³⁶⁸ And most state-level endangered species acts are relatively limited in comparison to the federal law, with most states having no mechanism for recovery, consultation, critical habitat, or citizen enforcement.³⁶⁹

2. The National Park System

a. The 1916 Organic Act

The National Park Service Organic Act³⁷⁰ makes conservation of park resources, including wildlife, a primary management goal:

[To] promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose . . . *to conserve the scenery, natural and historic objects, and wild life in the System units* and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations.³⁷¹

Courts have construed this provision as a directive that, between the competing goals of conservation of park resources and facilitating public

³⁶⁵ Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities, 59 Fed. Reg. 34,274, 34,725 (July 1, 1994).

³⁶⁶ *Id.*

³⁶⁷ 16 U.S.C. § 1535(c), (f); see Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 ENVTL. L. 451, 462 (2004).

³⁶⁸ 16 U.S.C. § 1535(f) ("Any State law or regulation respecting the taking of an endangered species or threatened species may be more restrictive than the exemptions or permits provided for in this chapter or in any regulation which implements this chapter but not less restrictive than the prohibitions so defined."); see, e.g., *Nat'l Audubon Soc'y*, 307 F.3d at 851-53 (holding that California's rule prohibiting use of leg-hold traps by federal employees was preempted by the ESA); *Swan View Coal., Inc. v. Turner*, 824 F. Supp. 923, 938 (D. Mont. 1992); *Glenn-Colusa Irrigation Dist.*, 788 F. Supp. at 1134.

³⁶⁹ Susan George & William J. Snape III, *State Endangered Species Acts*, in ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES 345, 346 (Donald C. Baur & W.M. Robert Irvin eds., 2d ed. 2010) (concluding that "most acts lack all but the most basic elements of a legislative scheme to protect a state's imperiled species").

³⁷⁰ Ch. 408, 39 Stat. 535 (1916) (codified in scattered sections of 54 U.S.C.).

³⁷¹ 54 U.S.C. § 100101 (Supp. II 2015) (emphasis added).

enjoyment of park resources, conservation generally takes precedence.³⁷² Notably, the Organic Act's phrase authorizing management for the enjoyment of scenery, natural and historic objects, and wildlife is cabined by the admonition that enjoyment may only occur "in such manner and by such means as will leave them [i.e., park resources] unimpaired for the enjoyment of future generations."³⁷³ Absent an explicit contrary mandate in the relevant individual park establishment act, in the event of a conflict, NPS must prioritize conservation over public enjoyment.³⁷⁴

b. National Park Service Management Policy

NPS's own Management Policies recognize that conservation of park resources is "predominant."³⁷⁵ More specifically:

Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.³⁷⁶

Issues related to wildlife management come squarely within the purview of the conservation mandate. "Impairment" includes disruption of

³⁷² See, e.g., *Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183, 192–93 (D.D.C. 2008) (invalidating NPS's Winter Use Plan because it violated the conservation mandate by impairing Yellowstone's soundscape, wildlife, and air quality); *Fund for Animals v. Norton*, 512 F. Supp. 2d 49, 54–55 (D.D.C. 2007) (finding that NPS had articulated a satisfactory explanation regarding limited use of snowmobiles in Yellowstone); *Fund for Animals v. Norton*, 294 F. Supp. 2d 92, 108 (D.D.C. 2003) (overturning decision to allow snowmobiles in Yellowstone because NPS had not explained reversal of earlier conclusion that snowmobiles caused impairment); see also *Bicycle Trails of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir. 1996) (noting the "overarching concern" of the Organic Act is "resource protection"); *Defs. of Wildlife v. Salazar*, 877 F. Supp. 2d 1271, 1306–07 (M.D. Fla. 2012) (remanding decision to increase off-road vehicle (ORV) use because of failure to explain change in position as to ORV's adverse impacts to wildlife, soil, and hydrology); *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7, 24–38 (D.D.C. 2010) (remanding NPS's decision to allow jet skis in two national parks given the impacts to wildlife, water and air quality, soundscapes, aquatic vegetation, and visitor experience); *Edmonds Inst. v. Babbitt*, 42 F. Supp. 2d 1, 16 (D.D.C. 1999) (noting that the primary purpose of the Organic Act is "conservation of wildlife resources"); *Nat'l Rifle Ass'n of Am. v. Potter*, 628 F. Supp. 903, 909 (D.D.C. 1986) ("In the Organic Act, Congress speaks of but a single purpose, namely conservation.").

³⁷³ 54 U.S.C. § 100101(a).

³⁷⁴ Eric Biber & Elisabeth Long Esposito, *The National Park Service Organic Act and Climate Change*, 56 NAT. RESOURCES J. 193, 223–24 (2016). But see *Nat'l Parks Conservation Ass'n v. U.S. Dep't of Interior*, 46 F. Supp. 3d 1254, 1278, 1337 (M.D. Fla. 2014) (applying an establishment act that shuffles these priorities and finding that the establishment acts for Big Cypress Preserve and Addition Lands mandate multiple uses, including ORV use on designated trails), *aff'd*, 835 F.3d 1377 (11th Cir. 2016).

³⁷⁵ NAT'L PARK SERV., MANAGEMENT POLICIES 2006 § 1.4.3 (2006), <https://perma.cc/3R3K-EUP8> [hereinafter NPS MANAGEMENT POLICIES].

³⁷⁶ *Id.*

natural abundance, diversity, and ecological integrity, and is not limited to those impacts that "are so intense or sustained that they result in 'the elimination of a native species or significant population declines in a native species.'"³⁷⁷

NPS's Management Policies direct NPS to "maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems."³⁷⁸ Native species are "all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system."³⁷⁹ NPS commits itself to preserving, maintaining, and restoring both populations of species and their habitats, and to "minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them."³⁸⁰ In addition, the Management Policies state that NPS will cooperate and work with state and tribal governments, federal agencies, and other land managers to encourage the conservation of species populations and habitats "whenever possible."³⁸¹ Although the Policies are not judicially enforceable, courts have not hesitated to find that deviations from the Policies are arbitrary and capricious.³⁸²

c. Hunting and Fishing

Courts have occasionally upheld NPS decisions that adversely impact wildlife, including decisions to cull deer and other wildlife from parks where the wildlife is undermining conservation goals by destroying vegetation or harming other species.³⁸³ As a general rule, however, hunting and other types of consumptive resource utilization within units of the National Park System are prohibited as contrary to the conservation ethic articulated in the

³⁷⁷ *Bluewater Network*, 721 F. Supp. 2d at 36 (rejecting NPS's interpretation of impairment to allow mortality and other "regular" adverse effects to wildlife as a "draconian" definition that was inconsistent with the Organic Act).

³⁷⁸ NPS MANAGEMENT POLICIES, *supra* note 375, § 4.4.1.

³⁷⁹ *Id.* § 4.4.1.3.

³⁸⁰ *Id.* § 4.4.1.

³⁸¹ *Id.* § 4.4.1.1.

³⁸² *See, e.g., Bluewater Network*, 721 F. Supp. 2d at 20 n.13 ("While these Policies are not judicially enforceable, they are 'relevant insofar as NPS puts forth the Policies as justification for the decision under review.'" (citations omitted)).

³⁸³ *See, e.g., Davis v. Latschar*, 202 F.3d 359, 359-60 (D.C. Cir. 2000) (upholding NPS plan to cull deer); *N.M. State Game Comm'n v. Udall*, 410 F.2d 1197, 1200-01 (10th Cir. 1969) (similar); *Grunewald v. Jarvis*, 930 F. Supp. 2d 73, 84-86 (D.D.C. 2013) (similar), *aff'd*, 776 F.3d 893 (D.C. Cir. 2015); *Friends of Animals v. Caldwell*, No. 2:09-cv-5349, 2010 WL 4259753, at *1, *7 (E.D. Pa. Oct. 27, 2010), *aff'd*, 434 F. App'x 72 (3d Cir. 2011) (similar); *see also WildEarth Guardians v. Nat'l Park Serv.*, 703 F.3d 1178, 1191-93 (10th Cir. 2013) (upholding NPS plan to cull elk); *Wilkins v. Sec'y of Interior*, 995 F.2d 850, 851 (8th Cir. 1993) (reversing district court and upholding NPS plan to remove wild horses); *Intertribal Bison Coop. v. Babbitt*, 25 F. Supp. 2d 1135, 1140-41 (D. Mont. 1998) (upholding NPS plan to manage Yellowstone bison), *aff'd*, 175 F.3d 1149 (9th Cir. 1999); *Greater Yellowstone Coal. v. Babbitt*, 952 F. Supp. 1435, 1445-46 (D. Mont. 1996) (upholding NPS plan to authorize capture or killing of bison by state officials), *aff'd*, 108 F.3d 1385 (9th Cir. 1997).

Organic Act.³⁸⁴ Specific establishment legislation for individual parks authorizes limited subsistence or recreational hunting, trapping, or fishing within approximately thirty-one NPS units.³⁸⁵ Those areas permitting hunting, trapping, or fishing typically do so in conformance with applicable federal and state laws.³⁸⁶ NPS regulations prohibit commercial fishing in the parks.³⁸⁷ However, in *Alaska Wildlife Alliance v. Jensen*,³⁸⁸ the Ninth Circuit held that NPS has the discretion to permit commercial fishing in non-wilderness areas of certain Alaska parks.³⁸⁹

3. The National Wildlife Refuge System

a. The National Wildlife Refuge System Improvement Act (1997)

The National Wildlife Refuge System is unique among federal land conservation units in its explicit focus on wildlife and ecosystem conservation as its dominant use.³⁹⁰ FWS manages the Refuge System under the auspices of the National Wildlife Refuge System Administration Act,³⁹¹ which was amended in 1997 by the National Wildlife Refuge System Improvement Act.³⁹² The agency also provides detailed explanations of its statutory obligations in its regulations³⁹³ and the FWS Manual.³⁹⁴

³⁸⁴ COGGINS & GLICKSMAN, *supra* note 124, § 32.14; see *United States v. Jarrell*, 143 F. Supp. 2d 605, 605–06, 609 (W.D. Va. 2001) (upholding conviction for hunting in Shenandoah National Park); *Organized Fisherman of Fla.*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (denying a preliminary injunction to enjoin enforcement of NPS regulations that restricted fishing practices in a national park).

³⁸⁵ Jessica Almy, Student Article, *Taking Aim at Hunting on National Park Service Lands*, 18 N.Y.U. ENVTL. L.J. 184, 185 (2010); see *Nat'l Rifle Ass'n*, 628 F. Supp. 903, 907 n.4 (D.D.C. 1986) (finding express authorization for hunting in the enabling acts of thirty-one NPS properties).

³⁸⁶ 36 C.F.R. § 2.2(b)(4) (2016); 43 C.F.R. § 24.4(f) (2016); *Organized Fishermen of Fla.*, 776 F.2d 1544, 1549 (11th Cir. 1985) (finding that, despite Florida law, there was no right to engage in commercial fishing in Everglades National Park); *United States v. Knauer*, 635 F. Supp. 2d 203, 212 (E.D.N.Y. 2009) (holding that permission for commercial fishing or hunting in Gateway National Park was left to NPS); see also *Fund for Animals v. Mainella*, 294 F. Supp. 2d 46, 48, 52 (D.D.C. 2003) (refusing to enjoin state's bear hunt in Delaware Gap National Recreation Area since statutory language provided that federal regulation was required only when NPS exercised its discretion to place limitations on hunting or to provide areas for intensive management).

³⁸⁷ 36 C.F.R. §§ 2.3(d)(4), 5.3; see *S.F. Herring Ass'n v. U.S. Dep't of Interior*, No. 13-cv-01750-JST, 2014 WL 172232, at *4–6 (N.D. Cal. Jan. 15, 2014) (finding that NPS had authority to issue citations to commercial fishermen in San Francisco Bay near the Golden Gate Recreational Area).

³⁸⁸ 108 F.3d 1065 (9th Cir. 1997).

³⁸⁹ *Id.* at 1067, 1074.

³⁹⁰ *National Wildlife Refuge System Improvement Act of 1997 Public Law 105-57*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/S8FN-FHHT> (last updated Aug. 19, 2009).

³⁹¹ *National Wildlife Refuge System Administration Act of 1966*, 16 U.S.C. §§ 668dd–668ee (2012); see *The Refuge System and FWS*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/4N9R-GDXQ> (last visited Nov. 11, 2017).

³⁹² *National Wildlife Refuge System Improvement Act of 1997*, Pub. L. No. 105-57, 111 Stat. 1252 (1997).

³⁹³ See 50 C.F.R. pts. 31–32 (2016).

³⁹⁴ See 50 C.F.R. pts. 31–32 (2016).

The Act authorizes the agency to permit the use of any area within the system for any purpose as long as it is determined that the proposed use is compatible with the "major purposes for which the areas were established."³⁹⁵ The Act further clarifies that all actions on a refuge must be compatible with both the mission of the refuge system and the purposes of the relevant individual refuge (as determined by the establishment legislation of that refuge).³⁹⁶ Where the system mission and refuge purposes conflict, refuge purposes should be given precedence, while still fulfilling the system mission to the extent that is possible.³⁹⁷ The agency's discretion in determining whether a use is compatible is further limited by the requirement that compatibility be based on "sound professional judgment."³⁹⁸ Furthermore, agency regulations require compatibility determinations to: 1) be written, 2) identify the proposed or existing use that the compatibility determination applies to, and 3) state whether the proposed use is in fact a compatible use based on "sound professional judgment."³⁹⁹

The mission of the refuge system, as provided by the Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁴⁰⁰ In meeting the mission of the system, the statute lays out explicit obligations for the agency.⁴⁰¹ Three of these statutory requirements are particularly relevant to this discussion and are elaborated upon in greater detail below:

In administering the system the Secretary shall—

(A) provide for the conservation of fish, wildlife, and plants, and their habitat within the System;

(B) ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans;

³⁹⁴ See *Service Manual Chapters: Series 600 – Land Use and Management Series*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/Q93L-S223> (last updated Nov. 2, 2017).

³⁹⁵ 16 U.S.C. § 668dd(d)(1)(A).

³⁹⁶ *Id.* § 668ee(1). Establishment legislation is of key importance in refuge management as a source of refuge purposes and a guide to refuge management. Many refuges have purposes derived from multiple pieces of establishment legislation, which can lead to confusion regarding the relative priorities of the various refuge purposes. ROBERT L. FISCHMAN, *THE NATIONAL WILDLIFE REFUGES: COORDINATING A CONSERVATION SYSTEM THROUGH LAW* 164 (2003).

³⁹⁷ 16 U.S.C. § 668dd(a)(4)(D).

³⁹⁸ *Id.* § 668ee(1); see *Del. Audubon Soc'y v. Salazar*, 829 F. Supp. 2d 273, 288–89 (D. Del. 2011) (finding that a dune restoration decision was within sound professional judgment when it was "supported by scientific literature").

³⁹⁹ 50 C.F.R. § 25.12 (2016).

⁴⁰⁰ 16 U.S.C. § 668dd(a)(2).

⁴⁰¹ See *id.* § 668dd(a)(4).

(E) ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the System are located.⁴⁰²

Two significant court cases interpret many of the provisions of the Act. In *Wyoming v. United States*, the state argued that FWS interfered with the state's sovereign right to manage wildlife by prohibiting the state from vaccinating elk against brucellosis on refuge lands.⁴⁰³ The Tenth Circuit ultimately determined that ordinary principles of preemption applied; if the state's actions would conflict with federal mandates or present an obstacle to their accomplishment, then the state is preempted by the Improvement Act.⁴⁰⁴ In *National Audubon Society, Inc. v. Davis*, environmental groups challenged California over a state law banning the use of all leg-hold traps in the state, including those used on federal lands or to protect endangered species.⁴⁰⁵ The Ninth Circuit found that the ban conflicted with FWS's statutory authority to manage refuges, and so the state law was preempted.⁴⁰⁶ These two cases are discussed in detail below.⁴⁰⁷

i. Provide for the Conservation of Fish, Wildlife, Plants, and Their Habitats

The Refuge Improvement Act groups the terms "conserving," "conservation," "manage," "managing," and "management" together, and provides a single definition for all of them: "to sustain and, where appropriate, restore and enhance, healthy populations of fish, wildlife, and plants."⁴⁰⁸ As the *Wyoming* court states, it would be impossible for the agency to meet its obligation for conservation "unless [refuges] are consistently directed and managed as a national system."⁴⁰⁹ Furthermore, that court found that "Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System]."⁴¹⁰ The *Audubon* court concurred in this reasoning,

⁴⁰² *Id.*

⁴⁰³ *Wyoming*, 279 F.3d 1214, 1222, 1229 (10th Cir. 2002).

⁴⁰⁴ *Id.* at 1234–35.

⁴⁰⁵ 307 F.3d 835, 842–44 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416 (9th Cir. 2002).

⁴⁰⁶ *Id.* at 854.

⁴⁰⁷ See *infra* notes 409–411, 426–433 and accompanying text.

⁴⁰⁸ 16 U.S.C. § 668ee(4) (2012).

⁴⁰⁹ *Wyoming*, 279 F.3d 1214, 1233 (10th Cir. 2002) (quoting H.R. REP. NO. 105-106, at 8 (1997)).

⁴¹⁰ *Id.* at 1234. In another case, *Defenders of Wildlife v. Salazar*, the D.C. Circuit defined "conservation" in this context by referencing the specific facts of the case. 651 F.3d 112, 115–17 (D.C. Cir. 2011). In that case, FWS was accused of violating the conservation mandate of the Improvement Act by failing to commit to a deadline to end the agency's elk feeding program in the National Elk Refuge. *Id.* at 115. The court determined that there was "no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System," yet the court determined that a phased (rather than an abrupt) ending of that program was reasonable. *Id.* at 117.

referencing the goals of the Improvement Act and FWS's authority over refuge lands in its finding that state law was preempted.⁴¹¹

ii. Ensure That the Biological Integrity, Diversity, and Environmental Health of the System Are Maintained

While the statute itself does not define these terms, FWS defines them in its manual.⁴¹² The manual states that the "highest measure of biological integrity, diversity, and environmental health is viewed as those intact and self-sustaining habitats and wildlife populations that existed during historic conditions."⁴¹³ Therefore, the agency "favor[s] management that restores or mimics natural ecosystem processes or functions."⁴¹⁴ The agency's manual also lays out the major principles underlying the biological integrity policy, the first of which is that wildlife conservation must always be the primary concern in the management of the refuges,⁴¹⁵ and that ensuring biological integrity, diversity, and environmental health is necessary for the agency to fulfill the system mission of conservation.⁴¹⁶

The requirement to maintain "biological integrity, diversity, and environmental health" requires refuge officials to "manage lands to conserve the full range of wild species and plant communities" that existed in a refuge before it was substantially changed by humans, and also "calls for the conservation of basic ecological processes with little human alteration, including the natural biological processes that shape genomes, organisms, and communities."⁴¹⁷ As Fischman describes the biological integrity requirement: "No other organic mandate employs as unconditional or specific a series of ecological criteria to constrain management and promote conservation."⁴¹⁸

iii. Ensure Effective Coordination, Interaction, and Cooperation

Congress clearly intended for FWS to cooperate meaningfully with other land managers, particularly states. Included in the statute is a requirement that the agency issue a conservation plan for each refuge that is "consistent with the provisions of this Act and, to the extent practicable, consistent with fish and wildlife conservation plans of the State in which the refuge is located."⁴¹⁹ As the *Wyoming* court states, the Improvement Act calls

⁴¹¹ *Nat'l Audubon Soc'y*, 307 F.3d at 854.

⁴¹² U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 3, BIOLOGICAL INTEGRITY, DIVERSITY, AND ENVIRONMENTAL HEALTH § 3.6 (2001), www.fws.gov/policy/601fw3.html.

⁴¹³ *Id.* § 3.10.

⁴¹⁴ *Id.* § 3.7(E).

⁴¹⁵ *Id.* § 3.7(A).

⁴¹⁶ *Id.* § 3.7(B).

⁴¹⁷ FREYFOGLE & GOBLE, *supra* note 292, at 212.

⁴¹⁸ FISCHMAN, *supra* note 396, at 126; see also *Defs. of Wildlife*, 651 F.3d 112, 116 (D.C. Cir. 2011) (emphasizing the agency's "biological integrity" mandate).

⁴¹⁹ 16 U.S.C. § 668dd(e)(1)(A)(iii) (2012).

for, “at a minimum, state involvement and participation in the management of the [National Wildlife Refuge System] as that system affects surrounding state ecosystems.”⁴²⁰ However, in understanding the statute we must give effect to all of the language provided, and while Congress strongly encourages cooperation, it also tempers that goal by finding that it is only necessary “to the extent practicable,” otherwise the agency would not be capable of fulfilling its congressionally designated mission.⁴²¹ As the *Wyoming* court observed: “Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System].”⁴²²

iv. Savings Clause

The Improvement Act also contains two savings clauses. First, the Act prohibits the taking of any fish or animal within refuges without FWS permission,⁴²³ but the prohibition does not extend beyond refuge boundaries: “Nothing in this Act shall be construed to authorize the Secretary to control or regulate hunting or fishing of fish and resident wildlife on lands or waters that are not within the System.”⁴²⁴ Next, the Act provides that:

Nothing in this Act shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations in any area within the System. Regulations permitting hunting or fishing of fish and resident wildlife within the System shall be, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans.⁴²⁵

The state in *Wyoming* argued that the first sentence of the savings clause retains to the state “the absolute right to manage wildlife . . . free from federal intervention.”⁴²⁶ However, the Tenth Circuit found that as a matter of statutory construction the first sentence cannot be read in isolation; instead, the clause must be understood in its entirety, giving effect to the whole clause.⁴²⁷ The second sentence of the savings clause indicates that federal regulation of wildlife on refuges only has to be consistent with state law “to the extent practicable.”⁴²⁸ So while consistency is encouraged, it is not mandated at the expense of the other requirements of the statute.

⁴²⁰ *Wyoming*, 279 F.3d 1214, 1231 (10th Cir. 2002).

⁴²¹ 16 U.S.C. § 668dd(e)(1)(A)(iii); *Wyoming*, 279 F.3d at 1233.

⁴²² *Wyoming*, 279 F.3d at 1234.

⁴²³ 16 U.S.C. § 668dd(c); see *United States v. Kilpatrick*, 347 F. Supp. 2d 693, 695 (D. Neb. 2004) (upholding conviction for trespassing on and shooting deer in a closed portion of a wildlife refuge).

⁴²⁴ *Id.* § 668dd(f).

⁴²⁵ *Id.* § 668dd(m).

⁴²⁶ *Wyoming*, 279 F.3d at 1231.

⁴²⁷ *Id.*

⁴²⁸ 16 U.S.C. § 668dd(m); *Wyoming*, 279 F.3d at 1232.

The *Wyoming* court also found that if the first sentence is read so as to exclude the possibility of FWS authority to manage wildlife in ways that might conflict with state law, such a result “would be inconsistent with the [Improvement Act’s] ‘mission . . . to administer a national network of lands.’”⁴²⁹ Interpreting the statute as prohibiting FWS from ever acting contrary to state law would leave the state “free to manage and regulate the [refuge] in a manner the FWS deemed incompatible with the [refuge’s] purpose.”⁴³⁰ The *Wyoming* court found it “highly unlikely . . . that Congress would carefully craft the substantive provisions of the [Improvement Act] to grant authority to the FWS to manage the [refuge] and promulgate regulations thereunder and then essentially nullify those provisions and regulations with a single sentence.”⁴³¹ The *Audubon* court agreed, stating “the first sentence of the savings clause was not meant to eviscerate the primacy of federal authority over [National Wildlife Refuge] management.”⁴³² To the extent that state law conflicts with or undermines statutory requirements or federal objectives, it is preempted.⁴³³ The Department of the Interior has adopted this cooperative federalism interpretation of the savings clause as well.⁴³⁴

v. Compatibility Determinations

The compatibility determination forms the central criterion for determining whether or not actions will be allowed to proceed on refuge lands and therefore is the key mechanism in implementing the statute’s goal of conservation. A compatible use is one that “in the sound professional judgment of [FWS] will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”⁴³⁵ In implementing this provision, FWS must consider direct, indirect, and cumulative impacts of the proposed use.⁴³⁶ However, actions categorized as

⁴²⁹ *Wyoming*, 279 F.3d at 1234 (omission in original) (quoting 16 U.S.C. § 668dd(a)(2)).

⁴³⁰ *Id.*

⁴³¹ *Id.* at 1234–35 (citation omitted); see *Geier v. Am. Honda Motor Co.*, 529 U.S. 861, 870 (2000) (“[T]his Court has repeatedly ‘decline[d] to give broad effect to savings clauses where doing so would upset the careful regulatory scheme established by federal law.’” (second alteration in original) (quoting *United States v. Locke*, 529 U.S. 89, 106–07 (2000))).

⁴³² *Nat’l Audubon Soc’y*, 307 F.3d 835, 854 (9th Cir.), *amended on denial of reh’g*, 312 F.3d 416 (9th Cir. 2002).

⁴³³ *Id.*; see *Sch. Bd. of Avoyelles Par. v. U.S. Dep’t of Interior*, 647 F.3d 570, 582 (5th Cir. 2011) (finding that Louisiana law was in direct conflict with Property Clause and the National Refuge Act and was therefore pre-empted insofar as the Louisiana statute—allowing owner of estate that has no access to public road to claim right of passage over neighboring property—“would permit the School Board to enter, use, or otherwise occupy Refuge lands in violation of FWS regulations”).

⁴³⁴ 43 C.F.R. § 24.4(e) (2016).

⁴³⁵ 16 U.S.C. § 668ee(1) (2012); 50 C.F.R. § 25.12(a) (2016).

⁴³⁶ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. 62,484, 62,489 (Oct. 18, 2000).

"refuge management activity" do not require compatibility determinations,⁴³⁷ though refuge management activities must be actions in furtherance of the system mission or refuge purposes and so are inherently compatible.⁴³⁸ State wildlife management activities may be considered "refuge management activities" if they are taken "pursuant to a cooperative agreement between the State and [FWS] where the Refuge Manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission."⁴³⁹ Because compatibility determinations must be made using "sound professional judgment,"⁴⁴⁰ the *Wyoming* court found that a reviewing court has "law to apply," and the determinations are reviewable in court.⁴⁴¹

In conclusion, Congress delegated to FWS the responsibility to manage the national wildlife refuges in accordance with the specific requirements laid out in both the Refuge Improvement Act and the establishment legislation for individual refuges. Ultimately, it is up to refuge managers to determine whether it is "practicable" and "consistent" for state laws to be applied on refuge lands.⁴⁴² As the *Wyoming* court stated: "The first sentence of the saving clause does not deny the FWS, where at odds with the State, the authority to make a binding decision bearing upon the 'biological integrity, diversity, and environmental health of the System.'"⁴⁴³ Both the compatibility requirement and the mandate to promote biological integrity, diversity, and environmental health impose legally enforceable restrictions and obligations on FWS that cannot be cast aside at the request of states.

4. The National Forest System

a. The 1897 Organic Act

USFS's 1897 "Organic Act"⁴⁴⁴ authorizes the establishment of national forests.⁴⁴⁵ It states in part that "[n]o national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."⁴⁴⁶ The law also authorizes USFS to regulate "the occupancy

⁴³⁷ *Id.* at 62,488; U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 1, GENERAL OVERVIEW OF WILDERNESS STEWARDSHIP POLICY § 1.5(V) (2008) [hereinafter FWS WILDERNESS POLICY].

⁴³⁸ 50 C.F.R. § 25.12(a); Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,489; see Joly, *supra* note 275, at 45–46.

⁴³⁹ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,488.

⁴⁴⁰ 16 U.S.C. § 668ee(1).

⁴⁴¹ *Wyoming*, 279 F.3d 1214, 1237 (10th Cir. 2002).

⁴⁴² FREYFOGLE & GOBLE, *supra* note 292, at 215.

⁴⁴³ *Wyoming*, 279 F.3d at 1234 (quoting 16 U.S.C. § 668dd(a)(4)(B)).

⁴⁴⁴ Act of June 4, 1897, ch. 2, 30 Stat. 11, 34–36 (codified as amended at 16 U.S.C. §§ 473–482, 551 (2012)).

⁴⁴⁵ 16 U.S.C. § 475.

⁴⁴⁶ *Id.*

and use" of the national forests and "to preserve the forests thereon from destruction."⁴⁴⁷

The Organic Act is silent on fish and wildlife management on national forests. In an early wildlife decision, however, the Supreme Court found USFS to have broad powers in protecting the national forests (in this case the Kaibab) from damage inflicted by deer in northern Arizona.⁴⁴⁸ The power of the United States, said the Court, to "protect its lands and property does not admit of doubt, the game laws of any other statute of the state to the contrary notwithstanding."⁴⁴⁹

b. The Multiple-Use Sustained-Yield Act of 1960

In 1960, Congress passed the Multiple-Use Sustained-Yield Act⁴⁵⁰ (MUSYA). For the first time, it was statutorily recognized that USFS had some responsibility to consider fish and wildlife values on the national forests.⁴⁵¹ MUSYA states in pertinent part: "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, *and wildlife and fish* purposes."⁴⁵² This language does not require USFS to conserve wildlife in any specific way, only to consider wildlife and fish in the context of multiple-use decision making. As defined in the law, multiple use means:

The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various

⁴⁴⁷ See *id.* § 551 ("The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests which may have been set aside or which may be hereafter set aside under the provisions of section 471 of this title, and which may be continued; and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction." (footnote omitted)); see also *Forest Serv. Emps. for Envtl. Ethics v. U.S. Forest Serv.*, 689 F. Supp. 2d 891, 905 (W.D. Ky. 2010) (finding that USFS unlawfully delegated its Organic Act authority in allowing the National Wild Turkey Federation to issue special use permits on forest lands).

⁴⁴⁸ *Hunt*, 278 U.S. 96, 100 (1928).

⁴⁴⁹ *Id.* (citations omitted).

⁴⁵⁰ Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517, 74 Stat. 215 (codified as amended at 16 U.S.C. §§ 528-531).

⁴⁵¹ 16 U.S.C. § 528.

⁴⁵² *Id.* (emphasis added).

resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.⁴⁵³

As the courts generally view it, the multiple-use mandate “breathe[s] discretion at every pore”⁴⁵⁴ and grants USFS wide latitude in determining the “proper mix of uses” for national forest lands.⁴⁵⁵ In *Perkins v. Bergland*, the plaintiffs argued that MUSYA contained standards that cabined USFS’s discretion over the proper number of grazing permits to protect the public land from damage.⁴⁵⁶ The Ninth Circuit disagreed:

These sections of MUSYA contain the most general clauses and phrases. For example, the agency is “directed” in section 529 to administer the national forests “for multiple use and sustained yield of the several products and services obtained therefrom,” with “due consideration [to] be given to the relative values of the various resources in particular areas.” This language, partially defined in section 531 in such terms as “that [which] will best meet the needs of the American people” and “making the most judicious use of the land,” can hardly be considered concrete limits upon agency discretion. Rather, it is language which “breathe[s] discretion at every pore.” What appellants really seem to be saying when they rely on the multiple-use legislation is that they do not agree with the Secretary on how best to administer the forest land on which their cattle graze. While this disagreement is understandable, the courts are not at liberty to break the tie by choosing one theory of range management as superior to another.⁴⁵⁷

Since *Perkins v. Bergland*, the courts have consistently found that USFS has broad discretion under the multiple-use framework.⁴⁵⁸ This includes *Wyoming v. U.S. Department of Agriculture*, where the Tenth Circuit upheld the 2001 Roadless Rule⁴⁵⁹ over challenges that the Rule failed to satisfy the statutory multiple-use mandate because it precluded timber harvesting in

⁴⁵³ *Id.* § 531(a).

⁴⁵⁴ *Perkins v. Bergland*, 608 F.2d 803, 806 (9th Cir. 1979) (alteration in original) (quoting *Strickland v. Morton*, 519 F.2d 467, 469 (9th Cir. 1975)).

⁴⁵⁵ *Wyoming v. U.S. Dep’t of Agric.*, 661 F.3d 1209, 1268 (10th Cir. 2011).

⁴⁵⁶ *Perkins*, 608 F.2d at 806.

⁴⁵⁷ *Id.* at 806–07 (alterations in original) (citations and footnotes omitted).

⁴⁵⁸ See, e.g., *Cal. Forestry Ass’n v. Bosworth*, No. 2:05-cv-00905-MCE-GGH, 2008 WL 4370074, at *4 (E.D. Cal. Sept. 24, 2008); *Pac. Rivers Council v. U.S. Forest Serv.*, No. 2:05-cv-00953-MCE-GGH, 2008 WL 4291209, at *16–17 (E.D. Cal. Sept. 18, 2008), *aff’d in part and rev’d in part*, 689 F.3d 1012 (9th Cir. 2012); *California ex rel. Lockyer v. U.S. Dep’t of Agric.*, No. 2:05-cv-0211-MCE-GGH, 2008 WL 3863479, at *7–8 (E.D. Cal. Aug. 19, 2008), *aff’d sub nom.*, *Sierra Forest Legacy v. Sherman*, 646 F.3d 1161 (9th Cir. 2011); *Nat. Res. Def. Council, Inc. v. U.S. Forest Serv.*, 634 F. Supp. 2d 1045, 1058 (E.D. Cal. 2007); *Clinch Coal v. Damon*, 316 F. Supp. 2d 364, 378 (W.D. Va. 2004); *Sierra Club v. Marita*, 845 F. Supp. 1317, 1328 (E.D. Wis. 1994), *aff’d*, 46 F.3d 606 (7th Cir. 1995); *Wind River Multiple-Use Advocates v. Espy*, 835 F. Supp. 1362, 1372 (D. Wyo. 1993), *aff’d*, 85 F.3d 641 (10th Cir. 1996); *Big Hole Ranchers Ass’n v. U.S. Forest Serv.*, 686 F. Supp. 256, 264 (D. Mont. 1988).

⁴⁵⁹ *Special Areas; Roadless Area Conservation*, 66 Fed. Reg. 3244 (Jan. 12, 2001).

certain areas.⁴⁶⁰ The court reaffirmed MUSYA's discretionary nature and found that, while the Rule did not permit timber harvesting, it permitted other multiple uses, such as "outdoor recreation," "watershed," and "wildlife and fish purposes."⁴⁶¹

A relatively short and simple savings clause is also provided in MUSYA: "Nothing herein shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish on the national forests."⁴⁶² However, as noted above, in *California Coastal Commission v. Granite Rock Co.*, the Supreme Court held that federal law preempted the extension of state land use plans onto national forest lands because the savings clause merely indicates that ordinary principles of preemption govern such disputes.⁴⁶³ By the same token, contradictory state regulation of wildlife in the national forests would be preempted despite the savings clause.⁴⁶⁴

c. The National Forest Management Act of 1976

Born out of the timber clear-cutting controversies of the 1960s and 1970s, NFMA was passed in order to better balance timber management, resource use, and environmental protection.⁴⁶⁵ Unlike the highly discretionary Organic Act and MUSYA, NFMA provides substantive and procedural planning requirements, goals, and constraints on the agency, including obligations for managing fish and wildlife.⁴⁶⁶ NFMA requires the writing of land and resource management plans (LRMPs or forest plans) by every national forest and grassland in the National Forest System (NFS).⁴⁶⁷

NFMA created a three-tiered regulatory approach to planning.⁴⁶⁸ At the highest level, national-level NFMA regulations govern the development and revision of second-tier forest plans.⁴⁶⁹ Forest plans typically make zoning and suitability decisions, and limit and regulate various activities within a forest area, therefore acting as a gateway through which subsequent project-level proposals must pass.⁴⁷⁰ Forest plans also include long-term goals and desired

⁴⁶⁰ *Wyoming*, 661 F.3d at 1267-69; accord *Am. Whitewater v. Tidwell*, 959 F. Supp. 2d 839, 863 (D.S.C. 2013), *aff'd*, 770 F.3d 1108 (4th Cir. 2014); *Ark Initiative v. Tidwell*, 816 F.3d 119, 128 (D.C. Cir.), *cert. denied*, 137 S. Ct. 301 (2016).

⁴⁶¹ *Wyoming*, 661 F.3d at 1268-69 (quoting 16 U.S.C. § 528 (2012)).

⁴⁶² 16 U.S.C. § 528.

⁴⁶³ *Granite Rock Co.*, 480 U.S. 572, 585, 593-94 (1987).

⁴⁶⁴ *Hunt*, 278 U.S. 96, 100 (1928) (upholding federal removal of deer from the Kaibab National Forest to protect the forest from damage caused by overgrazing, despite objections from the state).

⁴⁶⁵ 16 U.S.C. § 1600.

⁴⁶⁶ See *id.* §§ 1603-1604; 36 C.F.R. § 219.1 (2016).

⁴⁶⁷ 16 U.S.C. § 1604(a).

⁴⁶⁸ *Id.* § 1604. For a more elaborate explanation of this tiered approach, see *Citizens for Better Forestry v. U.S. Department of Agriculture*, 341 F.3d 961, 965-66 (9th Cir. 2003).

⁴⁶⁹ *Citizens for Better Forestry*, 341 F.3d at 965 (citing 16 U.S.C. § 1604(g)).

⁴⁷⁰ Scott W. Hardt, *Federal Land-Use Planning and Its Impact on Resource Management Decisions*, in PUBLIC LAND LAW II (Rocky Mountain Mineral Law Found., Special Inst. 1997).

conditions of the land and resources.⁴⁷¹ Site-specific projects make up the third tier of planning.⁴⁷² Any such proposed use of a national forest is subject to the requirement in NFMA that “[r]esource plans and permits, contracts, and other instruments for use and occupancy of National Forest System lands shall be consistent with” the applicable forest plan.⁴⁷³ Thus, to the extent that states are subject to USFS authority, that authority must be exercised in conformance with the provisions in the current forest plan.

i. NFMA and Wildlife

One of NFMA’s most powerful provisions is its wildlife diversity mandate.⁴⁷⁴ It requires that forest plans “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁴⁷⁵ According to Wilkinson and Anderson’s authoritative history of NFMA’s development, the diversity provision was meant to require “[USFS] planners to treat the wildlife resource as a controlling, co-equal factor in forest management and, in particular, as a substantive limitation on timber production.”⁴⁷⁶ Regulations implementing NFMA address requirements for diversity in greater detail.⁴⁷⁷ If state wildlife management actions occur on national forest lands they must be considered in this statutory and regulatory context, and may be subject to preemption based on USFS’s authority and obligations for wildlife diversity.⁴⁷⁸

Most “first-generation” forest plans were written pursuant to the 1982 NFMA regulations. Those regulations required that “[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”⁴⁷⁹ While this language emphasized management of habitat, the regulation also established a minimum population threshold, at least in concept, by defining “viable population” as “one which has the estimated numbers and distribution of

⁴⁷¹ See generally Michael J. Gippert & Vincent L. DeWitte, *The Nature of Land and Resource Management Planning Under the National Forest Management Act*, 3 ENVTL. LAW. 149 (1996) (discussing the various planning processes under NFMA); see also *Ohio Forestry Ass’n v. Sierra Club*, 523 U.S. 726, 729 (1998) (describing the nature of forest plans).

⁴⁷² *Citizens for Better Forestry*, 341 F.3d at 966.

⁴⁷³ 16 U.S.C. § 1604(i).

⁴⁷⁴ See generally Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service’s 2012 Planning Rule*, 77 J. WILDLIFE MGMT. 428 (2013) (exploring the broad implications for wildlife management under the 2012 Planning Rule).

⁴⁷⁵ 16 U.S.C. § 1604(g)(3)(B).

⁴⁷⁶ CHARLES F. WILKINSON & H. MICHAEL ANDERSON, *LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS* 296 (1987).

⁴⁷⁷ See, e.g., National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026, 43,050 (Sept. 30, 1982) (to be codified at 36 C.F.R. pt. 219).

⁴⁷⁸ See, e.g., 36 C.F.R. § 219.26 (2016) (discussing the requirements for pursuing and maintaining ecological diversity).

⁴⁷⁹ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19); see, e.g., *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401, 1404–05 (9th Cir. 1996) (applying viability regulations to northern spotted owl).

reproductive individuals to insure its continued existence is well distributed in the planning area.⁴⁸⁰

Existing forest plans will be revised (many during the next decade) and amended under new NFMA implementing procedures codified in the 2012 Planning Rule.⁴⁸¹ They include a different set of substantive requirements for management of wildlife. For ESA-listed species, forest plan components (e.g., desired future conditions, objectives, standards, and guidelines) must provide the "ecological conditions necessary to[] contribute to" their recovery.⁴⁸² For other at-risk species, referred to as species of conservation concern (SCC), forest plan components must provide the "ecological conditions necessary to . . . maintain a viable population of each species of conservation concern within the plan area."⁴⁸³ There is an exception for SCC management: where population viability is beyond the authority of USFS or capability of the land, USFS must coordinate to the extent practicable with others having management authority over lands relevant to a larger population.⁴⁸⁴

The 2012 Planning Rule defines "ecological conditions" to include "habitat and other influences on species and the environment."⁴⁸⁵ Other influences include "human uses."⁴⁸⁶ The Rule defines "viable population" as "[a] population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments."⁴⁸⁷ Like its predecessor, the 2012 Planning Rule thus establishes population levels for at-risk species as a goal, which is to be achieved by providing ecological conditions and regulating human uses.

Forest plans may be considered as "regulatory mechanisms," as defined by the ESA, during the listing process and may be a basis for not listing a species.⁴⁸⁸ Regulations of the United States Department of Agriculture

⁴⁸⁰ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19).

⁴⁸¹ National Forest System Land Management Planning, 77 Fed. Reg. 21,162 (Apr. 9, 2012).

⁴⁸² 36 C.F.R. § 219.9(b)(1).

⁴⁸³ *Id.* Agency planning policy requires that species identified by states as being at risk be considered as potential SCC. U.S. FOREST SERV., FOREST SERVICE HANDBOOK: LAND MANAGEMENT PLANNING HANDBOOK § 1909.12 (2013).

⁴⁸⁴ 36 C.F.R. § 219.9(b)(2).

⁴⁸⁵ *Id.* § 219.19.

⁴⁸⁶ *Id.*

⁴⁸⁷ *Id.* § 219.49.

⁴⁸⁸ *See* Greater Yellowstone Coal, Inc. v. Servheen, 665 F.3d 1015, 1030–32 (9th Cir. 2011) (finding forest plan direction was properly considered a valid regulatory mechanism for providing protection for grizzly bears). The decision to list Canada lynx as a threatened species was based largely on the lack of regulatory mechanisms in federal plans. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,074 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17) ("Therefore, amendment of Forest Plans to provide protection for lynx and lynx habitat is needed to conserve habitat for lynx and its prey on Federal forest lands. Without such amendments, the species is threatened."). The decision to not list the greater sage grouse was based largely on plans for federal lands that conserved the species. *See* Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to

(USDA) require USFS—and other USDA agencies—to “avoid actions which may cause a species to become threatened or endangered.”⁴⁸⁹ Under current plans and policies, species identified as “sensitive” were so designated in part to avoid their listing under the ESA,⁴⁹⁰ and agency actions may not create “significant trends towards federal listing.”⁴⁹¹ Current forest plans must ensure that viable populations of sensitive species are maintained.⁴⁹² The relationship of newly identified SCC and the ESA has not been as clearly articulated, but their role in developing adequate forest plan regulatory mechanisms should be similar.

When forest plans are amended or revised, they are also subject to the substantive requirements of the ESA for listed species.⁴⁹³ This means that they cannot jeopardize the continued existence of listed species,⁴⁹⁴ or destroy or adversely modify any critical habitat that has been designated,⁴⁹⁵ or result in prohibited incidental take.⁴⁹⁶ Forest plans may also be viewed as the primary means by which the agency is “carrying out programs for the conservation of” listed species, in accordance with section 7(a)(1) of the ESA.⁴⁹⁷

When it prepares forest plans under NFMA, USFS may include plan components that govern activities affecting wildlife.⁴⁹⁸ These plan components may include both desired ecological conditions and restrictions

List Greater Sage-Grouse (*Centrocercus urophasianus*) as an Endangered or Threatened Species, 80 Fed. Reg. 59,858, 59,858 (Oct. 2, 2015) (to be codified at 50 C.F.R. pt. 17).

⁴⁸⁹ U.S. DEP’T OF AGRIC., NO. 9500-004, DEPARTMENTAL REGULATION: FISH AND WILDLIFE POLICY § 1(d) (2008), <https://perma.cc/7T2X-FD7T>.

⁴⁹⁰ U.S. FOREST SERV., FOREST SERVICE MANUAL [FSM] § 2670.22(1) (2005).

⁴⁹¹ *Id.* § 2670.32(4).

⁴⁹² *Id.* § 2672.41 (2009).

⁴⁹³ *See, e.g., Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1086–88 (9th Cir. 2015), *cert. denied*, 137 S. Ct. 293 (2016).

⁴⁹⁴ *See, e.g., Res. Ltd. v. Robertson*, 35 F.3d 1300, 1304 n.3 (9th Cir. 1993) (finding FWS conditioned its “no jeopardy” conclusion on the USFS’s continued adherence to grizzly bear guidelines).

⁴⁹⁵ *See Cottonwood*, 789 F.3d at 1088 (reinitiation of consultation on forest plans required after designation of critical habitat for Canada lynx).

⁴⁹⁶ Recently settled litigation involving the Superior National Forest Plan claimed that USFS is responsible for the take of Canada lynx resulting from hunting and trapping on the national forest. Complaint for Declaratory and Injunctive Relief at 2, 6, Ctr. for Biological Diversity v. Tidwell, No. 1:16-cv-01049-TSC (D.D.C. June 6, 2016).

⁴⁹⁷ 16 U.S.C. § 1536(a)(1) (2016). The Preamble to the 2012 Planning Rule states that the requirement to contribute to recovery, “will further the purposes of § 7(a)(1) of the ESA, by actively contributing to threatened and endangered species recovery and maintaining or restoring the ecosystems upon which they depend.” National Forest System Land Management Planning, 77 Fed. Reg. 21,162, 21,215 (Apr. 9, 2012) (to be codified at 50 C.F.R. pt. 219). The FWS Handbook for consultation states that a programmatic review based on section 7(a)(1) is appropriate for Federal agency planning and program management documents. U.S. FISH & WILDLIFE SERV. & NAT’L MARINE FISHERIES SERV., CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING CONSULTATION AND CONFERENCE ACTIVITIES UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT 1-1, 5-1 (1998), <https://perma.cc/LN7H-HNNL>.

⁴⁹⁸ *See National Forest System Land and Resource Management Planning*, 47 Fed. Reg. 43,026, 43,044 (Sept. 30, 1982) (to be codified at 36 C.F.R. § 219.11) (listing ecological factors as a planning criteria).

on activities that are likely to adversely affect these conditions.⁴⁹⁹ Such restrictions could be applicable to state actions occurring in a national forest.⁵⁰⁰ However, the 2012 Planning Rule states that plans do not themselves regulate uses by the public, such as hunting and fishing.⁵⁰¹

ii. Wildlife and Special Use Authorization

Several wildlife conflicts playing out in the national forests involve the question of whether or not USFS should authorize a wildlife-focused action by a nonfederal actor. For example, states may be engaged in introducing new species on national forest lands, or limiting or removing species that are undesirable from the state's perspective. Questions may arise about USFS's role in these state actions and the applicability of federal law to them.

USFS implements forest plans by authorizing specific uses that promote achievement of the desired outcomes, such as plant and animal diversity and viable populations.⁵⁰² It may also authorize activities that would not necessarily promote these outcomes.⁵⁰³ This is often the case with requests for special use authorizations by applicants for permits, which could include state and local governments.⁵⁰⁴ A forest plan may include mandatory requirements (e.g., standards or guidelines) applicable to the issuance of such permits.⁵⁰⁵

The objective of the USFS special uses program is to "[a]uthorize and manage special uses of National Forest System lands in a manner which protects natural resources and public health and safety, consistent with [forest plans]."⁵⁰⁶ Permits may be granted only if "[t]he proposed use cannot reasonably be accommodated on non-National Forest System lands."⁵⁰⁷

Almost all uses of NFS lands, improvements, and resources are designated "special uses."⁵⁰⁸ Wildlife management activities on national

⁴⁹⁹ *See id.*

⁵⁰⁰ A conflict between a state action and NFMA's diversity requirement could possibly arise where a state game species is considered at-risk by USFS. This is the case for bighorn sheep, where the State of Wyoming passed a law authorizing removal of bighorn sheep if USFS were to eliminate domestic sheep grazing. WYO. STAT. ANN. § 11-19-604(e) (2017); *see also* Idaho Wool Growers Ass'n v. Vilsack, 7 F. Supp. 3d 1085, 1092 (D. Idaho 2014) (finding USFS's forest plan "committed 'no clear error in judgment'" by reducing domestic sheep grazing in order to prevent disease transmission to bighorn sheep), *aff'd*, 816 F.3d 1095 (9th Cir. 2016).

⁵⁰¹ 36 C.F.R. § 219.2(b)(2) (2016). A forest plan direction to limit public uses must be implemented by a closure order, pursuant to *id.* § 261.50, and may include special closures to protect wildlife pursuant to *id.* § 261.53(a).

⁵⁰² *Id.* § 219.9.

⁵⁰³ *Id.* § 219.9(b)(2).

⁵⁰⁴ *Id.* § 251.50(a).

⁵⁰⁵ *Id.* § 251.52.

⁵⁰⁶ FSM § 2702 (2011).

⁵⁰⁷ *Id.* § 2703.2(2)(b).

⁵⁰⁸ 36 C.F.R. § 251.50(a), (e) (some uses are not considered "special uses" because they are regulated by separate authorities); *see also* FSM § 2701.1 (listing the various authorities for different kinds of special uses).

forests by nonfederal parties would be considered special uses.⁵⁰⁹ Before conducting a special use, individuals or entities must obtain a special use authorization from the authorized officer, unless that requirement is waived by regulation.⁵¹⁰ There is no waiver provision that necessarily allows state actions taken on NFS lands without a permit. A special use authorization is normally not required for hunting or fishing.⁵¹¹ However, USFS may manage public recreation of any kind by issuing a closure order.⁵¹²

iii. Coordination with State and Local Governments

NFMA includes a requirement to coordinate with the land and resource management planning processes of state and local governments in the development of forest plans.⁵¹³ The 2012 Planning Rule requires review of the planning and land use policies of state and local governments, consideration of the objectives of these policies, and opportunities to reduce conflicts.⁵¹⁴ However, it explicitly does not permit the responsible USFS official to “conform the management to meet non-[USFS] objectives or policies.”⁵¹⁵

The 2012 Planning Rule also requires the official responsible for forest planning to “encourage States, counties, and other local governments to seek cooperating agency status in the NEPA process for development, amendment, or revision of a plan.”⁵¹⁶ The role of such cooperating agencies is to assist in the environmental review process.⁵¹⁷ NEPA also includes a requirement to “cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements.”⁵¹⁸ In addition, NEPA documents must identify any inconsistencies with state and local plans or laws, and “describe the extent to which the agency would reconcile its proposed action with the plan or

⁵⁰⁹ 36 C.F.R. § 251.50(a).

⁵¹⁰ *Id.* § 251.50(c)–(e) (the requirement for a special use permit is waived for most noncommercial recreational activities not involving a large organized group, most forms of travel on NFS roads, uses with nominal effects, and uses regulated by a state agency or another federal agency in a manner that adequately protects national forest lands and resources).

⁵¹¹ *Id.* § 251.50(c).

⁵¹² *Id.* § 261.50; *see also id.* § 261.70(a)(4) (among other reasons, closure orders are authorized for the “[p]rotection of threatened, endangered, rare, unique, or vanishing species of plants, animals, birds or fish, or special biological communities”).

⁵¹³ *See* NFMA, 16 U.S.C. § 1604(a) (2012) (providing that, “as appropriate,” forest plan revisions should be “coordinated with the land and resource management planning processes of State and local governments and other Federal agencies”); *see also* 36 C.F.R. § 219.4(b)(1) (requiring NFMA officials to coordinate with the “equivalent and related planning efforts” of Tribes, agencies, and state and local governments).

⁵¹⁴ 36 C.F.R. § 219.4(b)(2).

⁵¹⁵ *Id.* § 219.4(b)(3); *see, e.g.*, Letter from USDA Forest Serv., Intermountain Region, to Matt Mead, Governor of Wyo. (Feb. 20, 2015) (on file with authors) (Bridger-Teton National Forest refused to “adopt” a Wyoming plan for bighorn sheep, describing it only as “a valuable framework”).

⁵¹⁶ 36 C.F.R. § 219.4(a)(1)(iv).

⁵¹⁷ *Id.* § 219.4(a)–(b).

⁵¹⁸ 40 C.F.R. §§ 1501.6, 1506.2(b) (2016).

law.⁵¹⁹ There is no general NEPA requirement to coordinate decision-making processes or for USFS decisions to be consistent with state plans.

In conclusion, although it is clear that USFS must coordinate the development of LRMPs with tribal, state, and local governments, this coordination requirement does not give such nonfederal entities equal footing in managing NFS lands, nor does it require USFS to act and manage NFS lands consistent with these nonfederal plans.

d. U.S. Forest Service Cooperation in Wildlife Management

Federal regulations applicable to USFS require cooperation among wildlife management agencies:

The Chief of [USFS], through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of [USFS] will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.⁵²⁰

USFS directives provide additional coordination guidance.⁵²¹ In particular, they require development of a written Memorandum of Understanding with each state involving policies or procedural matters.⁵²²

Hunting, fishing, and trapping on NFS lands are subject to state fish and wildlife laws and regulations, unless those regulations conflict with federal laws or they would permit activities that conflict with land and resource management responsibilities of USFS or that are inconsistent with direction in forest plans.⁵²³ Memorandums with state fish and wildlife agencies must

⁵¹⁹ *Id.* § 1506.2(d) ("To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.").

⁵²⁰ 36 C.F.R. § 241.2.

⁵²¹ See FSM § 2671.1 (2005).

⁵²² *Id.* § 2611.1 (1990).

⁵²³ *Id.* § 2643.1 (1995); see, e.g., *Meister v. U.S. Dep't of Agric.*, 623 F.3d 363, 379–80 (6th Cir. 2010) (stating that it is not beyond USFS's authority to consider using a forest plan to prohibit gun hunting in areas to be managed for non-motorized recreation); *La. Sportsmen All. v. Vilsack*, 984 F. Supp. 2d 600, 611 (W.D. La. 2013) (holding that a forest plan may prohibit hunting deer with dogs to reduce conflicting uses), *rev'd on other grounds*, 583 F. App'x 379 (5th Cir. 2014); *Ctr. for Biological Diversity v. U.S. Forest Serv.*, No. CV-12-8176-PCT-SMM, 2013 WL 3335234,

"recognize the role of [USFS] in cooperating in the development of State fish and wildlife laws and regulations, especially those addressing hunting, fishing, and trapping as they would apply to occupancy and use of National Forest System lands."⁵²⁴

"Introductions or stocking of species may be made to restore resources following environmental changes, [and] to provide recreation opportunities where reproduction is insufficient to meet demand."⁵²⁵ Authority is also provided to "restore locally extinct indigenous species, to recover threatened and endangered species, and to introduce new species in coordination with State and Federal agencies."⁵²⁶ A prior joint agreement with appropriate state fish and wildlife agencies is needed for any introductions.⁵²⁷ "Such MOU's must document agreements on each fish and wildlife translocation project and appropriate environmental documentation."⁵²⁸ When stocking and reintroductions occur, USFS "has the responsibility to prevent damage to resources occurring on [NFS] lands" and comply with the ESA and Wilderness Act.⁵²⁹

State cooperative agreements are found in MOUs that are appended to the USFS Manual as regional supplements that pertain to the states found in each region. For example, an MOU between Idaho and USFS commits USFS to considering state goals when developing its forest plans.⁵³⁰ It also recognizes that special use permits may be needed for some state actions on federal lands.⁵³¹ The MOU requires prior consultation (but not permission) for use of chemicals and for transplants or introductions of wildlife or fish "with sufficient lead time to permit joint field investigations regarding the effects of such programs on National Forest System lands."⁵³² It also contains a savings clause regarding state and federal authorities.⁵³³

e. Special Designated Areas Managed by the U.S. Forest Service

The laws and regulations reviewed above generally apply throughout the NFS, but the System also includes special areas, designated by Congress or the President, that may include additional authority and direction for

*3 (D. Ariz. July 2, 2013) (determining that USFS has authority to regulate the use of lead bullets to protect California condors), *rev'd on other grounds*, 640 F. App'x 617 (9th Cir. 2016).

⁵²⁴ FSM § 2643.

⁵²⁵ *Id.* § 2640.3(3); *see also* Exec. Order No. 11,987, 3 C.F.R. § 116 (1977) (generally restricting federal agencies from introducing exotic species to lands they administer and encouraging the prevention of introductions by other levels of government and by private citizens).

⁵²⁶ FSM § 2640.3. "The State has the responsibility to make the determination as to which wildlife and fish species are native or indigenous." *Id.* § 2641.

⁵²⁷ *Id.* §§ 2640.41–42.

⁵²⁸ *Id.* § 2641.

⁵²⁹ *Id.*

⁵³⁰ *Id.* § 1561.2(A)(3) (1994).

⁵³¹ *Id.* § 1561.2(A)(6)–(7).

⁵³² *Id.* § 1561.2(B)(6)–(8).

⁵³³ *Id.* § 1561.2(C)(12).

managing wildlife. These include an assortment of USFS-administered national recreation areas, conservation areas, and other specially designated landscapes.⁵³⁴ These include national monuments that are established by the President using the Antiquities Act.⁵³⁵ A recent national monument established on NFS lands (which also includes BLM lands) is the Sand to Snow National Monument in California.⁵³⁶ President Obama's Proclamation establishing the monument emphasizes the area's "remarkable species richness that makes it one of the most biodiverse areas in southern California," that it "is home to 12 federally listed threatened and endangered animal species" and "frequented by over 240 species of birds," and that the area's "intersection of mountains makes th[e] area a critical bridge for wildlife traversing the high elevations of southern California's desert landscape."⁵³⁷ The Proclamation orders USFS and BLM to use "their respective applicable legal authorities" to implement these wildlife-focused purposes of the national monument and includes a savings clause stating that the Proclamation does nothing "to enlarge or diminish the jurisdiction of the State of California, including its jurisdiction and authority with respect to fish and wildlife management."⁵³⁸

5. Public Lands Managed by the Bureau of Land Management

a. Federal Land Policy Management Act (1976)

Of most relevance to wildlife on public lands managed by BLM is the Federal Land Policy Management Act of 1976. FLPMA is considered to be BLM's Organic Act because it consolidated and articulated the agency's mission and management responsibilities.⁵³⁹ Its full history is beyond the purview of this Article, but it is commonly recognized that the Act was designed, in part, to correct the agency's historic practice of prioritizing livestock grazing and mining as the dominant uses of public lands.⁵⁴⁰ In FLPMA, Congress declared that fish and wildlife values were to be balanced with other resources and uses of the public lands, and expressed a policy that:

⁵³⁴ For a comprehensive listing of "special recreation and conservation overlays," see GEORGE CAMERON COGGINS ET AL., *FEDERAL PUBLIC LAND AND RESOURCES LAW* 946-47 (6th ed. 2007); NAT. RES. LAW CTR., *PROTECTIVE DESIGNATIONS ON FEDERAL LANDS: CASE STUDIES OF NATIONAL CONSERVATION AREAS, NATIONAL MONUMENTS, NATIONAL PARKS, NATIONAL RECREATION AREAS, AND WILDERNESS AREAS 2* (2004); Martin Nie & Michael Fiebig, *Managing the National Forests Through Place-Based Legislation*, 37 *ECOLOGY L.Q.* 1, 15-23 (2010).

⁵³⁵ Antiquities Act of 1906, 54 U.S.C. §§ 320301-320303 (Supp. III 2016); see *id.* § 320301.

⁵³⁶ Proclamation No. 9396, 81 Fed. Reg. 8379 (Feb. 18, 2016).

⁵³⁷ *Id.* at 8380.

⁵³⁸ *Id.* at 8382-83.

⁵³⁹ See DEBRA L. DONAHUE, *THE WESTERN RANGE REVISITED: REMOVING LIVESTOCK FROM PUBLIC LANDS TO CONSERVE NATIVE BIODIVERSITY* 203 (1999); JAMES R. SKILLEN, *THE NATION'S LARGEST LANDLORD: THE BUREAU OF LAND MANAGEMENT IN THE AMERICAN WEST* 102 (2009).

⁵⁴⁰ See DONAHUE, *supra* note 539, at 206-07; SKILLEN, *supra* note 539, at 102-03.

[T]he public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.⁵⁴¹

FLPMA also codified a multiple-use mandate,⁵⁴² which is defined as follows:

[T]he management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, *wildlife and fish*, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.⁵⁴³

Three components of this definition are essential to understanding BLM's multiple-use mandate. First, it means that some lands may be used for less than all of the possible resources and values present in an area. In fact, some land may be used for only one resource or value. Second, "multiple use" means that some lands may be used for purposes that do not return the greatest profit to individuals, corporations, or federal, state, or local governments. Third, the diverse resources for which BLM is given direction to manage include "wildlife and fish," and not just fish and wildlife *habitat*. We return to this issue in Part IV.A.

Similar to other federal land laws, Congress recognized the national interest in these public lands and wanted their management to be based on a systematic inventory and an informed land use planning process. To this end, FLPMA requires the preparation of resource management plans.⁵⁴⁴ In preparing these plans, the agency must consider such things as the "present and potential uses of the public lands[,] . . . the relative scarcity of the values involved," to "rely, to the extent it is available, on the inventory of the public

⁵⁴¹ 43 U.S.C. § 1701(a)(8).

⁵⁴² Congress first codified a multiple-use management for BLM in the Classification and Multiple Use Act of 1964, 43 U.S.C. §§ 1411–1418 (1970) (omitted as obsolete in 1976).

⁵⁴³ 43 U.S.C. § 1702(c) (2012) (emphasis added).

⁵⁴⁴ *Id.* § 1712.

lands, their resources, and others values," and "weigh long-term benefits to the public against short-term benefits."⁵⁴⁵

As in the case of the national forests, the multiple-use mandate given to BLM provides a great deal of agency discretion.⁵⁴⁶ But this discretion is not boundless. The agency violates FLPMA if it fails to "engage in any reasoned or informed decisionmaking process" concerning the implementation of multiple use.⁵⁴⁷ FLPMA's multiple-use mandate is also bounded by two additional provisions of FLPMA: 1) the requirement to avoid "permanent impairment . . . [to] the quality of the environment,"⁵⁴⁸ and 2) the requirement that the Secretary of Interior (and hence BLM) must "take any action necessary to prevent unnecessary or undue degradation of the lands."⁵⁴⁹

i. Areas of Critical Environmental Concern

FLPMA requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern" (ACECs).⁵⁵⁰ As defined in FLPMA:

The term "areas of critical environmental concern" means areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, *fish and wildlife resources* or other natural systems or processes, or to protect life and safety from natural hazards.⁵⁵¹

This is a unique provision in federal land law. ACECs are often designated because of the fish and wildlife values associated with them.⁵⁵² Congress, in unambiguous fashion, ordered the agency to *prioritize* the designation and protection of ACECs.⁵⁵³ This means that BLM should be giving ACECs priority for consideration in the planning process and extra

⁵⁴⁵ *Id.* § 1712(c)(4)-(7).

⁵⁴⁶ See, e.g., *Nat. Res. Def. Council, Inc. v. Hodel*, 624 F. Supp. 1045, 1058 (D. Nev. 1985), *aff'd*, 819 F.2d 927 (9th Cir. 1987).

⁵⁴⁷ *Nat'l Wildlife Fed'n*, 140 Interior Dec. 85, 101 (IBLA 1997). For a more complete history of this case and its implications for multiple use, see generally Joseph M. Feller, *The Comb Wash Case: The Rule of Law Comes to the Public Rangelands*, 17 PUB. LAND & RESOURCES L. REV. 25 (1996).

⁵⁴⁸ 43 U.S.C. § 1702(c).

⁵⁴⁹ *Id.* § 1732(b). See generally Roger Flynn, *Daybreak on the Land: The Coming of Age of the Federal Land Policy and Management Act of 1976*, 29 VT. L. REV. 815 (2005) (reviewing the application of this provision as it relates to water, mining, and property rights).

⁵⁵⁰ 43 U.S.C. § 1712(c)(3).

⁵⁵¹ *Id.* § 1702(a) (emphasis added).

⁵⁵² Karin P. Sheldon & Pamela Baldwin, *Areas of Critical Environmental Concern: FLPMA's Unfulfilled Conservation Mandate*, 28 COLO. NAT. RESOURCES ENERGY & ENVTL. L. REV. 1, 28 (2017).

⁵⁵³ Debra L. Donahue, *Federal Rangeland Policy: Perverting Law and Jeopardizing Ecosystem Services*, 22 J. LAND USE & ENVTL. L. 299, 337-38 (2007).

weight in decision making.⁵⁵⁴ As summarized in a recent study: "The legislative history of FLPMA establishes Congress' clear intent to provide for special protection of ACECs and to direct BLM to accord priority for that protection over other multiple uses in the agency's inventory, land designation and planning activities."⁵⁵⁵ The study finds that such prioritization has not taken place and recommends a number of steps be taken to meet FLPMA's mandate. This includes "restor[ing] the visibility and effectiveness of ACECs"—in BLM regulations, policy guidance, and budget justifications—and providing them "the heightened level of protection required by FLPMA."⁵⁵⁶

ii. Bureau of Land Management Regulation and Policy

Three provisions are of particular importance to wildlife management on public lands managed by BLM. The first is the "fundamentals of rangeland health" regulation that requires standards and guidelines to be developed by BLM, including those focused on wildlife habitat.⁵⁵⁷ The regulation requires that "[h]abitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal proposed or candidate threatened and endangered species, and other special status species."⁵⁵⁸

The second is found in the BLM Manual for management of "special status species."⁵⁵⁹ This policy was written pursuant to FLPMA, the ESA, and other laws.⁵⁶⁰ BLM special status species are defined as: "(1) species listed or proposed for listing under the [ESA], and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA."⁵⁶¹ The objectives of the policy are "[t]o conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species," and "[t]o initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA."⁵⁶² Candidate species for ESA listing are included in BLM's sensitive species category.⁵⁶³ Furthermore, BLM must address "Bureau sensitive species and their habitats in land use plans and associated NEPA documents."⁵⁶⁴ With

⁵⁵⁴ See *id.* (noting that Congress repeatedly emphasized the "priority" to be given to ACECs).

⁵⁵⁵ Sheldon & Baldwin, *supra* note 552, at 5.

⁵⁵⁶ *Id.* at 61, 63.

⁵⁵⁷ 43 C.F.R. § 4180.1 (2016).

⁵⁵⁸ *Id.* § 4180.1(d).

⁵⁵⁹ BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6840—SPECIAL STATUS SPECIES MANAGEMENT (2008), <https://perma.cc/ME8D-HBTM>.

⁵⁶⁰ *Id.* § 6840.03.

⁵⁶¹ *Id.* § 6840.01.

⁵⁶² *Id.* § 6840.02.

⁵⁶³ *Id.* § 6840.01; see also *id.* at Glossary 5.

⁵⁶⁴ *Id.* § 6840.2A1(B).

respect to implementation-level planning, BLM "should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the Bureau sensitive species policies would no longer be necessary."⁵⁶⁵

The third regulation pertains to the issuance of special recreation permits. Wildlife is implicated when it is the object of a commercial or competitive event.⁵⁶⁶ BLM is obligated to regulate the use and occupancy of public lands,⁵⁶⁷ and its regulations and policy require special recreation permits for "commercial use, organized group activities or events, competitive use, and for use of special areas."⁵⁶⁸ Discretion is provided to the agency over whether to issue a permit based on the following factors:

- (a) Conformance with laws and land use plans,⁵⁶⁹
- (b) Public safety,
- (c) Conflicts with other uses,
- (d) Resource protection,
- (e) The public interest served,
- (f) Whether in the past [the applicant] complied with the terms of [the] permit or other authorization from BLM and other agencies, and
- (g) Such other information that BLM finds appropriate.⁵⁷⁰

BLM may also impose stipulations and conditions on the permit "to meet management goals and objectives and to protect lands and resources and the public interest."⁵⁷¹

⁵⁶⁵ *Id.*

⁵⁶⁶ 43 C.F.R. § 2932.11 (2016) ("[Y]ou must obtain a Special Recreation Permit for: (1) Commercial use, including vending associated with recreational use; or (2) Competitive use."); *see also id.* § 2932.14(b) ("Outfitters and guides providing services to hunters, trappers, or anglers must obtain Special Recreation Permits from BLM. Competitive event operators and organized groups may also need a Special Recreation Permit for these activities.").

⁵⁶⁷ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁵⁶⁸ 43 C.F.R. § 2931.2. A competitive use is defined as "[a]ny organized, sanctioned, or structured use, event, or activity on public land in which 2 or more contestants compete" and either register, enter, or apply for the event and/or use a "predetermined course or area." *Id.* § 2932.5. Commercial use means "recreational use of the public lands and related waters for business or financial gain," and the activity, service, or use is commercial if "[a]ny person, group, or organization makes or attempts to make a profit, receive money, amortize equipment, or obtain goods or services, as compensation from participants in recreational activities occurring on public lands led, sponsored, or organized by that person, group, or organization." *Id.*

⁵⁶⁹ Permits must be consistent with the applicable resource management plan for the area. *See* 43 U.S.C. § 1732(a); 43 C.F.R. § 1610.5-3(a).

⁵⁷⁰ 43 C.F.R. § 2932.26.

⁵⁷¹ *Id.* § 2932.41.

b. The National Landscape Conservation System

BLM is also tasked with managing units within the National Landscape Conservation System (NLCS).⁵⁷² NLCS includes BLM-administered national conservation areas (NCAs) and similar designations, national monuments, and wilderness study areas, and provides direction, either through statute or presidential proclamation, in how to manage individual units.⁵⁷³ It is beyond the scope of this Article to review the full extent and diversity of the NLCS. Importantly, however, most conservation areas and monuments managed by BLM include special provisions, going beyond FLPMA, that pertain to wildlife management and the biological values associated with the designations. For example, a purpose declared by Congress in establishing the Morley Nelson Snake River Birds of Prey NCA in Idaho is to “provide for the conservation, protection, and enhancement of raptor populations and habitats and the natural and environmental resources and values associated therewith.”⁵⁷⁴ Many of these laws also include wildlife savings clauses, some simply stating that nothing in the designation “shall be deemed to enlarge or diminish the jurisdiction” of the state “with respect to fish and wildlife management.”⁵⁷⁵ In 2009, Congress formally recognized and established the NLCS and provided another wildlife-specific savings clause that would serve as a backup if the enabling legislation was silent on the matter.⁵⁷⁶

c. Federal-State Interactions

FLPMA includes a provision encouraging the coordination and consistency of federal and state land use plans:

[T]o the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management

⁵⁷² 16 U.S.C. § 7202(c) (2012).

⁵⁷³ *Id.* § 7202(b). BLM manages roughly 4.1 million acres of NCAs and lands with similar designations, and roughly 9.5 million acres of national monuments. BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL CONSERVATION AREAS AND SIMILAR DESIGNATIONS, <https://perma.cc/XYV3-H4UZ> (last updated Oct. 2016); BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL MONUMENTS, <https://perma.cc/8F7Y-6CNV> (last updated Jan. 2017). Federal wilderness areas are also included in the NLCS, and we address those areas in Part III.B.7.

⁵⁷⁴ 16 U.S.C. § 460iii-2(a)(2).

⁵⁷⁵ *E.g.*, Proclamation No. 7398, 66 Fed. Reg. 7359, 7361 (Jan. 22, 2001).

⁵⁷⁶ Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, 123 Stat. 991 (codified as amended in scattered sections of 7, 16, 33, 36, 42, and 43 U.S.C.)

“Nothing in this chapter shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations, including the regulation of hunting, fishing, trapping and recreational shooting on public land managed by the Bureau of Land Management. Nothing in this chapter shall be construed as limiting access for hunting, fishing, trapping, or recreational shooting.”

16 U.S.C. § 7202(d)(2).

activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans, and shall provide for meaningful public involvement of State and local government officials, both elected and appointed, in the development of land use programs, land use regulations, and land use decisions for public lands, including early public notice of proposed decisions which may have a significant impact on non-Federal lands. Such officials in each State are authorized to furnish advice to the Secretary with respect to the development and revision of land use plans, land use guidelines, land use rules, and land use regulations for the public lands within such State and with respect to such other land use matters as may be referred to them by him. Land use plans of the Secretary under this section *shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.*⁵⁷⁷

This provision provides state governors the opportunity to advise BLM of their positions on draft land use plans. BLM must consider this advice in so-called "consistency reviews."⁵⁷⁸

In short, there are several engagement points for state and local governments to participate in the land use planning process and multiple responsibilities on the part of BLM to respond to state and local concerns. But this entire process is conditioned on federal primacy: that priority be given to federal law and purposes in the land use planning processes. We return to this provision in Part IV.F, as we believe the coordination/consistency provisions of FLPMA provide a constructive opportunity for federal and state governments to plan for the management and conservation of wildlife across political jurisdictions.

FLPMA's savings clause pertaining to wildlife provides additional direction on federal-state interactions regarding wildlife management:

That nothing in this Act shall be construed as authorizing the Secretary concerned to require Federal permits to hunt and fish on public lands or on lands in the National Forest System and adjacent waters or as enlarging or diminishing the responsibility and authority of the States for management of fish and resident wildlife. However, the Secretary concerned may designate areas of public land and of lands in the National Forest System where, and establish periods when, no hunting or fishing will be permitted for reasons of

⁵⁷⁷ 43 U.S.C. § 1712(c)(9) (2012) (emphasis added).

⁵⁷⁸ Resource Management Planning, 81 Fed. Reg. 89,580, 89,666 (Dec. 12, 2016) (to be codified at 43 C.F.R. § 1610.3-3); see *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 721 (10th Cir. 2009) ("A meaningful opportunity to comment is all the regulation requires."); *W. Expl., LLC v. U.S. Dep't of the Interior*, No. 3:15-cv-00491-MMD-VPC, 2017 WL 1237971, at *16 (D. Nev. Mar. 31, 2017) ("The statute and regulations are silent on how detailed or specific BLM needs to be," and that BLM met its obligation to resolve inconsistencies between local plans and federal sage grouse plans "to the extent practical.").

public safety, *administration, or compliance with provisions of applicable law*. Except in emergencies, any regulations of the Secretary concerned relating to hunting and fishing pursuant to this section shall be put into effect only after consultation with the appropriate State fish and game department. Nothing in this Act shall modify or change any provision of Federal law relating to migratory birds or to endangered or threatened species.⁵⁷⁹

This provision was at the center of a dispute involving a proposed wolf hunt on federal lands by the State of Alaska. In *Alaska v. Andrus*,⁵⁸⁰ the United States District Court for the District of Alaska found that this provision of FLPMA, along with the multiple-use mandate, “taken together clearly provide the Secretary with the power to halt the wolf hunt.”⁵⁸¹ Furthermore, said the court, under the power of “[a]dministration,” the Secretary is commanded to manage the public lands under principles of multiple use [and m]ultiple use includes the management of wildlife.”⁵⁸² Although FLPMA grants authority to either permit or prohibit the wolf hunt, this authority, in and of itself, did not trigger NEPA when the agency failed to exercise it because there was no major federal action.⁵⁸³ The NEPA application question was at the heart of two circuit court reviews, both affirming that the non-exercise of power by the Secretary did not trigger NEPA, though the Ninth Circuit seemed to lament that it did “not reach the intriguing questions of statutory construction and application that would lurk in defining the Secretary’s power to supersede the State in managing wildlife.”⁵⁸⁴ We return to the questions unresolved by these courts in Part IV.D.

The Department of the Interior sought to provide more guidance on federal-state relationships through a policy statement in 1983.⁵⁸⁵ In essence, Department of Interior’s Policy simply recognizes some of the principles of wildlife federalism that we covered in Parts II and III.A of the Article, from states as trustees of wildlife to federal constitutional powers to manage

⁵⁷⁹ 43 U.S.C. § 1732(b) (emphasis added).

⁵⁸⁰ 429 F. Supp. 958 (D. Alaska 1977), *aff’d*, 591 F.2d 537 (9th Cir. 1979).

⁵⁸¹ *Id.* at 961–62.

⁵⁸² *Id.* at 962.

⁵⁸³ *Id.* at 963; see NEPA, 42 U.S.C. § 4332(c) (2012); COGGINS & GLICKSMAN, *supra* note 124, § 17:16 (noting that “[i]f federal and state projects are sufficiently interrelated to constitute a single ‘federal action’ for NEPA purposes, state agencies may be enjoined for NEPA violations”).

⁵⁸⁴ *Alaska v. Andrus*, 591 F.2d 537, 538 (9th Cir. 1979). The District of Columbia Circuit reached the same conclusion regarding NEPA, but used language in dicta that was relatively favorable to the state’s authority to manage wildlife. See *Defs. of Wildlife v. Andrus*, 627 F.2d 1238, 1250 (D.C. Cir. 1980) (“We are simply unable to read [FLPMA’s] cautious and limited permission to intervene in an area of state responsibility and authority as imposing such supervisory duties on the Secretary that each state action he fails to prevent becomes a ‘Federal action.’”).

⁵⁸⁵ Department of the Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24). Although the Policy appears in the C.F.R. “as a matter of convenience to the public,” *id.*, it was not subject to the rulemaking requirements of the Administrative Procedure Act, 5 U.S.C. § 553 (2012), and as such does not carry the force of law. *Christensen v. Harris County*, 529 U.S. 576, 587 (2000).

wildlife. For example, the Policy states that "[f]ederal authority exists for specified purposes while State authority regarding fish and resident wildlife remains the comprehensive backdrop applicable in the absence of specific, overriding Federal Law."⁵⁸⁶

The Policy goes further than these fundamental principles of federalism, however, by stating that it is intended "to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife."⁵⁸⁷ In other sections, the Policy recognizes that "[s]tate jurisdiction remains concurrent with Federal authority,"⁵⁸⁸ and asserts that, in passing FLPMA, Congress "recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁵⁸⁹ While the Policy does acknowledge basic constitutional principles pertaining to the Property Clause, Commerce Clause, federal preemption, and treaty-making powers,⁵⁹⁰ it also makes the often-repeated assertion that BLM "has custody of the land itself and the habitat upon which fish and resident wildlife are dependent" and that "[m]anagement of the habitat is a responsibility of the Federal Government,"⁵⁹¹ thereby implying that BLM only has power over the land and not the wildlife that inhabit it.

In Part IV.C, we explain the fundamental problems with the Department of Interior's Policy on federal-state relationships and discuss the implications resulting from this problematic interpretation of law.

6. The Special Case of Alaska

a. Alaska National Interest Lands Conservation Act

Alaska presents a unique situation within the federal public lands system. Alaska includes all of the same land categories and federal laws that exist elsewhere in the country. However, federal land managers in Alaska must also contend with the Alaska National Interest Lands Conservation Act⁵⁹² (ANILCA), which creates new land categories⁵⁹³ and statutory exceptions⁵⁹⁴ that do not exist elsewhere, as well as an overarching system of subsistence management which adds an additional management

⁵⁸⁶ 43 C.F.R. § 24.1(a) (2016).

⁵⁸⁷ *Id.* § 24.2(a).

⁵⁸⁸ *Id.* § 24.3(c).

⁵⁸⁹ *Id.* § 24.4(c).

⁵⁹⁰ *Id.* § 24.3.

⁵⁹¹ *Id.* § 24.4(d).

⁵⁹² 16 U.S.C. §§ 3101–3233 (2012).

⁵⁹³ *See, e.g., id.* § 3201 (establishing National Preserves, a subcategory of National Park Lands on which sport hunting is permitted); *id.* § 410hh-2.

⁵⁹⁴ Such as exceptions to the prohibitions laid out by the Wilderness Act. For instance, snow machine use, which is banned as mechanized transport in every other state, is permitted in Alaska Wilderness Areas where that use was established before the creation of the Wilderness Area. *See id.* §§ 3121(a)–(b), 3170(a), 3171(a).

mission/goal to nearly all federal lands in Alaska.⁵⁹⁵ In *Sturgeon v. Frost*,⁵⁹⁶ the Supreme Court explicitly acknowledged this unusual status, stating that "ANILCA repeatedly recognizes that Alaska is different [And] ANILCA itself accordingly carves out numerous Alaska-specific exceptions."⁵⁹⁷

i. Subsistence

It is the subsistence requirement that is the single biggest difference between managing wildlife on federal lands in Alaska and managing them in the rest of the country. ANILCA is the establishment legislation for nearly every federal conservation unit in the state.⁵⁹⁸ This creates an opportunity for uniformity in management strategy across agencies and conservation units that could not exist elsewhere in the country where units were set aside in a more haphazard manner. Taking advantage of that opportunity, ANILCA establishes that subsistence shall be permitted on all federal lands with few exceptions,⁵⁹⁹ and creates a subsistence preference that applies to rural Alaskans that grants them a priority position in relation to other consumptive users of fish and game.⁶⁰⁰

Subsistence is defined by ANILCA as "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption."⁶⁰¹ More colloquially, it refers to rural hunting, fishing, and gathering of resources for personal use.⁶⁰² When ANILCA was originally passed, the intent of the statute was for the state to administer the subsistence hunting program (like all other hunting programs) on federal lands, and merely required that the state abide by ANILCA's requirements.⁶⁰³ It soon became clear, however, that the state could not implement the rural subsistence preference because it violated the state's constitutional requirement for equal access to fish and game, according the Alaska Supreme Court.⁶⁰⁴ Several efforts were made to amend the Alaska constitution so that the state could reclaim authority over all

⁵⁹⁵ See generally *id.* §§ 3111–3126 (establishing the overarching system of subsistence management under ANILCA).

⁵⁹⁶ 136 S. Ct. 1061 (2016).

⁵⁹⁷ *Id.* at 1070.

⁵⁹⁸ 16 U.S.C. §§ 410hh–410hh-1; *id.* §§ 460mm–460mm-2; *id.* § 539; ANILCA, Pub. L. No. 96-487, §§ 302–303, 94 Stat. 2371, 2385–93 (1980); *id.* §§ 601–603, 94 Stat. 2412–15; *id.* §§ 701–704, 94 Stat. 2371, 2417–19.

⁵⁹⁹ The exceptions are within the original boundaries of Denali National Park and Preserve and Glacier Bay National Park and Preserve, which were both expanded by ANILCA. 16 U.S.C. § 410hh-1(1), (3)(a).

⁶⁰⁰ See *id.* § 3112(2) ("[N]onwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska.").

⁶⁰¹ *Id.* § 3113.

⁶⁰² ANILCA states that "the situation in Alaska is unique in that, in most cases, no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses." *Id.* § 3111(2).

⁶⁰³ *Id.* § 3115(d).

⁶⁰⁴ *McDowell v. State*, 785 P.2d 1, 9 (Alaska 1989).

hunting, but those attempts were never successful.⁶⁰⁵ In 1990, the Federal Subsistence Board, which mirrors the functions of the state's Board of Game, was created, and the federal government began to assume control of subsistence hunting on federal lands.⁶⁰⁶

ANILCA instructs the agencies to manage subsistence "consistent with sound management principles, and the conservation of healthy populations of fish and wildlife," and "consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit."⁶⁰⁷ ANILCA also states that "[n]othing in this title shall be construed as . . . permitting the level of subsistence uses of fish and wildlife within a conservation system unit to be inconsistent with the conservation of healthy populations, and within a national park or monument to be inconsistent with the conservation of natural and healthy populations, of fish and wildlife."⁶⁰⁸ So the management standard for all federal public lands is the requirement to maintain healthy populations, but for national park lands, the requirement is to maintain natural and healthy populations of wildlife. Agencies must also evaluate the effect of all uses on public lands on subsistence uses and needs, and formally notify subsistence users if there could be any effects on subsistence harvests as a result of other uses.⁶⁰⁹

ii. Sport Hunting

Sport hunting (non-subsistence hunting) is permitted on most non-park lands in Alaska and is managed largely through the state regulatory process, as it is elsewhere in the United States.⁶¹⁰ However, ANILCA creates a new category of park lands called "Preserves" where sport hunting and commercial trapping are permitted.⁶¹¹ The State of Alaska regulates sport hunting statewide, including on federal lands.⁶¹² However, conflicts have arisen between the state's hunting regulations, which express the state's wildlife laws and goals, and the wildlife management goals expressed by several federal statutes. For instance, the State of Alaska is required to intensively manage wildlife populations in order to maximize a sustained yield of desirable prey (e.g., moose, caribou, and deer).⁶¹³ This intensive

⁶⁰⁵ FRANK NORRIS, ALASKA SUBSISTENCE: A NATIONAL PARK SERVICE MANAGEMENT HISTORY 162-63 (2002).

⁶⁰⁶ *Id.* at 165; Kyle Joly, Sanford P. Rabinowitch & Julie Lurman Joly, *Dual Management of Wildlife in Alaska: Making Federal Practice Align with Federal Mandates*, 32 GEORGE WRIGHT F. 18, 18 (2015).

⁶⁰⁷ 16 U.S.C. § 3112(1).

⁶⁰⁸ *Id.* § 3125(1).

⁶⁰⁹ *Id.* § 3120(a).

⁶¹⁰ *Id.* § 3202(c).

⁶¹¹ *Id.* §§ 410hh-2, 3201; see Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. 64,325, 64,325 (Oct. 23, 2015) (to be codified at 36 C.F.R. pt. 13).

⁶¹² Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326.

⁶¹³ ALASKA STAT. § 16.05.255(e) (2016).

management requirement often leads to predator reduction efforts.⁶¹⁴ NPS on the other hand is required to maintain natural and healthy populations of all species according to ANILCA and “to conserve the scenery and the natural and historic objects and the wild life” according to the NPS Organic Act.⁶¹⁵ NPS policies implementing the Organic Act require the agency to “protect natural ecosystems and processes, including the natural abundances, diversities, distributions, densities, age-class distributions, populations, habitats, genetics, and behaviors of wildlife.”⁶¹⁶ These state and federal goals are mutually exclusive.⁶¹⁷

In 2015, NPS promulgated new regulations restricting how the state’s sport hunting laws could apply within parks, so that they do not conflict with NPS’s legal obligations under the Organic Act and ANILCA.⁶¹⁸ The new rules clarify that state wildlife regulations that conflict with NPS regulations or laws are not applicable on NPS lands.⁶¹⁹ The Alaska Regional Park Service Director will publish a list, at least annually, of all state-permitted activities that are prohibited on NPS lands.⁶²⁰

There has been a great deal of criticism of these rule changes. NPS’s effort has been characterized by the state as statutory overreach and a violation of the public trust doctrine,⁶²¹ though both ANILCA and the Organic Act recognize NPS’s authority to regulate these activities.⁶²²

Once the NPS rules were successfully promulgated, FWS began a similar rulemaking process. FWS’s effort to follow a similar course was initially marked by efforts to block the development of such rules on national wildlife refuges,⁶²³ though FWS’s effort was eventually successful,

⁶¹⁴ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (“In the last several years, the State of Alaska has allowed an increasing number of liberalized methods of hunting and trapping wildlife and extended seasons to increase opportunities to harvest predator species.”).

⁶¹⁵ 54 U.S.C. § 100101 (Supp. II 2015) (previously codified at 16 U.S.C. § 1).

⁶¹⁶ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (citing NPS MANAGEMENT POLICIES, *supra* note 375, §§ 4.1, 4.4.1, 4.4.1.2, and 4.4.2).

⁶¹⁷ Lurman & Rabinowitch, *supra* note 275, at 165.

⁶¹⁸ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,325. This rule change has been followed by a similar rule change on National Wildlife Refuges. See *infra* notes 623–624 and accompanying text.

⁶¹⁹ 36 C.F.R. § 13.42(a), (f) (2016).

⁶²⁰ *Id.* § 13.42(f)(1).

⁶²¹ See, e.g., Doug Vincent-Lang, *Alaska Must Reject Feds’ Claim to Control Hunting in Preserves and Refuges*, ALASKA DISPATCH NEWS (June 26, 2016), <https://perma.cc/2F3L-VGYN>. Lang is the former director of Wildlife Conservation at the Alaska Department of Fish and Game. *Id.*

⁶²² Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,329, 64,333.

⁶²³ Senator Sullivan (R. AK) submitted an amendment, which was ultimately never passed, to the Bipartisan Sportsmen’s Act of 2015 that would prohibit FWS from implementing regulations restricting the application of state hunting rules on Refuge lands. Sam Friedman, *Sullivan Moves to Prohibit Federal Refuge Predator Hunt Rules*, FAIRBANKS DAILY NEWS-MINER (Jan. 20, 2016), <https://perma.cc/E7EA-WNY9>.

and the rules were promulgated.⁶²⁴ Ultimately, in 2017, Congress—exercising its authority under the Congressional Review Act⁶²⁵—abolished the FWS regulations.⁶²⁶ Therefore, the FWS regulations are no longer in force (though this elimination of the regulations does not speak in any way to their legality), while the NPS regulations remain in place. Furthermore, while the FWS regulations have been eliminated, the statutes animating them are still in place. FWS still possesses the authority, and often the obligation, to prevent the state from acting in ways contrary to federal mandates regarding wildlife management on refuges, regardless of the status of these particular regulations. As NPS states, “the State’s responsibility [to manage fish and wildlife] is not exclusive and it does not preclude federal regulation of wildlife on federal public lands, as is well-established in the courts and specifically stated in ANILCA.”⁶²⁷

7. The National Wilderness Preservation System

a. The Policy and Objectives of the Wilderness Act

The Wilderness Act of 1964 expresses the following policy:

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as “wilderness areas”, and *these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness.*⁶²⁸

The Act defines wilderness⁶²⁹ and imposes a duty on the federal agencies to administer designated areas for “preserving the wilderness character.”⁶³⁰ In addition, Congress designated fifty-four areas managed by USFS,⁶³¹ detailed inventory procedures,⁶³² prohibited a number of uses,⁶³³ and

⁶²⁴ Non-Subsistence Take of Wildlife, and Public Participation and Closure Procedures, on National Wildlife Refuges in Alaska, 81 Fed. Reg. 52,248 (Aug. 5, 2016) (to be codified at 50 C.F.R. pts. 32 and 36).

⁶²⁵ 5 U.S.C. §§ 801–808 (2012). The law authorizes Congress to review and repeal federal agency regulations passed within the last sixty legislative days. *Id.* § 801(a)(3).

⁶²⁶ Act of Apr. 3, 2017, Pub. L. No. 115-20, 131 Stat. 86 (providing congressional disapproval).

⁶²⁷ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,331.

⁶²⁸ 16 U.S.C. § 1131(a) (2012) (emphasis added).

⁶²⁹ *Id.* § 1131(c).

⁶³⁰ *Id.* § 1133(b).

⁶³¹ *Id.* § 1132(a); KATIE HOOVER, CONG. RESEARCH SERV., RL31447, WILDERNESS: OVERVIEW AND STATISTICS (2015).

adopted special provisions to clarify certain other uses.⁶³⁴ Sections of the Act particularly relevant to managing wildlife in wilderness areas include the definition of wilderness and the federal responsibility to preserve wilderness character; the prohibited uses; and the congressionally authorized special provisions that apply to managing wildlife in wilderness.

i. Preserving Wilderness Character

Congress directed each federal agency managing a wilderness to “preserve its wilderness character.”⁶³⁵ To implement this requirement, the four wilderness-managing agencies have endorsed the following definition of wilderness character:

Wilderness character is a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection with nature. Taken together, these tangible and intangible values define wilderness character and distinguish wilderness from all other lands.⁶³⁶

Specifically, five qualities of wilderness character are identified in the Act’s definition of wilderness: untrammeled; natural; undeveloped; solitude or primitive and unconfined recreation; and other features of value, including ecological and scientific features.⁶³⁷ We review each of these qualities below.

Untrammeled. In one of the most poetic passages found in the U.S. Code, the Wilderness Act provides that “wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are

⁶³² 16 U.S.C. § 1132(b)–(d). BLM’s authority to inventory for wilderness characteristics and to manage areas designated by Congress was expressed in FLPMA. 43 U.S.C. §§ 1711, 1782 (2012).

⁶³³ 16 U.S.C. § 1133(c).

⁶³⁴ *Id.* § 1133(d).

⁶³⁵ *Id.* § 1133(b).

⁶³⁶ PETER LANDRES ET AL., RMRS-GTR-340, KEEPING IT WILD 2: AN UPDATED INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 7 (2015) [hereinafter KIW2]; see Memorandum from Chair, Interagency Wilderness Steering Committee to Chair, Interagency Wilderness Policy Council, Interagency Wilderness Steering Committee’s *Keeping It Wild 2* Recommendations (Sep. 21, 2015) (approved by the Wilderness Policy Council Dec. 23, 2015). Understanding the complex meaning of the term “wilderness character” has been an ongoing task for the federal agencies mandated to preserve it for over a decade. See PETER LANDRES ET AL., RMRS-GTR-212, KEEPING IT WILD: AN INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 5–7 (2008) [hereinafter KIW]; PETER LANDRES ET AL., RMRS-GTR-151, MONITORING SELECTED CONDITIONS RELATED TO WILDERNESS CHARACTER: A NATIONAL FRAMEWORK, at iii–iv, 4–6 (2005).

⁶³⁷ 16 U.S.C. § 1131(c).

untrammelled by man" that "generally appears to have been affected primarily by the forces of nature" and "retain[s] its primeval character and influence."⁶³⁸ Untrammelled means "essentially unhindered and free from the intentional actions of modern human control or manipulation."⁶³⁹ In terms of wildlife management, this concept precludes intentional manipulation of species, populations, and individuals (with the exception of casual, noncommercial hunting and fishing, where allowed).⁶⁴⁰ The Untrammelled Quality is a unique requirement among federal land management legislation; it is what puts the "wild" in "wilderness." When manipulation is necessary—for instance, to comply with another law such as the ESA or to improve another quality of wilderness character—action should be taken with the utmost restraint and humility.⁶⁴¹

Natural. The Act provides that wilderness is "protected and managed so as to preserve its natural conditions."⁶⁴² This means that ecological systems within wilderness areas "are substantially free from the effects of modern civilization."⁶⁴³ In terms of wildlife management, wilderness ecosystems should retain their native or indigenous species composition, distribution patterns, and ecological processes, including predator-prey dynamics, disturbance regimes, and abiotic and biotic fluctuations.⁶⁴⁴ These ecosystems should be uncompromised by non-native species, or by artificially increased (or decreased) populations of native species or other biophysical conditions.⁶⁴⁵ While the Untrammelled Quality reflects the wilderness character mandate to halt actions undertaken to consciously manipulate "the earth and its community of life," the Natural Quality minimizes the adverse ecological effects to a wilderness area from intentional or unintentional actions, as well as the adverse effects from larger scale ecological change occurring outside the wilderness—for example, the spread of non-native species and habitat fragmentation.⁶⁴⁶

Undeveloped. The Wilderness Act also identifies wilderness as "an area of undeveloped Federal land . . . without permanent improvements or human habitation," "where man himself is a visitor who does not remain . . . with the imprint of man's work substantially unnoticeable."⁶⁴⁷ This means that wilderness is unmarred by "the sights and sounds of modern human occupation."⁶⁴⁸ The Act's prohibition on "improvements" is not restricted to those that are permanent, but includes any physical developments (e.g.,

⁶³⁸ *Id.*

⁶³⁹ KIW2, *supra* note 636, at 10–11.

⁶⁴⁰ *See id.* at 104.

⁶⁴¹ *See* Sandra B. Zellmer, *Wilderness Imperatives and Untrammelled Nature*, in ENVIRONMENTAL LAW AND CONTRASTING IDEAS OF NATURE: A CONSTRUCTIVIST APPROACH 179, 184–85 (Keith H. Hirokawa ed., 2014).

⁶⁴² 16 U.S.C. § 1131(c).

⁶⁴³ KIW2, *supra* note 636, at 11; *see also id.* at 39.

⁶⁴⁴ *Id.* at 41–43.

⁶⁴⁵ *Id.* at 11.

⁶⁴⁶ *Id.* at 101, 109–10.

⁶⁴⁷ 16 U.S.C. § 1131(c).

⁶⁴⁸ KIW2, *supra* note 636, at 11; *see also id.* at 45–48.

structures, installations, and both permanent and temporary roads) as well as temporal developments (i.e., where the wilderness is “developed” for the duration of the use of the prohibited tool, such as motor vehicles, motorized equipment, and mechanical transport).⁶⁴⁹ Again, restraint and humility are key: “[In wilderness areas] we stand without our mechanisms that make us immediate masters over our environment.”⁶⁵⁰ The implications for wildlife management are discussed in greater detail below.⁶⁵¹

Solitude or Primitive and Unconfined Recreation. Wilderness areas provide “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”⁶⁵² This means that, in wilderness, recreational opportunities occur “in an environment that is relatively free from the encumbrances of modern society, and for the experience of the benefits and inspiration derived from self-reliance, self-discovery, physical and mental challenge, and freedom from societal obligations.”⁶⁵³ In terms of wildlife management, recreational opportunities to enjoy wildlife (including hunting and fishing) are allowed within the constraints of preserving wilderness character as a whole—that is, without structures, installations, the use of motorized equipment, motor vehicles, or mechanical transport, and without manipulating populations for a more “desirable” (and less natural) assemblage of species.⁶⁵⁴

Other Features of Value. Finally, the Wilderness Act provides that wilderness “may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”⁶⁵⁵ “This quality captures important elements or ‘features’ of a particular wilderness that are not [necessarily] covered by the other four qualities.”⁶⁵⁶ In terms of wildlife management, the ecological and scientific values are key, and in most cases, they are already addressed within the purview of the Natural Quality.⁶⁵⁷

ii. Within and Supplemental

Under section 4(a) of the Wilderness Act: “The purposes . . . are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and national wildlife refuge systems are established and administered.”⁶⁵⁸ As section 4(b) makes clear, however, “each agency administering any area designated as wilderness shall be responsible for *preserving the wilderness character* of the area and shall so administer such area for such other purposes for which it may have been

⁶⁴⁹ See 16 U.S.C. § 1133(c).

⁶⁵⁰ Howard Zahniser, *The Need for Wilderness Areas*, 59 LIVING WILDERNESS 37, 38 (1956).

⁶⁵¹ See discussion *infra* Part III.B.7.a.iii.

⁶⁵² 16 U.S.C. § 1131(c).

⁶⁵³ KIW2, *supra* note 636, at 11–12; see also *id.* at 51–55.

⁶⁵⁴ *Id.* at 51, 78.

⁶⁵⁵ 16 U.S.C. § 1131(c).

⁶⁵⁶ KIW2, *supra* note 636, at 12; see also *id.* at 57–60.

⁶⁵⁷ *Id.* at 39, 57–58.

⁶⁵⁸ 16 U.S.C. § 1133(a).

established as also *to preserve its wilderness character*.⁶⁵⁹ For all four agencies, upon designation as wilderness, the preservation of wilderness character becomes the primary duty of the underlying unit,⁶⁶⁰ and management of other purposes must meet the requirements of the Wilderness Act in addition to the requirements of each agency's Organic Act.⁶⁶¹

All four land management agencies struggle with this concept, but it has been especially problematic for FWS and NPS, largely because many employees of these two agencies believe that their conservation-oriented purposes are equivalent to wilderness preservation.⁶⁶² How these agencies have addressed this problem is discussed below.⁶⁶³ Implications and continuing issues surrounding "within and supplemental" are discussed in Part IV.E. The "within and supplemental" requirement crops up routinely with respect to justifying uses explicitly prohibited by the Wilderness Act.⁶⁶⁴

iii. Prohibition of Certain Uses

Section 4(c) of the Wilderness Act specifically prohibits ten uses.⁶⁶⁵ These are all subject to two exceptions: "Except as specifically provided for in this chapter, and subject to existing private rights."⁶⁶⁶ Notably, there are no "existing private rights" associated with the management of wildlife in wilderness, and other specific provisions are discussed below.⁶⁶⁷ Two of the ten prohibited uses—commercial enterprise and permanent roads—are subject *only* to these two exceptions (unless specifically authorized in subsequent legislation).⁶⁶⁸ The prohibition on commercial enterprises has been a significant issue in wildlife management.

Commercial enterprise is defined as "a project or undertaking of or relating to commerce."⁶⁶⁹ Only three types of commercial activity may be allowed in wilderness, as they are specifically provided for in the Act:

⁶⁵⁹ *Id.* § 1133(b) (emphasis added).

⁶⁶⁰ See *Wilderness Watch v. Vilsack*, 229 F. Supp. 3d 1170, 1182 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal. v. Timchak*, No. CV-06-04-E-BLW, 2006 WL 3386731, at *6 (D. Idaho Nov. 21, 2006))), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁶⁶¹ 16 U.S.C. § 1133(a).

⁶⁶² See Sandra B. Zellmer, *Wilderness Management in National Parks and Wildlife Refuges*, 44 ENVTL. L. 497, 500 (2014) (analyzing wilderness management on dominant use lands).

⁶⁶³ See discussion *infra* Part III.B.7.c

⁶⁶⁴ See discussion *infra* Part IV.E.

⁶⁶⁵ 16 U.S.C. § 1133(c).

⁶⁶⁶ *Id.*

⁶⁶⁷ See discussion *infra* Part III.B.7.a.iv.

⁶⁶⁸ ROSS W. GOETE, CONG. RESEARCH SERV., R41649, WILDERNESS LAWS: STATUTORY PROVISIONS AND PROHIBITED AND PERMITTED USES 10–11 (2011).

⁶⁶⁹ See *Wilderness Soc'y v. U.S. Fish & Wildlife Serv. (Tustemena Lake)*, 353 F.3d 1051, 1061, 1065 (9th Cir. 2003) (en banc) (stating that commercial means "work that is intended for the mass market" and "even non-profit entities may engage in commercial activity"), *amended en banc by* 360 F.3d 1374 (9th Cir. 2004).

livestock grazing,⁶⁷⁰ exercising certain mineral rights,⁶⁷¹ and commercial services.⁶⁷² Absent those three activities, no commercial enterprise can take place in wilderness, and no wilderness resources can be removed for financial gain, including animals or parts of animals such as antlers and fur.⁶⁷³ Therefore, collection of wilderness wildlife resources may be allowed only for personal use. Not only is it a violation of the Wilderness Act to remove wilderness resources for financial gain, but also, no action may be taken to enhance a commercial activity, even if the activity itself takes place entirely outside the wilderness and even if it causes only “minimal intrusion on wilderness values.”⁶⁷⁴

Although commercial enterprises and permanent roads are tightly proscribed by the Wilderness Act, the other eight prohibited uses—temporary roads; use of motor vehicles, motorized equipment, and motorboats; landing of aircraft; any other form of mechanical transport; structures; and installations—are subject to an exception “as necessary to meet minimum requirements for the administration of the area for the purpose of this chapter.”⁶⁷⁵ This “minimum requirements” exception has three components.

For the purpose of this Act. As described above, the purpose of the Wilderness Act, and congressional direction to the federal agencies on the means of accomplishing that purpose, is to preserve wilderness character.⁶⁷⁶ Unless necessary in the exercise of a legal right, or unless specifically allowed elsewhere in the Wilderness Act (or other federal law), Congress has made it clear that otherwise-prohibited uses cannot be authorized for any purpose other than preserving wilderness character.⁶⁷⁷

For the administration of the area. Otherwise-prohibited uses cannot be authorized to facilitate management objectives or activities occurring *outside* of the wilderness area.⁶⁷⁸ Notably, in section 4(c), Congress clearly

⁶⁷⁰ 16 U.S.C. § 1133(d)(4).

⁶⁷¹ *Id.* § 1133(d)(3).

⁶⁷² *Id.* § 1133(d)(5); see *supra* notes 693–696 and accompanying text.

⁶⁷³ See BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6340—MANAGEMENT OF DESIGNATED WILDERNESS AREAS (PUBLIC) § 1.6(C)(21)(c)(ix)(E) (2012), <https://perma.cc/287T-JA3V> [hereinafter BLM MANUAL] (“Sale of wildlife products gathered from wilderness is prohibited.”).

⁶⁷⁴ *Tustemena Lake*, 353 F.3d at 1062, 1066–67 (prohibiting FWS approval of salmon stocking within the Kenai Wilderness).

⁶⁷⁵ 16 U.S.C. § 1133(c).

⁶⁷⁶ See discussion *supra* Part III.B.7.a.i.

⁶⁷⁷ 16 U.S.C. § 1133(b)–(c).

⁶⁷⁸ See *High Point, LLLP v. Nat’l Park Serv.*, 850 F.3d 1185, 1197–98 (11th Cir. 2017) (finding that, just as a van filled with tourists could not “be construed as ‘necessary’ to meet the ‘minimum requirements’ for administering the area,” neither could enlargement of a dock (a prohibited structure) be construed as an “existing private right[.]” given the narrow construction applied to Wilderness Act exceptions (citing *Wilderness Watch v. Mainella*, 375 F.3d 1085, 1092 (11th Cir. 2004))); *High Sierra Hikers Ass’n v. U.S. Forest Serv.*, 436 F. Supp. 2d 1117, 1134, 1137, 1144 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance downstream flows for fisheries and to preserve historical values was not necessary to meet minimum requirements for the administration of the area as the

referenced "*the area*";⁶⁷⁹ not, as the Act does elsewhere, the National Wilderness Preservation System as a whole.⁶⁸⁰ In other words, prohibited uses cannot be authorized in Wilderness A to preserve the wilderness character of Wilderness B, unless they also preserve the wilderness character of Wilderness A.

Necessary to meet minimum requirements. Defining the "minimum" "necessary" is a work of art. One court cautioned that a generic finding of necessity will not suffice, and while it declared that the agencies need not "make a finding of 'absolute necessity,'"⁶⁸¹ it offered no measure of exactly how necessary is necessary enough to meet the statute's requirements when coupled with the qualifier "minimum."⁶⁸² To guide the agencies, the Arthur Carhart National Wilderness Training Center (Carhart) has devised a two-step process: first, managers must determine if any action is *necessary* to address a problem of wilderness stewardship; if so, managers must then determine what the *least amount* of an otherwise prohibited use is necessary to accomplish the problem identified in the first step.⁶⁸³ Though not specifically required by the Act, Carhart's *Minimum Requirements Decision Guide* is the most frequently used tool for making a minimum requirements decision, and the two-step analysis process has become ubiquitous.⁶⁸⁴ In any event, the courts have made it clear that before the federal agency can authorize one of these prohibited uses, it must explain why non-prohibited uses would be insufficient to preserve the area's wilderness character.⁶⁸⁵

enhancement of fisheries was not necessary to meet minimum requirements for the administration of the area).

⁶⁷⁹ 16 U.S.C. § 1133(c).

⁶⁸⁰ See, e.g., *id.* § 1281(b) ("Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system . . . shall be subject to the provisions of both the Wilderness Act and this chapter . . .").

⁶⁸¹ *Wilderness Watch, Inc. v. U.S. Fish & Wildlife Serv. (Kofa)*, 629 F.3d 1024, 1037 n.8 (9th Cir. 2010) (emphasis added).

⁶⁸² See *id.* at 1049 & n.9 (Bybee, J., dissenting) (arguing that the word "necessary" should be construed broadly, as it has with respect to other legislation, but failing to recognize that none of the other examples couples "necessity" with the Wilderness Act's qualifier "minimum").

⁶⁸³ See ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: OVERVIEW 1, 3 (2016), <https://perma.cc/XDH4-F6BP>.

⁶⁸⁴ See, e.g., Director's Order No. 41, Jonathan Jarvis, Dir., Nat'l Park Serv., U.S. Dep't of Interior, Wilderness Stewardship § 6.4 (May 13, 2013), <https://perma.cc/5XKB-L9TJ> (requiring national parks to follow the two-step analysis process when completing the minimum requirements analysis); ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: U.S. FOREST SERVICE GUIDELINES 1 (2008), <https://perma.cc/8YL6-S3V7> ("Use of the MRDG is not currently required by law or agency policy However, use of the MRDG or a similar minimum requirements analysis (MRA) process was strongly recommended by the chief in a 2000 memo."); BLM MANUAL, *supra* note 673, app. B-1 ("BLM will use the Minimum Requirements Decision Guide (MRDG) developed by the Arthur Carhart National Wilderness Training Center."); FWS WILDERNESS POLICY, *supra* note 437, § 1.20 (requiring national wildlife refuge staff to attend a wilderness training at Carhart before making minimum requirement decisions).

⁶⁸⁵ See *Kofa*, 629 F.3d at 1037-38 ("[T]he key question—whether water structures were necessary at all—remains entirely unanswered and unexplained by the record [N]owhere in the record does the Service explain why [conforming] actions, alone or in combination, are insufficient"); cf. *High Sierra Hikers Ass'n v. Blackwell*, 390 F.3d 630, 646 (9th Cir. 2004)

iv. Special Provisions

The Wilderness Act contains a number of “special provisions.”⁶⁸⁶ Three of these are applicable to the management of wildlife in wilderness. One special provision deals wholly with wildlife management, the so-called savings clause: “Nothing in this chapter shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests.”⁶⁸⁷ As with similar savings clauses discussed above, this provision retains federal jurisdiction over wildlife on federal lands, while recognizing the traditional interest of the states with respect to wildlife management insofar as consistent with Wilderness Act purposes.⁶⁸⁸ Federal land managers cannot defer to state management prerogatives when doing so would violate the express terms of the Wilderness Act,⁶⁸⁹ or undermine the purposes of the Act.⁶⁹⁰

The second relevant special provision involves pre-existing uses of aircraft or motorboats. The Wilderness Act states “the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary . . . deems

(construing the Wilderness Act’s provision for commercial services “to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas,” and holding that in order to invoke that exception, the agency must make a reasoned finding of necessity (quoting 16 U.S.C. § 1133(d)(5))).

⁶⁸⁶ 16 U.S.C. § 1133(d).

⁶⁸⁷ *Id.* § 1133(d)(7). This provision was extended to BLM: “Once an area has been designated for preservation as wilderness, the provisions of the Wilderness Act which apply to national forest wilderness areas shall apply with respect to the administration and use of such designated area.” FLPMA, 43 U.S.C. § 1782(c) (2012) (citation omitted).

⁶⁸⁸ See Lindsay Sain Jones, Note, *The Problem with the Bureau of Land Management’s Delegation of Wildlife Management in Wilderness*, 47 GA. L. REV. 1281, 1310 (2013) (stating that the savings clause does not affect “the nature of the jurisdiction or responsibility of the states with respect to wildlife on federal lands”; thus “the federal government’s jurisdiction over wildlife on federal lands remains intact”); cf. *Izaak Walton League of Am. v. St. Clair*, 353 F. Supp. 698, 707 (D. Minn. 1973) (holding that, despite the general rule that the federal government has no inherent police power and that zoning is a power of the states, state zoning provisions were not applicable within a national forest wilderness area), *rev’d on other grounds*, 497 F.2d 849 (8th Cir. 1974).

⁶⁸⁹ See *Kofa*, 629 F.3d at 1027, 1039–40 (invalidating a cooperative initiative with Arizona to maintain water structures); *Tustemena Lake*, 353 F.3d 1051, 1066–67, 1069 (9th Cir. 2003) (*en banc*) (prohibiting a salmon enhancement project as a prohibited “commercial enterprise” even though the state had previously administered and maintained regulatory control over the project), *amended en banc* by 360 F.3d 1374 (9th Cir. 2004); *Californians for Alts. to Toxics v. U.S. Fish & Wildlife Serv.*, 814 F. Supp. 2d 992, 996 (E.D. Cal. 2011) (invalidating a joint federal-state plan to restore cutthroat trout to its historic range in a wilderness area by eradicating non-native trout with rotenone); *High Sierra Hikers Ass’n*, 436 F. Supp. 2d 1117, 1122, 1137 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance fisheries was not necessary to meet minimum requirements and thus was prohibited despite involvement and support of the California Department of Fish and Game).

⁶⁹⁰ See *Wolf Recovery Found. v. U.S. Forest Serv.*, 692 F. Supp. 2d 1264, 1266, 1269–70 (D. Idaho 2010) (affirming a decision to allow the Idaho Fish and Game Commission to use helicopters to monitor wolves in the Frank Church Wilderness, but only because the activity was “designed to aid the restoration of a specific aspect of the wilderness character of the Frank Church Wilderness that had earlier been destroyed by man”).

desirable.⁶⁹¹ Agency regulations and policy specify the conditions to allow such uses and also limit the permissible locations to established sites to be used by the public, rather than for any agency's administrative uses (such as wildlife management), which is subject to the more liberal analysis of simply meeting the "minimum necessary" test.⁶⁹²

Third, while commercial activity in wilderness is severely restricted, commercial services are allowable "to the extent necessary for activities which are proper for realizing . . . wilderness purposes."⁶⁹³ In a series of cases over outfitters in wilderness areas on the Inyo National Forest as well as the Sequoia-Kings Canyon Wilderness, the courts have made it clear that "the [federal] agency's primary responsibility is to protect the wilderness, not cede to commercial needs."⁶⁹⁴ Determining the "extent necessary" is paramount: "[The] argument that [certain services] are not specifically forbidden in the wilderness area confuses the absence of a specific prohibition with the requirement of *necessity*; the fact that something is otherwise 'legal' does not make it necessary."⁶⁹⁵ In allocating guiding permits, the federal agency errs if it "elevate[s] recreational activity over the long-term preservation of the wilderness character of the land."⁶⁹⁶

*b. Subsequent Wilderness Legislation with Wildlife Provisions*⁶⁹⁷

A common refrain from wilderness managers is that "the Act designating *my* wilderness contains special direction on the management of wildlife." In most cases, however, the precise language of any given piece of

⁶⁹¹ 16 U.S.C. § 1133(d)(1); see also *Wilderness Watch, Inc. v. Bureau of Land Mgmt.*, 799 F. Supp. 2d 1172, 1176, 1181 (D. Nev. 2011) (holding that this exception supported BLM's determination to allow police department to conduct search and rescue helicopter training where aircraft use pre-dated designation as protected wilderness area); *United States v. Gregg*, 290 F. Supp. 706, 706-08 (W.D. Wash. 1968) (upholding conviction for an unauthorized landing of an airplane in a wilderness, but noting that the Secretary could, by regulation, "create an exception to this blanket prohibition at places where the use of aircraft was established before the passage of the Act").

⁶⁹² See, e.g., U.S. FOREST SERV., HELICOPTER LANDINGS IN WILDERNESS: FINAL ENVIRONMENTAL IMPACT STATEMENT 2-3 (1997), <https://perma.cc/BS2C-PGTU> ("Established helicopter use was for general public access, not helicopter access authorized by . . . law (such as . . . administrative use by [USFS] or other agencies)."); see also Memorandum from James Sippel, Wilderness Planner, Bureau of Land Mgmt., to Robert Taylor, Assistant Field Manager for Nat'l Landscape Conservation Sys., & Juan Palma, Las Vegas Field Manager (Mar. 1, 2007) (on file with authors) (stating that this section of the Wilderness Act is "in reference to previously existing landing strips used as fly-in trailheads" in relatively few wilderness areas).

⁶⁹³ 16 U.S.C. § 1133(d)(5).

⁶⁹⁴ *High Sierra Hikers Ass'n v. U.S. Dep't of the Interior*, 848 F. Supp. 2d 1036, 1042, 1047 (N.D. Cal. 2012); see also *Blackwell*, 390 F.3d 630, 636, 647 (9th Cir. 2004).

⁶⁹⁵ *High Sierra Hikers Ass'n v. Weingardt*, 521 F. Supp. 2d 1065, 1078 (N.D. Cal. 2007) (emphasis added) (noting the agency's conclusion, "improperly equates 'preference' with 'need'").

⁶⁹⁶ *Blackwell*, 390 F.3d at 636, 647.

⁶⁹⁷ For a comprehensive analysis of wildlife management provisions in post-1964 wilderness bills, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

subsequent legislation makes no substantive difference in the implementation of the Wilderness Act's provisions.⁶⁹⁸

As of 2017, Congress has designated 711 wilderness areas⁶⁹⁹ since the original fifty-four were designated in 1964.⁷⁰⁰ Each subsequent bill contains nearly identical "boilerplate" regarding administration of the area: "Subject to valid existing rights, this wilderness area shall be administered by the Secretary . . . in accordance with the Wilderness Act."⁷⁰¹

The first wilderness legislation to include extra special language⁷⁰² specifically pertaining to wildlife was passed in 1972, with the establishment of the Sawtooth National Recreation Area, including the Sawtooth Wilderness.⁷⁰³ The relevant language of this extra special provision makes no actual difference in wildlife management within the Sawtooth Wilderness.⁷⁰⁴ In 1978, Congress started the custom of including not only the blanket "boilerplate" direction,⁷⁰⁵ but also repeating or rewording the Wilderness Act's statement on wildlife jurisdiction and responsibilities.⁷⁰⁶

⁶⁹⁸ See *infra* notes 707–708 and accompanying text.

⁶⁹⁹ *National Wilderness Preservation System Fact Sheet*, WILDERNESS CONNECT, <https://perma.cc/7EUS-4TBN> (last updated June 27, 2017).

⁷⁰⁰ Shannon Meyer & Peter Landres, *A National Wilderness Preservation System Database*, INT'L J. WILDERNESS, April 2000, at 13, 13.

⁷⁰¹ See, e.g., Act of Mar. 21, 1968, Pub. L. No. 90-271, § 3, 82 Stat. 51, 52 (codified at 16 U.S.C. § 1132 (2012)) ("The . . . Wilderness shall be administered by the Secretary . . . in accordance with the provisions of the Wilderness Act governing areas designated by that Act as wilderness areas, except that any reference in such provisions to the effective date of the Wilderness Act shall be deemed to be a reference to the effective date of this Act."); Sawtooth National Recreation Area and Jerry Peak Wilderness Additions Act, Pub. L. No. 114-46, § 102(a), 129 Stat. 477, 477 (2015) (similar); Big Sur Wilderness and Conservation Act of 2002, Pub. L. No. 107-370, § 3(a), 116 Stat. 3071, 3073 (similar). With minor variations, this wording is found in every subsequent law designating wilderness.

⁷⁰² We use the term "extra special language" to describe provisions other than those found in the Special Provisions enumerated at 16 U.S.C. § 1133(d) or other direction found in the Wilderness Act of 1964.

⁷⁰³ Sawtooth National Recreation Area Act, Pub. L. No. 92-400, §§ 1(a), 8, 86 Stat. 612, 612, 614 (1972) (codified at 16 U.S.C. §§ 460aa-460aa-14).

⁷⁰⁴ See 16 U.S.C. § 460aa-7 (providing that hunting and fishing "shall" be permitted "within the boundaries of the recreation area in accordance with applicable laws of the United States and the State of Idaho, except that the Secretary may designate zones where, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment," after consultation with the State; the consultation requirement is inapplicable in emergencies); *id.* § 460aa-1(b) ("The lands designated as the Sawtooth Wilderness Area . . . shall be administered in accordance with the provisions of this Act and the provisions of the Wilderness Act whichever is more restrictive . . ." (citation omitted)).

⁷⁰⁵ See *supra* note 701 and accompanying text (describing boilerplate language found in all bills designating wilderness areas).

⁷⁰⁶ See, e.g., Act of Oct. 21, 1978, Pub. L. No. 95-495, § 14, 92 Stat. 1649, 1657 ("Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of the State with respect to fish and wildlife in the wilderness . . ."); *cf.* Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(a), 116 Stat. 1994, 2005 (reasserting that nothing "affects or diminishes" state jurisdiction).

Of the 139 laws designating wilderness since the passage of the 1964 Act,⁷⁰⁷ only four have extra special language that create minor effects in wilderness stewardship of wildlife resources in those particular wilderness areas,⁷⁰⁸ and only one has extra special language affecting that particular wilderness that is completely out of the norm of all other wilderness legislation. That bill designated the Wovoka Wilderness and is embedded within the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.⁷⁰⁹ The unique provisions of this law are as confusing as they are astonishing, and so are given extended attention here as an extreme outlier. On the one hand, the legislation states the Wovoka "shall be administered by the Secretary in accordance with the Wilderness Act"⁷¹⁰ and House Report 101-405 Appendix B.⁷¹¹ The law then adds: "The State, including a designee of the State, may conduct wildlife management activities . . . in accordance with the . . . Memorandum of Understanding: Intermountain Region [USFS] and the Nevada Department of Wildlife State of Nevada" and signed . . . [in] 1984."⁷¹² The legislation says "may," retaining a measure of federal discretion. But the cited MOU, which does not mention wilderness, contains contradictory direction and does not conform to federal law: "[USFS] agrees [t]o recognize the Department [of Wildlife of the State of Nevada] as the agency responsible for the preservation and management of the wildlife resources in Nevada and for determining the regulations under which fish and wildlife will be managed, utilized, and protected."⁷¹³ There is no authority for a state to determine federal regulations, and this provision is contradicted later in the document: "[E]ach and every provision of the Memorandum is subject to the laws of the State of Nevada, the laws of the United States, and the regulations of the Secretary of Agriculture."⁷¹⁴ The MOU also defines "exotic" wildlife species as "those species that do not or have not existed within the continental United States within recorded historical times."⁷¹⁵ By this definition, any

⁷⁰⁷ Methodology for counting wilderness bills varies. Here, we count as a separate law bills with their own public law number, separate titles within one public law, and separate sections where the law refers to that section as a Wilderness Act.

⁷⁰⁸ See California Desert Protection Act of 1994, Pub. L. No. 103-433, §§ 503, 506(b), 108 Stat. 4471, 4490 (directing the Secretary to allow hunting in the Mojave National Preserve Wilderness, which was created largely out of BLM lands where hunting was permitted); North Cascades National Park Service Complex Fish Stocking Act, Pub. L. No. 113-137, § 3, 128 Stat. 1741, 1741 (2014) (mandating fish stocking in the North Cascades NPS Complex); Endangered American Wilderness Act of 1978, Pub. L. No. 95-237, § 4(c), 92 Stat. 40, 44 (directing the USFS to conduct wildlife research in cooperation with the State of Idaho in the Gospel-Hump Wilderness); Lee Metcalf Wilderness and Management Act of 1983, Pub. L. No. 98-140, § 2(c), 97 Stat. 901, 901-02 (limiting the use of motor vehicles for wildlife management in the Lee Metcalf Wilderness).

⁷⁰⁹ Pub. L. No. 113-291, § 3066(b)(1), 128 Stat. 3292, 3838 (2014) (codified in scattered sections of 10, 16, 40, and 46 U.S.C.).

⁷¹⁰ *Id.* § 3066(c)(1), 128 Stat. at 3839.

⁷¹¹ *Id.* § 3066(d)(2)(B)(ii), 128 Stat. at 3841; see H.R. REP. NO. 101-405 (1990).

⁷¹² *Id.* § 3066(d)(5), 128 Stat. at 3842.

⁷¹³ FSM § 1561.2 exhibit 3(A)(1) (1994).

⁷¹⁴ *Id.* § 1561.2 exhibit 3(C)(16).

⁷¹⁵ *Id.* § 1561.2 exhibit 3(B)(6)(1).

species from anywhere in the world that is currently anywhere within the continental United States is not exotic (and, according to the MOU, no USFS-advanced approval is necessary for species within the continental United States to be transplanted by the State).⁷¹⁶ This conflicts with the Executive Order defining exotic species as, “with respect to a particular ecosystem, any species . . . that is not native to that ecosystem,” and defining a native species as, “with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.”⁷¹⁷

Two other statutes are notable in that they contain language affecting the management of wildlife in multiple wilderness areas. The first is ANILCA, which contains far more extra special language on a variety of issues than any other wilderness-designating language “in recognition of the unique conditions in Alaska.”⁷¹⁸ Concerning wildlife, ANILCA provides that in national forest wilderness areas the Secretary *may* allow activities and facilities to enhance aquaculture “in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource.”⁷¹⁹ Other provisions dealing with wildlife center on allowable public uses, rather than management actions per se. These include construction of certain structures—with some Secretarial discretion—to facilitate the taking of fish and wildlife,⁷²⁰ and public use of motor vehicles for subsistence hunting.⁷²¹ Additional analysis of the wildlife provisions in ANILCA is found in Part III.B.6.

The other wilderness legislation with extra special language affecting multiple areas is in Title I of the California Desert Protection Act of 1994,⁷²² which designated sixty-nine wilderness areas under the stewardship of BLM.⁷²³ Section 103(f) contains a unique provision: “Management activities to maintain or restore fish and wildlife populations and . . . habitats . . . *may* be carried out . . . and shall include the use of motorized vehicles by the appropriate State agencies.”⁷²⁴ The contradictory use of “shall” and “may” caused considerable confusion in the offices tasked with stewardship of

⁷¹⁶ See *id.* § 1561.2 exhibit 3(B)(6) (requiring Regional Forester approval “before transplanting nonindigenous, Federally classified endangered or threatened or exotic[] wildlife species” but not for all other species).

⁷¹⁷ Exec. Order No. 13,112, 3 C.F.R. § 159 (2000) (emphasis added) (defining “alien” and “native” species); see also *Frequently Asked Question About Invasive Species*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/A9YV-MRHT> (last updated Nov. 20, 2012) (“Other terms sometimes used for exotic species include ‘non-native[]’ ‘non-indigenous,’ and ‘alien.’ . . . These definitions come from Executive Order 13112.”).

⁷¹⁸ 16 U.S.C. § 3203(a) (2012).

⁷¹⁹ *Id.* § 3203(b).

⁷²⁰ *Id.* § 3204(a).

⁷²¹ *Id.* § 3121(b).

⁷²² *Id.* §§ 410aaa–410aaa-83.

⁷²³ See, e.g., California Desert Protection Act of 1994, Pub. Law No. 103-433, § 102(3), (55), (61), 108 Stat. 4471, 4473, 4479–80 (designating, among others, the Bighorn Mountain Wilderness, Rodman Mountains Wilderness, and Sheephole Valley Wilderness).

⁷²⁴ *Id.* § 103(f), 108 Stat. at 4482 (emphasis added).

these areas.⁷²⁵ Ultimately, BLM determined the correct interpretation of this language is that "BLM continues to hold the ultimate responsibility for managing any actions occurring within [sic] the wilderness areas . . . [and w]hen BLM and [the California Department of Fish and Wildlife (CDFG)] cooperatively determine the need [for any access by CDFG] . . . CDFG and their volunteer organizations will be allowed to continue to use motor vehicles to carry out these necessary activities."⁷²⁶

Another notable wilderness bill is the Arizona Desert Wilderness Act of 1990,⁷²⁷ which was the first of many laws to direct wildlife management "in accordance with appropriate policies and guidelines such as those set forth in Appendix B of [House Report 101-405]."⁷²⁸ As discussed below, this House Report is a verbatim transcript of the substantive portions of the 1986 International Association of Fish and Wildlife Agencies (IAFWA) agreement,⁷²⁹ and Congressional direction here contains two important points: 1) management actions "*may* be carried out"—i.e., action is not mandatory but discretionary; and 2) actions should be "consistent with relevant wilderness management plans"—i.e., discretion to take action lies with the federal land manager.⁷³⁰ In short, except for aerial fish stocking,⁷³¹ the federal responsibility to manage wildlife in such a way as to preserve an area's wilderness character was not changed.

Some more recent laws in Nevada and Idaho have lengthy sections on wildlife management that affirm federal discretion, but (with one exception)⁷³² these sections change nothing of substance from the authority found in the Wilderness Act itself.⁷³³ The considerable confusion and

⁷²⁵ Memorandum from Ed Hartey, State Dir., Bureau of Land Mgmt., to Dist. Managers of Bakersfield and Cent. Cal. Dist., Bureau of Land Mgmt. (Sept. 30, 1997), <https://perma.cc/T4MU-N2GT>.

⁷²⁶ *Id.*

⁷²⁷ Pub. L. No. 101-628, 104 Stat. 4469 (codified at 16 U.S.C. § 460ddd).

⁷²⁸ *Id.* § 101(h), 104 Stat. at 4474; see H.R. REP. NO. 101-405 (1990).

⁷²⁹ See discussion *infra* Part III.B.7.d.

⁷³⁰ Arizona Desert Wilderness Act of 1990, § 101(h), 104 Stat. at 4474.

⁷³¹ See U.S. FOREST SERV., BUREAU OF LAND MGMT. & INT'L ASS'N OF FISH & WILDLIFE AGENCIES, APPENDIX I: POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS I-8 to -9 (1986), <https://perma.cc/YE3K-8DEF> [hereinafter IAFWA 1986 AGREEMENT]. Under the IAFWA 1986 Agreement: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* (emphasis added). While "[a]erial stocking requires approval by the administering agency," agency discretion is limited in that such use of aircraft is exempted from the "minimum necessary" requirement as discussed above in Part III.B.7.a.iii. *Id.* at I-9.

⁷³² See *supra* notes 709-717 and accompanying text (discussing the Wovoka Wilderness legislation). We review extra special wildlife provisions in wilderness law in more detail in the FAQs accompanying this Article. See *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³³ See Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208, 116 Stat. 1994 (2005); Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209, 118 Stat. 2403, 2411-12; Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329, 120 Stat. 2922, 3036-37; Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, § 1503(b)(8), 123 Stat. 991, 1035-36; Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015,

misinterpretation of these laws by federal managers, state employees, and nongovernmental organizations is discussed in Part IV.E.

c. Agency Policy

Each of the four agencies has developed policy measures to guide wilderness managers. According to NPS's policy, both planning and management activities "must ensure that wilderness character is likewise preserved" within designated units of the National Park System.⁷³⁴ It provides: "The purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."⁷³⁵ "In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved."⁷³⁶

FWS's policy provides that, upon designation, wilderness character becomes an additional purpose of any wilderness area within a refuge. More specifically, the agency's policy states: "As we carry out individual refuge establishing purpose(s), the Administration Act purposes, the Refuge System mission and goals, and [FWS]'s mission in areas designated as wilderness, we do so in a way that preserves wilderness character."⁷³⁷

For the National Forest System, USFS's policy states that "[w]ildlife and fish management programs shall be consistent with wilderness values."⁷³⁸ It commits the agency to "[b]ase any [USFS] recommendation to State wildlife and fish agencies on the need for protection and maintenance of the wilderness resource";⁷³⁹ "[p]rovide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist";⁷⁴⁰ and "[d]iscourage measures for direct control (other than normal harvest) of wildlife and fish populations."⁷⁴¹ In addition, practical application of the USFS policies reflects the *Policies and Guidelines for Fish and Wildlife Management in*

Pub. L. No. 113-291, §§ 3064(e), 3066(d), 128 Stat. 3292, 3831-32, 3841-42 (2014). For a section-by-section analysis of these laws, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³⁴ NPS MANAGEMENT POLICIES, *supra* note 375, §§ 6.1, 6.3.1.

⁷³⁵ *Id.* § 6.1.

⁷³⁶ *Id.* § 6.3.1.

⁷³⁷ FWS WILDERNESS POLICY, *supra* note 437, § 1.12(B).

⁷³⁸ FSM § 2323.32(2) (2006).

⁷³⁹ *Id.* § 2323.32(1). This provision recognizes that states also have responsibilities for the protection of wildlife in wilderness and calls for cooperative federalism in fish and wildlife management. *Id.*

⁷⁴⁰ *Id.* § 2323.31(1).

⁷⁴¹ *Id.* § 2323.32(3).

National Forest and Bureau of Land Management Wilderness developed with AFWA.⁷⁴² This document is discussed below.

BLM's wilderness policy was completely rewritten in 2012.⁷⁴³ Though never explicitly stated, the wildlife section of this policy purposefully adheres more closely to the IAFWA 1986 Agreement than the 2006 Agreement.⁷⁴⁴ Importantly, the 2012 BLM policy provides that "States have a primary and critical role" rather than "the primary role" in wildlife management,⁷⁴⁵ recognizing that the states' interests are not supreme, but that either the states or the federal agency may initiate wildlife stewardship proposals in wilderness. In addition, the policy plainly declares "[t]he ultimate responsibility to preserve wilderness character rests with the BLM"; it emphasizes wilderness preservation and requires the use of the Carhart *Minimum Requirements Decision Guide* for any wildlife management action.⁷⁴⁶ It also clarifies the prohibition on commercial use of wildlife.⁷⁴⁷

d. Wilderness and the Association of Fish & Wildlife Agencies

While Congress has not substantially changed wildlife management in wilderness with the recent legislation discussed above, for a little more than a decade there have been significant efforts to do so through legally questionable policy channels and nontransparent agreements between federal agencies and IAFWA or AFWA (the Association changed names in 2006).

In 1986, USFS and BLM made a comprehensive revision of their wilderness management directives with the cooperation of IAFWA.⁷⁴⁸ This agreement consists of a statement of purpose, general sideboards for the management of fish and wildlife in wilderness, and details regarding specified actions that may or may not be taken in cooperation with the states.⁷⁴⁹ It maintains federal control over decision-making processes,

⁷⁴² See *id.* § 2323.32(5) (citing U.S. FOREST SERV. ET AL., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS (2006), <https://perma.cc/MSMK-WDCY> [hereinafter AFWA 2006 AGREEMENT]). For details on the AFWA 2006 Agreement, see discussion *infra* Part III.B.7.d.

⁷⁴³ BLM MANUAL, *supra* note 673 (superseding BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 8560—MANAGEMENT OF DESIGNATED WILDERNESS AREAS).

⁷⁴⁴ See, e.g., *id.* § 1.6(C)(21)(c)(v) (discussing chemical treatment of pesticides). Compare AFWA 2006 AGREEMENT, *supra* note 742, at 6 (providing a less comprehensive policy and guidelines for application of pesticides), with IAFWA 1986 AGREEMENT, *supra* note 731, at I-6 to -7 (providing a more comprehensive policy and guidelines for application of pesticides).

⁷⁴⁵ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(i) (emphasis added). This is a shift from the misleading language of 43 C.F.R. § 24.3 (2016). See discussion *infra* Part IV.C.

⁷⁴⁶ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(ii)–(iii), app. B-1 (discussing application of the ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., *supra* note 683).

⁷⁴⁷ *Id.* § 1.6(C)(21)(c)(ix)(E).

⁷⁴⁸ IAFWA 1986 AGREEMENT, *supra* note 731, at I-1.

⁷⁴⁹ *Id.* at I-1 to -2. Fourteen specific action areas are listed: use of motorized equipment; fish and wildlife research and management surveys; facility development and habitat alteration; threatened and endangered species; angling, hunting, and trapping; population sampling; chemical treatment; spawn taking; fish stocking; aerial fish stocking; transplanting wildlife;

recognizes the responsibility afforded federal managers by the Wilderness Act, and is guided by the following direction: "Fish and wildlife management activities will emphasize the protection of natural processes . . . [and] by the principle of doing only the minimum necessary to manage the area as wilderness."⁷⁵⁰ As noted above, these guidelines were incorporated into House Report 101-405 and referenced in several subsequent wilderness bills.⁷⁵¹

Although USFS, BLM, and IAFWA "reaffirmed [their] mutual commitment" to the 1986 Agreement in 1995⁷⁵² and again in 2002,⁷⁵³ the agencies initiated a complete revision of the document and ultimately issued a revamped "Policies and Guidelines" in 2006.⁷⁵⁴ There were remarkable changes between the 1986 Agreement and the 2006 Agreement.⁷⁵⁵ The solicitor assigned to review the 2006 Agreement on behalf of the Department of the Interior noted several problems with it, including significant inconsistencies with federal law.⁷⁵⁶ At least one AFWA officer was unconcerned: "[U.S. Department of the Interior] Solicitors balked but BLM Director made the decision to sign."⁷⁵⁷

wildlife damage control; visitor management to protect wilderness wildlife resources; and management of fire. *Id.* at I-2 to -11.

⁷⁵⁰ *Id.* at I-1. The 1986 Agreement veers off course in one respect, found in the section on aerial fish stocking: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* at I-8 to -9 (emphasis added).

⁷⁵¹ See *supra* notes 710-712, 727-729 and accompanying text.

⁷⁵² Memorandum from Jack Ward Thomas, Chief, U.S. Forest Serv., et al., to Reg'l Foresters et al., Int'l Ass'n of Fish & Wildlife Agencies 1 (Feb. 23, 1995) (on file with authors).

⁷⁵³ Memorandum from Dale N. Bosworth, Chief, U.S. Forest Serv., et al., to State Gov't Members of the Int'l Ass'n of Fish & Wildlife Agencies, et al. 1-2 (Aug. 9, 2002) (on file with authors) (noting "the statutory endorsement of the existing guidelines by the Arizona Desert Wilderness Act").

⁷⁵⁴ AFWA 2006 AGREEMENT, *supra* note 742.

⁷⁵⁵ Compare IAFWA 1986 AGREEMENT, *supra* note 731, at I-5 ("[S]uch actions [related to threatened and endangered species] must be necessary for the perpetuation or recovery of the species and it must be demonstrated that the actions cannot be done more effectively outside wilderness."), with AFWA 2006 AGREEMENT, *supra* note 742, at 8-9 (omitting the language from the IAFWA 1986 Agreement).

⁷⁵⁶ See Facsimile Transmission from Kris Clark, Div. of Land & Water Res., U.S. Dep't of the Interior, to Dwight Fielder, Bureau of Land Mgmt., & Jeff Jarvis, Bureau of Land Mgmt. 1, 6-7 (Aug. 10, 2006) (on file with authors) ("[T]he handling of the 'minimum requirements' analysis appears to conflict with the Wilderness Act. . . . [I]t materially changes the meaning of the provision [of section 4(c) in the Wilderness Act]. . . . [T]he Agreement fails to recognize that Federal law, including regulations and discretionary actions, preempt[s] state jurisdiction."); see also e-mail from Kris Clark to E. Dwight Fielder, Chief, Div. of Fish, Wildlife & Plant Conservation, Bureau of Land Mgmt. (June 22, 2006) (on file with authors) (explaining that "decisions about federal agency management of wildlife in wilderness areas is not the appropriate subject for negotiation with an outside group" and stating that the Agreement's characterizations of the Wilderness Act "are misleading and in many cases incorrect").

⁷⁵⁷ E-mail from Gary J. Taylor, Legislative Dir., Ass'n of Fish & Wildlife Agencies, to Duane Shroufe et al. (July 18, 2006) (on file with authors) (also noting "USDI Solicitors question[ed] [the] legal status of AFWA being able to speak for the states. Whatever . . . the important thing is that it is signed." (omission in original)); see also *id.* (stating that the USFS Chief, BLM Director,

A complete inventory of the changes is available elsewhere,⁷⁵⁸ but problematic additions or deletions include the following:

- Declaring that "State fish and wildlife management activities that do not involve Wilderness Act prohibitions identified . . . in Section 4(c) . . . are generally exempt from authorizations by the Federal administering agencies,"⁷⁵⁹ when in fact federal requirements to preserve wilderness character go beyond prohibiting section 4(c) uses and include prevention of any action that may degrade an area's wilderness character (e.g., introducing a non-native species).⁷⁶⁰
- Giving states responsibility to determine whether wildlife and fish species are indigenous, thereby possibly degrading the Natural Quality of wilderness character.⁷⁶¹ Associated with this change is the deletion of the IAFWA 1986 Agreement prohibition on stocking exotic fish.⁷⁶²
- Identifying any state plans and agreements as sufficient to establish if an action is necessary in wilderness, when the Wilderness Act states prohibited uses can be approved only to manage the area for the purpose of the Act.⁷⁶³
- Deleting a passage committing the agencies to being guided by the principle of doing "only the minimum necessary to manage the area as wilderness," and assigning authority for completing the "minimum requirements" analysis in part to the states,⁷⁶⁴ when the Act unequivocally gives federal agencies the sole responsibility to manage wilderness areas and preserve their wilderness character.⁷⁶⁵
- Analyzing implementation alternatives on the basis of impacts to "the wilderness characteristics (naturalness, outstanding

and AFWA Executive Vice President "all agreed no fanfare, news release or anything spotlighting it").

⁷⁵⁸ ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS: A COMPARISON OF THE 1986 IAFWA AND 2006 AFWA DOCUMENTS, <https://perma.cc/KR83-7CNK> (last updated May 30, 2017).

⁷⁵⁹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶⁰ See discussion *supra* Part.III.B.7.a.i.

⁷⁶¹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶² See IAFWA 1986 AGREEMENT, *supra* note 731, at 1-8 ("Exotic species of fish shall not be stocked.").

⁷⁶³ Wilderness Act, 16 U.S.C. § 1133(c) (2012); AFWA 2006 AGREEMENT, *supra* note 742, at 5, 16.

⁷⁶⁴ See IAFWA 1986 Agreement, *supra* note 731, at 1 (containing the now-deleted language about doing only the minimum necessary); AFWA 2006 Agreement, *supra* note 742, at 14 ("[T]he intent of this attachment is to document the analysis process used by the BLM and [USFS], in cooperation with the State fish and wildlife agencies, to determine the 'minimum requirements' for accomplishing fish and wildlife projects and activities within a wilderness area.").

⁷⁶⁵ 16 U.S.C. § 1133(b).

opportunities for solitude or primitive and unconfined recreation, and other special features),” and omitting consideration of other important impacts, in particular, to the untrammelled quality and the undeveloped quality.⁷⁶⁶

These provisions, and other AFWA initiatives, reflect AFWA’s fundamental misunderstanding of the federal role in managing wildlife. According to AFWA: “The state fish and wildlife agencies are responsible for fish and wildlife management within their borders, even on most federal public lands—including federal lands designated as Wilderness.”⁷⁶⁷ While the states have duties related to wildlife management, no statute grants them authority in wilderness—or other federal lands—superior to the federal agencies.⁷⁶⁸

It is clear from the plain text of the Wilderness Act that Congress intended the preservation of wilderness character as the primary purpose of the Act. Congress was adamant that wilderness areas shall be “administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment *as wilderness*,”⁷⁶⁹ and that allowing otherwise prohibited uses to meet minimum necessary requirements must be for the purpose of the Act,⁷⁷⁰ not for meeting “states’ abilities to accomplish big game harvest objectives.”⁷⁷¹ The misconception that federal agencies should only utilize “[w]ilderness management planning processes that support the state wildlife agencies and their wildlife management responsibilities and goals”⁷⁷² is exactly backward. In wilderness, state wildlife agencies should support—and cannot undermine—the congressional mandate to preserve wilderness character. While the state agencies may not be required to do so, the federal agencies must evaluate any action that may degrade wilderness character and are required to deny any action that does so.⁷⁷³

IV. ANALYSIS AND RECOMMENDATIONS

A. The Federal Obligation to Manage and Conserve Fish and Wildlife on Federal Lands

We begin our analysis by recognizing that federal land agencies have an *obligation*, and not just the discretion, to manage and conserve fish and

⁷⁶⁶ AFWA 2006 AGREEMENT, *supra* note 742, at 17.

⁷⁶⁷ John Kennedy, Speech at the National Wilderness Conference in Albuquerque, New Mexico: Fish and Wildlife Management in Wilderness 2 (Oct. 17, 2014) [hereinafter Kennedy Speech] (transcript on file with authors).

⁷⁶⁸ See 16 U.S.C. § 1133(a)(3) (“Nothing in this chapter shall modify the statutory authority under which units of the national park system are created.”).

⁷⁶⁹ *Id.* § 1131(a) (emphasis added).

⁷⁷⁰ *Id.* § 1133(c).

⁷⁷¹ Kennedy Speech, *supra* note 767, at 6.

⁷⁷² *Id.* at 11.

⁷⁷³ 16 U.S.C. § 1133(b).

wildlife on federal lands. Before explaining, it is important to first dispel the common myth that "the states manage wildlife, federal land agencies only manage wildlife habitat."⁷⁷⁴ We found this mantra repeated throughout our study, and it was commonly invoked by state and federal agencies in multiple cases and contexts.

The mantra has a long history and can be traced to the different sources of federal and state powers regarding wildlife management. As discussed in Part II.A, states claim ownership of wildlife and a commensurate public trust duty to manage it in the public's interest. On the other hand, the Property Clause of the U.S. Constitution provides federal land agencies with vast plenary powers to manage public lands—and the wildlife thereon.⁷⁷⁵ Writing in 1970, the Public Land Law Review Commission noted that "[h]istorically, the states have regulated the game population, and the Federal Government has managed the habitat."⁷⁷⁶ But the Commission also observed that, "increasingly, . . . the line between the traditional functions has become shadowy" because of the interplay between wildlife populations and habitat.⁷⁷⁷ The Commission released its report prior to passage of the ESA, NFMA, and FLPMA.⁷⁷⁸ And while these laws gave federal land agencies new responsibilities to conserve at-risk species and manage wildlife, and not just wildlife habitat, the "federal lands-habitat" refrain continued.

Part of the mantra's endurance is also due to the states' traditional role in regulating hunting, fishing, and trapping. As discussed previously, FLPMA and the Sikes Act include provisions related to hunting and fishing on public lands administered by USFS and BLM, meaning that federal agencies most often defer to the states when it comes to regulating the harvest of fish and wildlife on federal lands.⁷⁷⁹ Congress has shown no interest in usurping this traditional role of the states. However, wildlife management goes beyond simply setting harvest levels and methods. Just because the federal government has traditionally deferred to the states in establishing regulations pertaining to hunting, fishing, and trapping does not mean "the states manage wildlife, and federal land agencies manage wildlife habitat." We suspect that this non sequitur explains why the mantra has been so rarely questioned in the past.

⁷⁷⁴ See, e.g., *Kleppe*, 426 U.S. 529, 534 n.4, 536–37 (1976) ("[The State of New Mexico] contend[s] that the [Property] Clause grants Congress essentially two kinds of power: (1) the power to dispose of and make incidental rules regarding the use of federal property; and (2) the power to protect federal property. According to [the State], the first power is not broad enough to support legislation protecting wild animals that live on federal property; and the second power is not implicated since the Act is designed to protect the animals, which are not themselves federal property, and not the public lands.").

⁷⁷⁵ See *id.* at 546; Blumun & Paulsen, *supra* note 5, at 1461.

⁷⁷⁶ PUB. LAND LAW REVIEW COMM'N, ONE THIRD OF THE NATION'S LAND: A REPORT TO THE PRESIDENT AND TO THE CONGRESS BY THE PUBLIC LAND LAW REVIEW COMMISSION 158 (1970), <https://perma.cc/TR83-JWLF>.

⁷⁷⁷ *Id.*

⁷⁷⁸ See *id.* at iii (submitting the report in 1970). The ESA, NFMA, and FLPMA were passed in 1973, 1976, and 1976, respectively. See *supra* notes 87–88, 287 and accompanying text.

⁷⁷⁹ See *supra* notes 104–105, 579–582 and accompanying text.

The mantra is wrong from a legal standpoint, limited from a biological one, and problematically simplifies the complexity of wildlife-habitat relationships. We take issue with the mantra because it invariably leads to fragmented approaches to wildlife conservation and unproductive battles over agency turf, and it often leads to an abdication of federal responsibility over wildlife.

We begin with a review of the public land laws surveyed in Part III.B. We then turn to the public trust and national interest in federal lands, and finally to the biological and ecological concerns perpetuated by the wildlife-habitat mantra.

1. Federal Land Laws Governing Wildlife Management

Part III.B makes clear that Congress directed all four federal land management agencies to manage wildlife on federal lands and to not just provide wildlife habitat. The ESA is a good starting point because the Act and its regulations so clearly intertwine the fate of species and ecosystems. The two are linked together under the law, and the statute mandates that all federal land agencies utilize their authorities to effectuate the purposes of the Act.⁷⁸⁰ And the purpose of the Act, after all, is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”⁷⁸¹ Furthermore, the meaning of “harm,” in the definition of “take” includes “significant habitat modification or degradation.”⁷⁸² The ESA obligates federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat.⁷⁸³

The ESA is also significant because of the role played by federal lands in the conservation of listed and candidate species. The most recent assessment, completed in 2008, measured the distribution of ESA-status species (listed as endangered, threatened, or candidate) and species defined by NatureServe as imperiled.⁷⁸⁴ It found that federal lands are significant reservoirs of biodiversity.⁷⁸⁵ Lands managed by USFS and the Department of Defense (DOD) stood out in terms of supporting the greatest number of species with status under the ESA. Both agencies harbored about 23% of species with ESA-status (at least 355 species for each agency), followed by

⁷⁸⁰ ESA, 16 U.S.C. § 1536(a)(1) (2012); see *supra* note 311 and accompanying text.

⁷⁸¹ 16 U.S.C. § 1531(b).

⁷⁸² 50 C.F.R. § 17.3(c)(3) (2016).

⁷⁸³ 16 U.S.C. § 1536(a)(1)–(2).

⁷⁸⁴ Bruce A. Stein et al., *Federal Lands and Endangered Species: The Role of Military and Other Federal Lands in Sustaining Biodiversity*, 58 BIOSCIENCE 339, 341 (2008). NatureServe provides independent conservation status assessments for extinction risks facing species in the United States. *Id.* at 340; *About Us*, NATURESERVE, <https://perma.cc/K8TD-6J8R> (last visited Nov. 11, 2017) (“[W]e collect decision-quality data about imperiled species and entire ecosystems, transform that data into knowledge products and visualizations, and provide meaning through expert analyses and support to guide decision-making, implement action, and enhance conservation outcomes.”).

⁷⁸⁵ Stein et al., *supra* note 784, at 346.

NPS (19%), FWS (18%), and BLM (16%).⁷⁸⁶ USFS also harbored the most NatureServe-defined imperiled species: approximately 27% of the total (at least 821 species).⁷⁸⁷ This was followed by BLM (20%) and DOD lands (15%).⁷⁸⁸

To put these percentages in context, consider the importance of national forest lands to fish and wildlife more broadly:

The 193 million acres of the National Forest System support much of North America's wildlife heritage, including: habitat for 430 federally listed threatened and endangered species, six proposed species, and 60 candidate species, with over 16 million acres and 22,000 miles of streams designated as critical habitat for endangered species; approximately 80% of the elk, mountain goat, and bighorn sheep habitat in the lower 48 States; nearly 28 million acres of wild turkey habitat; approximately 70% of the Nation's remaining old growth forests; over 5 million acres of waterfowl habitat; habitat for more than 250 species of migratory birds; habitat for more than 3,500 rare species; some of the best remaining habitat for grizzly bear, lynx, and many reptile, amphibian and rare plant species; over two million acres of lake and reservoir habitat; and over two hundred thousand miles of fish-bearing streams and rivers.⁷⁸⁹

Amongst federal land agencies, BLM has the "fewest ESA status species" and "ranks second for number of imperiled species."⁷⁹⁰ Nonetheless, over 245 ESA-listed species and at least another 31 candidate species are found on BLM lands, and roughly 450 rare and listed plant and animal species "are believed to occur only on BLM-managed lands."⁷⁹¹ While private and other landholdings are essential to biodiversity conservation, federal lands will play an increasingly crucial role in the future.⁷⁹²

The wildlife conservation mandates given to NPS and FWS are unambiguous in the obligation to prioritize the conservation of fish and wildlife. The National Park Service Organic Act makes the conservation of

⁷⁸⁶ *Id.* at 343 & fig.2.

⁷⁸⁷ *Id.*

⁷⁸⁸ *Id.*

⁷⁸⁹ U.S. FOREST SERV., BIOLOGICAL ASSESSMENT OF THE UNITED STATES DEPARTMENT OF AGRICULTURE NATIONAL FOREST SYSTEM LAND MANAGEMENT PLANNING RULE FOR FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES; SPECIES PROPOSED FOR FEDERAL LISTING; SPECIES THAT ARE CANDIDATES FOR FEDERAL LISTING ON NATIONAL FOREST SYSTEM LANDS 17-18 (2011), <https://perma.cc/F4EP-4LQZ>.

⁷⁹⁰ Stein et al., *supra* note 784, at 345.

⁷⁹¹ *Threatened and Endangered Species*, BUREAU LAND MGMT., <https://perma.cc/2RYC-DFY2> (last visited Nov. 11, 2017); see *Threatened and Endangered* . . . , FLICKR, <https://perma.cc/W65S-3QD4> (last visited Nov. 11, 2017) (follow "Show more" hyperlink).

⁷⁹² Stein and colleagues conclude that "[g]iven the current and projected pace of private land development, we can expect that federal lands will assume greater importance for the protection of our native species." Stein et al., *supra* note 784, at 346; see also U.S. FOREST SERV., FUTURE OF AMERICA'S FORESTS AND RANGELANDS: FOREST SERVICE 2010 RESOURCES PLANNING ACT ASSESSMENT 11 (2012), <https://perma.cc/ZDB2-TJUR> (reviewing how development pressure on nonpublic lands is affecting "the ability of those public lands to sustain important ecosystem services and biodiversity"); *The Disappearing West*, CTR. FOR AM. PROGRESS, <https://perma.cc/RU3C-54L2> (last visited Nov. 11, 2017) (discussing the loss of natural land due to human development and the need for private, state, and federal conservation efforts).

park resources, including wildlife, a primary management goal, and the courts are consistent in their reading that conservation is to be prioritized over facilitating public enjoyment.⁷⁹³ Furthermore, the enjoyment of park resources and wildlife may only occur in “such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”⁷⁹⁴ The wildlife conservation mandate is even more well defined for national wildlife refuges. The 1997 Improvement Act prioritizes “the conservation of fish, wildlife and plants, and their habitats within the System” and seeks to “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans.”⁷⁹⁵ The laws governing national parks and wildlife refuges make clear the obligation to conserve fish and wildlife and its habitat.

The wildlife-habitat mantra is most often invoked in the context of USFS and BLM management.⁷⁹⁶ But the multiple-use mandates given to both agencies require that these lands be managed for fish and wildlife purposes, with no distinction made between wildlife and wildlife habitat.⁷⁹⁷ The multiple-use mandates provide USFS and BLM considerable discretion, but that does not mean that the agencies can arbitrarily opt out of managing fish and wildlife where laws or regulations require such management.

NFMA provides a more substantive and enforceable mandate for USFS: “[to] provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁷⁹⁸ Land and Resource Management Plans, whether written pursuant to the 1982 or 2012 NFMA regulations, must ensure the viability of species in planning areas.⁷⁹⁹ The regulations differ in how the viability requirement is defined, but both regulations emphasize the importance of habitat or “ecological conditions” in meeting the diversity mandate.⁸⁰⁰ Yet the definitions of viability, in both sets of regulations, focus on the population of species (e.g., their distribution, persistence, resilience, etc.).⁸⁰¹

FLPMA provides BLM with no wildlife diversity mandate, and it possesses more discretion than other federal land agencies. But this discretion is limited by FLPMA and its regulations.⁸⁰² Multiple use is defined in the Act to include “wildlife and fish.”⁸⁰³ Though “habitat for fish and wildlife and domestic animals” is referenced in FLPMA as well, the language

⁷⁹³ See discussion *supra* Part II.B.2.a.

⁷⁹⁴ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁷⁹⁵ 16 U.S.C. § 668dd(a)(4) (2012).

⁷⁹⁶ See, e.g., *Kleppe*, 426 U.S. 529, 536–37 (1976) (invoking the wildlife mantra to challenge federal jurisdiction over unbranded and unclaimed horses and burros on public lands administered by USFS and BLM).

⁷⁹⁷ See, e.g., 16 U.S.C. § 1604(e)(1); FLPMA, 43 U.S.C. § 1702(c) (2012).

⁷⁹⁸ 16 U.S.C. § 1604(g)(3)(B).

⁷⁹⁹ 36 C.F.R. § 219.9(b) (2012); *id.* § 219.19 (1983).

⁸⁰⁰ *Id.* §§ 219.9(b), 219.19 (2012); *id.* § 219.19 (1983).

⁸⁰¹ *Id.* § 219.19 (2012); *id.* (1983).

⁸⁰² 43 U.S.C. § 1712(c).

⁸⁰³ 43 C.F.R. § 1601.0-5(i) (2016).

is embedded in a more inclusive section focused on the ecological and other values for which public lands must be managed.⁸⁰⁴ The Act also requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern,"⁸⁰⁵ and "to protect and prevent irreparable damage" to the "fish and wildlife resources" found within these areas.⁸⁰⁶ Furthermore, whatever discretion BLM has regarding wildlife conservation becomes much less relevant once a species found on BLM lands is protected by the ESA.

2. *The Public Trust and National Interest in Federal Lands*

In addition to the statutory requirements summarized above, many of these federal land laws include trust-like language pertaining to the national interest in federal lands, non-impairment, and intergenerational responsibility that further clarifies the federal obligation to conserve wildlife. The NPS Organic Act, for example, requires the conservation of "scenery, natural and historic objects, and wild life" therein and also requires the provision for the enjoyment of the same "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."⁸⁰⁷ The mission of the National Wildlife Refuge System, as provided by the Improvement Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁸⁰⁸ In the Wilderness Act, Congress secured "for the American people of present and future generations the benefits of an enduring resource of wilderness."⁸⁰⁹ Section 101 of NEPA expresses the federal government's responsibility to use all practicable means to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."⁸¹⁰ Finally, the ESA includes similar language pertaining to the multiple values of species "to the Nation and its people" and the importance of "better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants."⁸¹¹

⁸⁰⁴ 43 U.S.C. § 1701(a)(8).

⁸⁰⁵ *Id.* § 1712(c)(3).

⁸⁰⁶ *Id.* § 1702(a).

⁸⁰⁷ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁸⁰⁸ National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. § 668dd(a)(2) (2012); see also Robert L. Fischman & Robert S. Adamcik, *Beyond Trust Species: The Conservation Potential of the National Wildlife Refuge System in the Wake of Climate Change*, 51 NAT. RESOURCES J. 1, 6 (2011) (analyzing FWS's "variable and amorphous application of 'trust' terminology and the doctrine that such terminology reflects").

⁸⁰⁹ 16 U.S.C. § 1131(a).

⁸¹⁰ NEPA, 42 U.S.C. § 4331(b)(1) (2012).

⁸¹¹ 16 U.S.C. § 1531(a); see also *Palila*, 471 F. Supp. 985, 994 (D. Haw. 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff'd*, 852 F.2d 1106 (9th Cir. 1988). According to the court: "It is also possible that Congress can assert a property interest in endangered species which is superior to that of the state. . . . The importance of preserving such a national resource may be of such magnitude as to rise to the level of a federal property interest." *Palila*, 471 F. Supp. at

While the multiple-use statutes of USFS and BLM do not specifically reference an intergenerational trust, it is implied in various provisions pertaining to the national interest in federal lands and the command to not impair them. MUSYA, for instance, requires USFS to manage multiple uses in a combination “that will best meet the needs of the American people . . . without impairment of the productivity of the land.”⁸¹² NFMA speaks to “the public interest” and serving “the national interest” in the renewable resources program.⁸¹³ And finally, FLPMA similarly recognizes “the national interest” in public lands and requires multiple-use management to “meet the present and future needs of the American people” as well as “long-term needs of future generations,” and to do so “without permanent impairment of the productivity of the land and the quality of the environment.”⁸¹⁴ The public trust is also acknowledged in Department of the Interior regulations on intergovernmental cooperation in fish and wildlife management:

The Secretary of the Interior reaffirms that fish and wildlife must be maintained for their ecological, cultural, educational, historical, aesthetic, scientific, recreational, economic, and social values to the people of the United States, and that these resources are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.⁸¹⁵

As the statutory language suggests, applying trust principles to lands as varied as those found in the federal system is challenging. It is one thing, for example, to find a trust duty for the national parks, but it becomes murkier when thinking of the routine multiple-use decisions that must be made by USFS and BLM, decisions that often involve the private use of public resources. But even here, there is an understanding by the courts that such private uses must be for “national and public purposes,”⁸¹⁶ and that anti-monopoly restrictions impose a constraint on Congress in making decisions about federal lands as a trust resource.⁸¹⁷ At least one prominent scholar places federal public lands “at the outer reaches of the public trust doctrine.”⁸¹⁸ This is in part because federal public land law is a field heavy

995 n.40. See generally Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605 (2004) (analyzing the wildlife trust doctrine).

⁸¹² 16 U.S.C. §§ 529, 531(a).

⁸¹³ *Id.* § 1600(2)–(3).

⁸¹⁴ 43 U.S.C. §§ 1701(a)(2), (a)(7), 1702(c) (2012).

⁸¹⁵ 43 C.F.R. § 24.1(b) (2016).

⁸¹⁶ *Light*, 220 U.S. 523, 537 (1911).

⁸¹⁷ See *Camfield*, 167 U.S. 518, 524 (1897) (“[The United States] would be recreant to its duties as trustee for the people . . . to permit any individual or private corporation to monopolize them for private gain . . .”); *United States v. Trinidad Coal & Coking Co.*, 137 U.S. 160, 170 (1890) (“[I]n making regulations for disposing of [lands], Congress took no thought of their pecuniary value, but, in the discharge of a high public duty and in the interest of the whole country, sought to develop the material resources of the United States . . .”).

⁸¹⁸ Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. DAVIS L. REV. 269, 273 (1980).

with statutes and regulations, leaving some to question the relevance of applying a common law-based trust doctrine,⁸¹⁹ and also because, in the past, Congress has not hesitated to deploy its Property Clause powers to privatize federal public lands and resources.⁸²⁰ But by the same token, when it appears Congress has chosen to dispose of federal property, the Court has demanded a clear expression of congressional intent.⁸²¹

The issue of a federal trust duty has received vigorous judicial and scholarly debate in recent years,⁸²² but the courts have nonetheless referenced a public trust duty in numerous federal land cases.⁸²³ It is fair to say that the federal public trust, like the Property Clause, "favors retention of federal land in national ownership (retention), national over state and local authority (nationalization), and environmental preservation (conservation)," as a matter of constitutional common law.⁸²⁴

Whether employed as an interpretive canon by the courts or a conservation tool by the federal agencies, the federal public trust provides a useful way of understanding the broad obligations of federal agencies to

⁸¹⁹ See *id.* at 276 ("The legislative matrix is sufficiently comprehensive that doubts can fairly be raised as to whether there is room for a broad, common law doctrine to operate.").

⁸²⁰ See *id.* (explaining that the government "sold or . . . transferred away" its public lands to allow settlement of the western United States and that "[n]o serious suggestion could be made that private title to some 1.4 billion acres is clouded due to the United States' inability to convey clear title"); *Light*, 220 U.S. at 537 (describing the federal public trust doctrine as applicable to "[a]ll the public lands of the nation [which] are held in trust for the people of the whole country" but also stating that Congress had sole power to dispose of those lands).

⁸²¹ See John D. Leshy, *A Property Clause for the Twenty-First Century*, 75 U. COLO. L. REV. 1101, 1110 (2004) ("[T]he Court demands that Congress express itself more clearly when it wants to dispose of federal lands than when it retains them."). Leshy places the *Light* opinion within the burgeoning conservation thrust of 20th century cases. See *id.* at 1120. Although the Court remarked that Congress, when exercising its rights incident to proprietorship and sovereignty, holds the power to "establish[] a forest reserve for what it decides to be national and public purposes . . . [or] disestablish a reserve," it in fact upheld federal authority to reserve and protect its public lands from destruction by unregulated grazing. *Light*, 220 U.S. at 537.

⁸²² Much of the recent debate stems from a misinterpretation of *PPL Montana, LLC v. Montana*, 565 U.S. 576 (2012). See, e.g., *Juliana v. United States*, 217 F. Supp. 3d 1224, 1256, 1258 (D. Or. 2016) ("[A] close reading of *PPL Montana* reveals that it says nothing about the viability of federal public trust claims."). For additional background, see Amicus Curiae Brief of Law Professors in Support of Granting Writ of Certiorari at 3–8, *Alec L. ex rel. Looz v. McCarthy*, 135 S. Ct. 774 (2014) (No. 14-496), 2014 WL 5841697, at *3–8 [hereinafter Amicus Curiae Brief] (arguing the lower court misapplied *PPL Montana*). See generally Hope M. Babcock, *Using the Federal Public Trust Doctrine to Fill Gaps in the Legal Systems Protecting Migrating Wildlife from the Effects of Climate Change*, 95 NEB. L. REV. 649 (2017) (arguing the legal basis for a federal version of the public trust doctrine); Michael C. Blumm & Lynn S. Schaffer, *The Federal Public Trust Doctrine: Misinterpreting Justice Kennedy and Illinois Central Railroad*, 45 ENVTL. L. 399, 408–09 (2015) (discussing Justice Kennedy's comments in *PPL Montana* regarding the public trust doctrine).

⁸²³ See Wilkinson, *supra* note 818, at 298 (identifying thirty-six court opinions describing "the inland public lands as being held in trust"); *Juliana*, 217 F. Supp. 3d at 1258–89 (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty).

⁸²⁴ See Leshy, *supra* note 821, at 1101 (reviewing Property Clause powers); *Juliana*, 217 F. Supp. 3d at 1260 ("[P]ublic trust rights both predated the Constitution and are secured by it.").

manage and conserve wildlife located on or integral to federal lands.⁸²⁵ We are not suggesting that the trust doctrine will provide a precise guide or formula that can be used by federal agencies to make complicated wildlife decisions. Rather, it will require that federal agencies explicitly consider their own trust obligations in decision-making processes and stop the practice of reflexively acquiescing to state claims of wildlife authority.

The famous “Mono Lake decision” by the California Supreme Court provides a constructive way of thinking about this obligation and what it means in practice.⁸²⁶ There, the court had to reconcile two different systems of legal thought—the prior appropriation doctrine and public trust doctrine of Western water law—that were on a “collision course.”⁸²⁷ Though the court did not dictate any “particular allocation” of water in the dispute, leaving that decision to the water management agencies, it did make clear that there is “an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.”⁸²⁸ The public trust duty, said the court, “imposes a duty of continuing supervision over the taking and use of the appropriated water.”⁸²⁹ In the case, the court asked state agencies to integrate two different doctrines of law and corrected the State of California who “mistakenly thought itself powerless to protect” trust resources.⁸³⁰ Federal agencies similarly have statutory and trust obligations for federal lands and wildlife, and these responsibilities must be factored into their decision-making processes.

Another trust responsibility of relevance is that between the federal government and Indian tribes. While we cannot give this complicated issue full consideration, it is important to recognize yet another layer of trust responsibilities found on federal lands. The federal government has a unique trust responsibility to protect the rights, assets, and property of Indian tribes.⁸³¹ This trust responsibility extends to protecting those off-reservation

⁸²⁵ See Melissa K. Scanlan, *A Comparative Analysis of the Public Trust Doctrine for Managing Water in the United States and India*, in ROUTLEDGE HANDBOOK OF WATER LAW AND POLICY 23, 25 (Alistair Rieu-Clarke et al. eds., 2017) (describing the trust as a judicial presumption that the state cannot privatize or substantially impair trust resources without a clear statutory directives and findings); William D. Araiza, *The Public Trust Doctrine as an Interpretive Canon*, 45 U.C. DAVIS L. REV. 693, 738 (2012) (characterizing the public trust doctrine as “[a]n interpretive canon . . . that provides courts with a judicially manageable method of vindicating the fundamental principle of public purpose in government management of natural resources”).

⁸²⁶ Nat'l Audubon Soc'y v. Superior Court of Alpine Cty., 658 P.2d 709, 711–12 (Cal. 1983).

⁸²⁷ *Id.* at 712.

⁸²⁸ *Id.* at 728, 732.

⁸²⁹ *Id.* at 728.

⁸³⁰ *Id.* at 732.

⁸³¹ “Though sovereign, Indian tribes are not foreign nations, but rather distinct political communities ‘that may more correctly perhaps be denominated domestic, dependent nations,’ whose ‘relations to the United States resemble that of a ward to his guardian.’” Martin Nie, *The Use of Co-Management and Protected Land-Use Designations to Protect Tribal Cultural Resources and Reserved Treaty Rights on Federal Lands*, 48 NAT. RESOURCES J. 585, 595 (2008) (quoting *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 2 (1831)). “A less paternalistic way of thinking about this trust relationship” is cast in terms of property; “the federal government has a

use rights that were reserved by tribes through treaties.⁸³² Hundreds of treaties precede the creation of federal land agencies, and many of these contain provisions that reserved rights on what is now federally managed land.⁸³³ These off-reservation treaty rights often include "hunting and fishing rights, gathering rights, water rights, grazing rights, and subsistence rights."⁸³⁴ The trust responsibility to protect these rights is recognized by Congress, the Executive Branch, and the courts.⁸³⁵

3. The Ecological Fallacy of Separating Wildlife from Habitat

The "states manage wildlife, federal land agencies manage habitat" mantra is also problematic from a biological and wildlife management perspective. This is because it creates a reductionist and oversimplified dichotomy between wildlife and habitat. It is obvious that 1) land management decisions made by federal agencies impact fish and wildlife populations, and 2) the decisions made by state agencies about fish and wildlife populations impact federal land and resources. Consider, for example, the impact a federal oil and gas lease can have on a state-managed mule deer population, or a state introducing non-native mountain goats to a national forest and the impact this introduction will have to that forest's alpine environment. Now, imagine in the latter case, USFS acquiescing to the introduction of non-native mountain goats on the grounds that the agency does not have authority over wildlife management and that it simply manages habitat. In cases like this, the habitat mantra becomes an abdication of federal responsibility over wildlife and its habitat.

duty to prevent harm to another sovereign's property." *Id.* (citing Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471, 1503-04 (1994)).

⁸³² *Id.*

⁸³³ See *id.* at 585-86, 596 (discussing reserved treaty rights of Native Nations on federal lands and approaches for protecting such rights).

⁸³⁴ *Id.* at 597.

⁸³⁵ See Exec. Order 13,175, 3 C.F.R. § 304 (2000) ("The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian tribes."); Order No. 3335, Sally Jewel, Sec'y of the Interior, Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries § 3 (Aug. 20, 2014) (providing background on the trust responsibility including a review of relevant statutes and case law). USFS "recognizes the Federal Government has certain trust responsibilities and a unique legal relationship with federally recognized Indian Tribes." 36 C.F.R. § 219.4(a)(2) (2016); see also U.S. FOREST SERV. HANDBOOK § 1509.13(11) (2016) (discussing consultation with Indian tribes); Joint Secretarial Order No. 3206, Sec'y of the Interior & Sec'y of Commerce, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act § 1 (June 5, 1997), <https://perma.cc/U45L-UWXF> ("This Order further acknowledges the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship in dealing with tribes.").

The fields of wildlife biology and management recognize the complex interplay between wildlife and habitat. For example, state wildlife agencies often make clear in their educational and outreach materials that wildlife management *is* habitat management.⁸³⁶ And a popular text views habitat

as a concept that is related to a particular species, and sometimes even to a particular population, of plant or animal. Habitat, then, is an area with a combination of resources (like food, cover, water) and environmental conditions (temperature, precipitation, presence or absence of predators and competitors) that promotes occupancy by individuals of a given species (or population) and allows those individuals to survive and reproduce.⁸³⁷

What is wildlife? The authors propose a similarly inclusive definition that includes “the full array of all biota present in an ecosystem as well as their ecological functions.”⁸³⁸ From here, the text goes on to analyze the interconnections between wildlife and habitat, while noting the obvious: “That vegetation plays a central role in the life of many animals is self-evident.”⁸³⁹ The authors, as do others in the field, call for managing wildlife in this larger ecosystem context.⁸⁴⁰ In some ways, the call differs little from Aldo Leopold’s views of “thinking like a mountain” and protecting the integrity of biotic communities: “The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.”⁸⁴¹

B. State Wildlife Governance

1. State Ownership and the Wildlife Trust

The common claim that “states own wildlife”—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. The claim is especially dubious when states assert ownership as a basis to challenge federal authority over wildlife on federal lands. As

⁸³⁶ See, e.g., Mont. Fish, Wildlife & Parks, *Fish & Wildlife: Fish Habitat*, MONTANA.GOV, <https://perma.cc/5QWH-7TKS> (last visited Nov. 11, 2017) (“Habitat is the KEY to fish and wildlife management in Montana.”).

⁸³⁷ MICHAEL L. MORRISON ET AL., *WILDLIFE—HABITAT RELATIONSHIPS: CONCEPTS AND APPLICATIONS* 10 (3d ed. 2006).

⁸³⁸ *Id.* at 380.

⁸³⁹ *Id.* at 43.

⁸⁴⁰ *Id.* at 12; see, e.g., Michael A. Huston, *Introductory Essay: Critical Issues for Improving Predictions*, in *PREDICTING SPECIES OCCURRENCES: ISSUES OF ACCURACY AND SCALE* 7, 7 (J. Michael Scott et al. eds., 2002) (explaining that theories of “how certain processes are expected to produce particular ecological patterns” are important “for the management and conservation of natural resources, including endangered species and biodiversity”); BRENDA C. MCCOMB, *WILDLIFE HABITAT MANAGEMENT: CONCEPTS AND APPLICATIONS IN FORESTRY* 7 (2d. ed. 2016) (“[V]egetation management by forest-land managers is probably the greatest factor influencing the abundance and distribution of animals in our forests today.”).

⁸⁴¹ ALDO LEOPOLD, *A SAND COUNTY ALMANAC: WITH ESSAYS ON CONSERVATION FROM ROUND RIVER* 137–41, 239 (1953).

reviewed in Part III.A, the U.S. Supreme Court has rejected this argument time and again. "To put the claim of the State upon title is to lean upon a slender reed," ruled the Court in *Missouri v. Holland*.⁸⁴² Decades later, in *Hughes v. Oklahoma*, the Court called such claims a "19th-century legal fiction."⁸⁴³

The states are on firm ground when declaring a "sovereign ownership" of wildlife that must be managed in the public interest. However, a more accurate phrase is to say that states manage wildlife under a doctrine of "sovereign trusteeship."⁸⁴⁴ In Part II, we highlighted trust-like language found in state constitutions, statutes, and case law. The so-called "wildlife trust doctrine" is essentially a branch of the public trust doctrine. It requires governmental trustees to manage the corpus of the trust—in this case wildlife—in the public interest and for the benefit of present and future generations, who are the beneficiaries of the trust.⁸⁴⁵ But the development and application of the wildlife trust is limited when contrasted to other trust resources, such as navigable waterways, submerged lands, and public access.⁸⁴⁶

While rejecting claims of state ownership, the *Hughes* Court makes clear that there nevertheless remain "legitimate state concerns for conservation and protection of wild animals" and that the states are not "powerless to protect and conserve wild animal life within their borders."⁸⁴⁷ The *Kleppe* Court also acknowledged that "States have broad trustee and police powers over wild animals within their jurisdictions."⁸⁴⁸ Although it did not elaborate on these powers, the Court emphasized that they were nevertheless subject to the constitutional powers and supremacy of the federal government.⁸⁴⁹ Similarly, in *Baldwin v. Fish & Game Commission of Montana*, the Court remarked that "the State's control over wildlife is not exclusive and absolute in the face of federal regulation."⁸⁵⁰ In Part III.A, we

⁸⁴² 252 U.S. 416, 434 (1920).

⁸⁴³ 441 U.S. 322, 335 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁸⁴⁴ Mary Christina Wood, *The Tribal Property Right to Wildlife Capital (Part I): Applying Principles of Sovereignty to Protect Imperiled Wildlife Populations*, 37 IDAHO L. REV. 1, 59 (2000).

⁸⁴⁵ See *Juliana*, 217 F. Supp. 3d 1224, 1254 (D. Or. 2016) ("[B]asic trust principles . . . impose upon the trustee a fiduciary duty to 'protect the trust property against damage or destruction.' The trustee owes this duty equally to both current and future beneficiaries of the trust." (citation omitted)).

⁸⁴⁶ See, e.g., Frank, *supra* note 15, at 678 ("[T]here has been precious little development of public trust principles in the fish and wildlife context over the past three decades. . . . [T]he reported decisions that do exist seem reluctant to apply public trust principles vigorously to protect fish and wildlife resources."). But see Robin Kundis Craig, *A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 ECOLOGY L.Q. 53, 84–86 (2010) (noting that California courts, for example, have applied the public trust doctrine to wildlife).

⁸⁴⁷ *Hughes*, 441 U.S. at 336, 338 (emphasis added).

⁸⁴⁸ *Kleppe*, 426 U.S. 529, 545 (1976).

⁸⁴⁹ *Id.*

⁸⁵⁰ *Baldwin*, 436 U.S. 371, 386 (1978) ("Nor does a State's control over its resources preclude the proper exercise of federal power."); see also *Otter v. Jewel*, 227 F. Supp. 3d 117, 124–26, (D.D.C. 2017) (holding that sovereign ownership of wildlife based on a state statute did not

reviewed other cases where the courts struck down state wildlife laws—and assertions of state ownership of wildlife—as being in violation of the U.S. Constitution, thus clarifying that state powers over wildlife on federal lands are qualified.

The problem is that states seem to most frequently reference ownership and a public trust in wildlife when declaring broad powers to manage it in opposition to federal (or tribal) interests. In other words, states often claim the powers of a trustee without the accompanying responsibilities.⁸⁵¹ The public trust in wildlife raises a number of related questions. What are the state's affirmative conservation duties under their trust obligations? What must they refrain from doing? Does the doctrine apply to just game species or to biological diversity more broadly?⁸⁵² Does it help resolve conflicts amongst species and if so how? Does the doctrine extend to the protection of wildlife habitat? How is the doctrine enforced and, in particular, do private citizens—the beneficiaries of the trust—have the ability to challenge state agencies to ensure protection of trust resources?⁸⁵³ How can a state exert its trust responsibilities for wildlife on federal lands when a state's trust responsibility is limited to the people of that state only, while federal land and its resources are to be managed for the benefit of all Americans? It is only when these and related questions are sufficiently answered by the states that the term “sovereign ownership” can be used meaningfully.⁸⁵⁴

To summarize, unqualified proclamations that states own wildlife and that the rights associated with ownership limit federal agencies from taking actions to conserve wildlife and its habitat must be challenged. We appreciate that the term “state ownership” is sometimes used as a shortcut to express the trust principles on which it is based and to characterize the state's substantial interest in conserving wildlife. But the term is too often used by the states as a way to challenge federal authority—as if “ownership”

mean that management of sage grouse on federal lands by the federal government produced an injury-in-fact for the purpose of state standing to challenge federal land management plans), *appeal filed sub nom.*, *Otter v. Zinke*, No. 17-5050 (D.C. Cir. Mar. 28, 2017).

⁸⁵¹ See Horner, *supra* note 14, at 28 (“[S]tates have been quick to assert their ‘rights’ with respect to public trust resources Unfortunately, their corresponding ‘duties’ have not been as readily accepted.”).

⁸⁵² See, e.g., Jeremy T. Bruskotter et al., *Rescuing Wolves from Politics: Wildlife as a Public Trust Resource*, 333 SCIENCE 1828, 1828–29 (2011) (arguing that states should utilize the public trust doctrine to protect wildlife species in need of support); Edward A. Fitzgerald, *The Alaskan Wolf War: The Public Trust Doctrine Missing in Action*, 15 ANIMAL L. 193, 197 (2009) (“The public trust doctrine . . . imposes a fiduciary duty on state government to protect and preserve public resources. . . . [It] ‘demands fair procedures, decisions that are justified, and results that are consistent with protection and perpetuation of the resource.’”).

⁸⁵³ See *Ctr. for Biological Diversity, Inc. v. FPL Grp., Inc.*, 83 Cal. Rptr. 3d 588, 603 (Cal. Ct. App. 2008) (affirming that the public has standing to challenge the state's management of wildlife under the public trust doctrine).

⁸⁵⁴ Eric Freyfogle and Dale Goble summarize: “The problem with taking [wildlife] trust language literally is that there is no trust document that sets forth the precise terms of the trust.” FREYFOGLE & GOBLE, *supra* note 292, at 33. So far, they say, “courts have had little or no occasion to struggle with these issues” and “[t]he duties states have and the limits they face in managing wildlife remain largely undecided.” *Id.* at 34; accord Blumun & Paulsen, *supra* note 5, at 1471; Horner, *supra* note 14, at 27.

provides them with more clout than "trust responsibility"—and it does little to help solve conflict or find common ground with federal agencies.⁸⁵⁵

Further complicating matters is that the state's wildlife trust duty, insofar as it is defined at all, is subject to the federal government's statutory and trust obligations over federal lands. As we discussed above, courts have found a trust responsibility for federal lands and integral resources. Although its potential application and parameters remain ill-defined, the cases tend to reinforce and strengthen federal powers over public lands, not limit them.⁸⁵⁶ This is in stark contrast to cases addressing the state public trust doctrine, which tend to restrict legislative and executive actions that run counter to trust responsibilities.⁸⁵⁷ This is not to suggest, however, that the doctrine cannot be used to impose limits and obligations on federal agencies. The Redwood National Park litigation is the most well-known example.⁸⁵⁸ In a series of cases involving the Park, national park statutes and the public trust doctrine were invoked to require affirmative action be taken to protect park resources from external threats posed by logging.⁸⁵⁹ There was, according to the court, an obligation to act: "any discretion vested in the Secretary concerning time, place and specifics of the exercise of such

⁸⁵⁵ As summarized by the Tenth Circuit in the Wyoming National Elk Refuge dispute: "FWS's apparent indifference to the State of Wyoming's problem and the State's insistence of a 'sovereign right' to manage wildlife on the [National Elk Refuge] do little to promote 'cooperative federalism.'" *Wyoming*, 279 F.3d 1214, 1240 (10th Cir. 2002).

⁸⁵⁶ See *Juliana*, 217 F. Supp. 3d 1224, 1253, 1260 (D. Or. 2016) (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty, and finding that "plaintiffs' public trust rights both predated the Constitution and are secured by it"); Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 J. LAND RESOURCES & ENVTL. L. 173, 175 (2004) (noting that the trust doctrine "supplements federal power rather than restricts it"); Wilkinson, *supra* note 818, at 284 ("[T]he trust concept was used to reach results in favor of the United States, that is, to create and reinforce federal powers."). But see MICHAEL C. BLUMM & MARY CHRISTINA WOOD, *THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW* 305 (2d ed. 2015) (challenging the notion that the trust obligation does not impose a restraint on federal land management and noting that these early cases never tested the issue, as many of them centered on the federal government's ability to protect federal lands from trespassers).

⁸⁵⁷ See *Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 452–54 (invalidating a transfer of state trust lands—submerged lands under Lake Michigan—to a private company); Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 784 (2010) (discussing how "the classic statement of the American public trust doctrine" provides limitations on the States' ability to alienate trust resources).

⁸⁵⁸ See *Redwoods III*, 424 F. Supp. 172, 175 (N.D. Cal. 1976) (finding that the Department of the Interior had taken all the necessary steps required of it to protect Redwood National Park under the Redwood National Park Act, 16 U.S.C. §§ 79a–79j (2012), and therefore was discharged of its previous failure to perform duties required by law); *Redwoods II*, 398 F. Supp. 284, 287, 293–94 (N.D. Cal. 1975) (stating that there is a "general trust duty" to conserve and provide for enjoyment of "scenery and natural and historic objects and wildlife . . . in such manner and by such means as will leave them unimpaired"), *modified*, *Redwoods III*, 424 F. Supp. 172 (N.D. Cal. 1976); *Redwoods I*, 376 F. Supp. 90, 93, 95–96 (N.D. Cal. 1974) (finding that any discretion vested in the Secretary of Interior was subordinate to his obligations to protect the park under the public trust doctrine as "guardian of the people of [the] United States over the public lands" and the Redwood National Park Act).

⁸⁵⁹ *Redwoods III*, 424 F. Supp. at 172–73; *Redwoods II*, 398 F. Supp. at 285; *Redwoods I*, 376 F. Supp. at 93.

powers is subordinate to his paramount legal duty imposed, not only under his trust obligation but by the statute itself, to protect the park.⁸⁶⁰

In moving forward, then, there would be value in attempting to harmonize the multiple trust obligations found on federal lands. As a starting place, the federal government must respond to state assertions of ownership and a wildlife trust by making clear that it too has statutory and trust obligations over federal lands, and they may extend to the conservation of wildlife. In some cases, the implication may be that the federal interest in wildlife preempts that of the states. But, in other cases when there are no competing objectives, a more cooperative form of "co-trusteeship" is possible. Mary Christina Wood uses this term to characterize the multiple trust obligations—at the federal, state, and tribal levels—as they apply to the interjurisdictional nature of salmon conservation and resource management more generally.⁸⁶¹ This co-trustee approach provides one way of reframing what is too often an adversarial relationship between federal and state governments. As Wood explains, the co-trustee framework creates mutual rights to transboundary assets along with collective responsibilities for conserving the resource.⁸⁶²

2. Hunting and the North American Model of Wildlife Conservation

Several conflicts examined as part of this project are partially driven by the way in which wildlife is managed and funded at the state level. Many of the cases reviewed as part of this research involve federal agency actions that are perceived to be in conflict with the state's interest in promoting and regulating fishing, hunting, and trapping. The Alaska cases provide the clearest examples, as the State of Alaska views actions by NPS and FWS to be in direct opposition to the state's mandate to intensively manage wildlife population in order to maximize a sustained yield of prey species in order to achieve high levels of human harvest.⁸⁶³ The wolf management cases in Idaho

⁸⁶⁰ *Redwoods I*, 376 F. Supp. at 96.

⁸⁶¹ Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43, 84–85 (2009).

⁸⁶² *Id.* at 85. Wood calls the approach a "sovereign cotenancy" over shared assets. *Id.* "A cotenancy is a 'tenancy under more than one distinct title, but with unity of possession.'" *Id.* She cites, among other cases, *Puget Sound Gillnetters Ass'n v. U.S. District Court for the Western District of Washington*, 573 F.2d 1123, 1126 (9th Cir. 1978), *vacated sub nom.*, *Washington v. Wash. State Commercial Passenger Fishing Vessel Ass'n*, 443 U.S. 658 (1979), where the Ninth Circuit "invoked the cotenancy model to describe shared sovereign rights to migrating salmon." Wood, *supra* note 861, at 85 & n.226. The most referenced case pertaining to co-trusteeship is *United States v. 1.58 Acres of Land Situated in Boston, Suffolk, Massachusetts*, 523 F. Supp. 120, 123–24 (D. Mass. 1981). See Amicus Curiae Brief, *supra* note 822, at 7 (reviewing the co-trustee/cotenancy model and its application to wildlife and other resources); Wood, *supra* note 861, at 71 & n.149 (stating that the public trust doctrine is not only prevalent in litigation at state level but applies with equal force to the federal government).

⁸⁶³ See, e.g., *Alaska*, 591 F.2d 537, 539 (9th Cir. 1979) (discussing Alaska's challenge to the Secretary of the Interior's decision "to close . . . federal lands to [a state-run] wolf-kill program," which had been "designed to relieve pressure upon the caribou herd").

provide another example.⁸⁶⁴ In the Frank Church River of No Return Wilderness, the State of Idaho undertook actions to protect elk from wolves and did so in complete contravention of the Wilderness Act.⁸⁶⁵

In these cases, and others, those outside interests challenging federal agency action/inaction on state wildlife management express a deep mistrust in a state's willingness to protect nongame species and predators. Clearly, some interests prefer federal management, or continued protection under the ESA or federal land law, because they believe that most states prioritize the management of fish and game and the revenue it produces through their license-based funding systems.

This is one reason why it is important for the states to find a more secure and predictable stream of funding for nongame management. Increased funding for nongame species would build capacity at the state level and help harmonize federal-state responsibilities over wildlife on federal lands. It is also necessary to broaden the base of wildlife funding at the state level. Doing so would bring states closer to the principles of wildlife trust management. Jacobson and others get to the crux of the matter:

According to the [public trust doctrine], wildlife is owned by no one and held in trust for the benefit of all, but with the user pay-benefit model, those who both derive direct benefits from wildlife and fund wildlife conservation from user fees may believe they have the only legitimate voice in governance of public wildlife conservation and management. Further, this model logically encourages those who pay via licenses and permits for the privilege of using wildlife to expect greater benefits than those who do not pay. This is a potentially fatal, deeply rooted inconsistency between rhetoric and reality in wildlife management in the United States, given the core premise of the [public trust doctrine] that wildlife is a public resource and no single stakeholder group should benefit from wildlife management more than others.⁸⁶⁶

It is beyond the scope of this Article to comprehensively address the North American Model of Wildlife Conservation. But, we were surprised to find the Model referenced so often in the cases examined, as it is merely a set of principles and is not based in law or regulation.⁸⁶⁷ Its frequent invocation by AFWA and the states is problematic, from providing a

⁸⁶⁴ See, e.g., *Wilderness Watch*, 229 F. Supp. 3d 1170, 1174, 1182–83 (D. Idaho 2017) (finding that USFS's approval of the efforts made by the Idaho Department of Fish and Game's (IDFG) to collar elk violated NEPA and the Wilderness Act), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017); *Maughan v. Vilsack*, No. 4:14-CV-0007-EJL, 2014 WL 12605649, at *1–2 (D. Idaho July 25, 2014) (discussing plaintiffs' claim that a wolf trapping and hunting program conducted by IDFG in a wilderness area violated NFMA, NEPA, the Wilderness Act, and other federal laws).

⁸⁶⁵ *Wilderness Watch*, 229 F. Supp. 3d at 1174, 1182–83.

⁸⁶⁶ Cynthia A. Jacobson et al., *A Conservation Institution for the 21st Century: Implications for State Wildlife Agencies*, 74 J. WILDLIFE MGMT. 203, 205–06 (2010).

⁸⁶⁷ See *supra* notes 56–57 and accompanying text.

particularly narrow and hunting-centric view of conservation history to asserting the power and authority of the states to regulate wildlife.⁸⁶⁸

First, the Model is often used to emphasize the importance of hunting, hunter access, and the significance of license-based revenue for state wildlife agencies.⁸⁶⁹ This exacerbates the potential for intergovernmental conflict by displaying an institutional bias toward game species and hunters, primarily because of the role hunters play in funding state wildlife agencies. Instead of building bridges between federal and state governments, the Model is wielded to draw distinctions between federal and state priorities.

In addition, the Model further undermines the potential for cooperative federalism by failing to include a principle focused on habitat and the role played by federal lands in the conservation of wildlife. As detailed above, federal lands and the habitat they provide are increasingly significant to biodiversity.⁸⁷⁰ Any story of wildlife conservation failing to acknowledge the contribution of federal lands—and the laws and regulations governing them—is woefully incomplete.

Another problem is that while the Model has a principle regarding wildlife as an international resource, it includes no such principle related to intergovernmental cooperation within the United States.⁸⁷¹ This makes little sense because of the transboundary and interjurisdictional nature of wildlife conservation. Some proponents of the Model suggest that it “must be viewed as a dynamic set of principles that can grow and evolve” and that its “future rests to a high degree on the adaptability and application of its principles to contemporary wildlife conservation needs.”⁸⁷² If so, the Model must consider more seriously how states can cooperate, as co-trustees, with federal and tribal governments in the conservation of wildlife.

C. The Department of Interior's Policy Statement on Federal-State Relationships

In Part III.B.5.c, we reviewed the Interior Department's 1983 policy statement and regulations on federal-state relations in wildlife policy. Although the Policy appears in the Code of Federal Regulations “as a matter of convenience to the public,”⁸⁷³ it was not subject to the rulemaking

⁸⁶⁸ See, e.g., Brief for the Ass'n of Fish & Wildlife Agencies as Amicus Curiae in Support of Petitioners, *supra* note 8, at 10 (referencing the Model to assert, “States have legal authority to manage fish and wildlife within their borders, except for federally protected species”); see also discussion *supra* Part II.C (providing examples of the Model's role in various cases).

⁸⁶⁹ See, e.g., Kennedy Speech, *supra* note 767, at 1, 6 (invoking the Model, on behalf of the Wyoming Game and Fish Department and AFWA's State-Federal Relations Committee, to criticize management of federal wilderness areas because of restrictions on types of hunter use and access).

⁸⁷⁰ See *supra* notes 784–788 and accompanying text.

⁸⁷¹ ORGAN ET AL., *supra* note 31, at 19.

⁸⁷² *Id.* at 29.

⁸⁷³ Department of the Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24).

requirements of the Administrative Procedure Act⁸⁷⁴ (APA),⁸⁷⁵ and as such does not carry the force of law.⁸⁷⁶ Despite its lack of weight, the Policy—which is not a bona fide regulation—was referenced in several of the cases we examined as part of this research and is frequently cited by agency officials.⁸⁷⁷

Most of the provisions reiterate basic principles of federalism as applied to wildlife management on federal lands with references to the Property, Commerce, Treaty, and Supremacy Clauses of the U.S. Constitution.⁸⁷⁸ The Policy also provides that fish and wildlife “are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.”⁸⁷⁹ It makes clear that “Congress may choose to preempt State management of fish and wildlife on Federal lands,” but then asserts that Congress nonetheless “reaffirmed the basic responsibility and authority of the States to manage fish and resident wildlife on Federal lands.”⁸⁸⁰

The most plausible construction of this language is that the states manage wildlife (including regulating hunting, fishing, and trapping) up to the point where the federal government determines that state-regulated activities conflict with federal law and regulation. This construction comports with our review of the case law in Part III.A, which expresses the vast constitutional powers held by Congress to conserve wildlife on federal lands.

A separate provision of the Department of Interior’s Policy muddies the water, however, by purporting to “reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife.”⁸⁸¹ The word “primary” is not defined, and it is used in an inconsistent fashion throughout the Policy.⁸⁸² Moreover, it is not clear “where” (or when) states have such “primary” authority. In one section, the Policy refers to state wildlife authority as providing a “comprehensive backdrop applicable in the absence of specific, overriding Federal law.”⁸⁸³ When placed in context, however, it becomes clear that this provision is merely another type of savings clause, recognizing state authority and

⁸⁷⁴ 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2012).

⁸⁷⁵ *Id.* § 553.

⁸⁷⁶ *Christensen*, 529 U.S. 576, 587 (2000).

⁸⁷⁷ See, e.g., Final Appropriate Refuge Uses Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 71 Fed. Reg. 36,408, 36,410 (June 26, 2006); N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, 854 F.3d 1236, 1243 (2017).

⁸⁷⁸ 43 C.F.R. § 24.3(a) (2016).

⁸⁷⁹ *Id.* § 24.1(b).

⁸⁸⁰ *Id.* § 24.3(a)–(b).

⁸⁸¹ *Id.* § 24.2(a).

⁸⁸² Compare *id.* (“This policy is intended to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility . . .”), with *id.* § 24.4(c) (“Congress in the Federal Land Policy and Management Act . . . reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands.”).

⁸⁸³ *Id.* § 24.1(a) (emphasis added).

responsibility where appropriate under existing law, and where appropriate to achieve the objective of "improved conservation of fish and wildlife."⁸⁸⁴

The Policy is more problematic with respect to lands managed by BLM, where it asserts, without citing any specific statutory provision, that FLPMA "explicitly recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁸⁸⁵ The problem is that FLPMA did no such thing. The word "primary" is not used in the statute nor is it implied.⁸⁸⁶ And, the regulations cannot "reaffirm" a principle of federalism that does not exist today and did not exist at the time of FLPMA's enactment.⁸⁸⁷ Furthermore, as we discuss in Part III.B.5.c, FLPMA's savings clause does nothing to enlarge or diminish state responsibilities for wildlife management on federal lands, and it explicitly reserves to the Secretary of Interior the authority to prohibit hunting and fishing for reasons of public safety, administration, and compliance with applicable laws.⁸⁸⁸

The Department of Interior's Policy on federal-state relations, particularly for BLM lands, represents an erroneous interpretation of the law. In its entirety, as currently written, the Policy is internally inconsistent, easily misconstrued, and provides little practical guidance because it does not sort through the fundamental tensions involved in managing wildlife on federal lands. To the extent it attempts to provide guidance, it is confusing and, in some passages, plainly contrary to law.⁸⁸⁹ Although it is fair to say that states may manage wildlife on federal lands unless state management strategies or measures conflict with federal prerogatives, neither BLM nor

⁸⁸⁴ *Id.* § 24.2(a).

⁸⁸⁵ *Id.* § 24.4(c).

⁸⁸⁶ Confusing matters even further, in another section of the same provision, the Department of the Interior acknowledges its responsibility for multiple-use management as defined in FLPMA, "including fish and wildlife conservation." *Id.* (emphasis added).

⁸⁸⁷ Much of what eventually became FLPMA can be traced to the work of the Public Lands Law Review Commission whose recommendations were published as *One Third of the Nation's Land* in 1970. See generally PUB. LAND LAW REVIEW COMM'N, *supra* note 776. The Commission's chapter on fish and wildlife management demonstrates what was understood to be the balance of federal-state power prior to FLPMA's passage in 1976. Far from affirming the "primary authority" of the states to manage wildlife on federal lands, the Commission emphasized the extent of federal powers to preempt the states. *Id.* at 158. Referenced within their recommendations pertaining to fish and wildlife is a 1964 opinion by the Solicitor of the Interior stating that "regulation of the wildlife populations on federally owned land is an appropriate and necessary function of the Federal Government when the regulations are designed to protect and conserve the wildlife as well as the land," concluding that "this authority is superior to that of a state." *Id.* (quoting 71 Interior Dec. 469, 473, 476 (1964)).

⁸⁸⁸ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁸⁸⁹ See APA, 5 U.S.C. § 706(2) (2012) (directing courts to set aside agency actions that are "not in accordance with law" or "contrary to constitutional right, power, privilege, or immunity"); *United States v. Mead Corp.*, 533 U.S. 218, 234-35 (2001) (finding that informal agency interpretations are not entitled to *Chevron* deference but only receive the level of deference "proportional to its 'power to persuade'" (quoting *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944))).

the Department of Interior has the authority to rewrite FLPMA,⁸⁹⁰ much less to redraw the constitutional boundaries of federal and state powers that were so clearly addressed in *Kleppe v. New Mexico*.⁸⁹¹ There, the Supreme Court explained why "the complete power" that Congress has over public lands necessarily includes the power to regulate and protect the wildlife living there.⁸⁹² Accordingly, we recommend that the Policy be corrected, this time using APA rulemaking procedures with adequate notice and meaningful opportunities for all interested stakeholders to comment.

D. Failure to Act: The APA, NEPA, and Beyond

As shown in Part III.A, the constitutional authority of federal land agencies to manage wildlife is well settled, and federal land laws and regulations provide the discretion and sometimes the obligation to conserve wildlife on federal lands. One of the most difficult contemporary questions concerns circumstances where federal agencies have refused to take action to protect wildlife on federal lands.

When states are involved, the general questions tend to be: 1) must the state ask the federal agency for permission to undertake its proposed use of federal land, and 2) if so, what if a state does not do so? The answer to the first question depends on whether the federal agency has a legal duty to act. Such duties may be found in the statutory authorities discussed in Part III.B or in regulations furthering the purposes of those authorities. It is important to distinguish those circumstances where the agency has a duty to act from those where the agency has the authority to act but action is discretionary. A failure to engage in a discretionary act is characterized by law as mere "inaction" while a failure to execute a mandatory duty is characterized as a judicially reviewable "failure to act."⁸⁹³ The distinction has legal significance with regard to the second question above.

As explained by the Supreme Court in *Norton v. Southern Utah Wilderness Alliance (SUWA)*,⁸⁹⁴ in order for courts "to avoid judicial entanglement in abstract policy disagreements" there must be a "discrete agency action" that an agency is required to take.⁸⁹⁵ There was no duty for BLM to act to prohibit motorized use in wilderness study areas in *SUWA* because the statutory provision at issue in FLPMA "is mandatory as to the object to be achieved, but it leaves BLM a great deal of discretion in deciding

⁸⁹⁰ See 43 U.S.C. §§ 1702(a), 1702(c) (defining the terms "areas of critical environmental concern" and "multiple use" in ways that limit federal land use).

⁸⁹¹ *Kleppe*, 426 U.S. 529, 539–41 (1976).

⁸⁹² *Id.* at 540–41 (emphasis added); see also *supra* notes 145–150 and accompanying text (discussing *Kleppe* in detail).

⁸⁹³ Under the APA, a reviewing court may "compel agency action unlawfully withheld." 5 U.S.C. § 706(1) (2012). "[A]gency action" is defined as "the whole or a part of an agency rule, order, license, sanction, relief, or the equivalent or denial thereof, or failure to act." *Id.* § 551(13) (emphasis added). For analysis, see generally Julie Lurman, *Subsistence at Risk: Failure to Act and NEPA Compliance in Post-ANILCA Alaska*, 36 ENVTL. L. 289 (2006).

⁸⁹⁴ 542 U.S. 55 (2004).

⁸⁹⁵ *Id.* at 66.

how to achieve it.⁸⁹⁶ Similarly, the Department of the Interior had no duty under FLPMA to intervene in the State of Alaska's aerial wolf control program on federal lands in *Defenders of Wildlife v. Andrus* because the statutory language was discretionary; thus, there was no judicially reviewable "failure to act."⁸⁹⁷

In addition to FLPMA, the plaintiffs in both *SUWA* and *Defenders of Wildlife* alleged violations of NEPA.⁸⁹⁸ The courts determined that where there was simply inaction, NEPA procedures were not required.⁸⁹⁹ Conversely, failure to act when there is a legal obligation to do so may trigger NEPA.⁹⁰⁰ While NEPA itself does not compel any particular federal action, a NEPA analysis is required whenever a federal action is otherwise compelled by law—whether the agency engages in that action or fails to do so.⁹⁰¹ Moreover, "[n]onfederal actors may . . . be enjoined under NEPA if their proposed action cannot proceed without the prior approval of a federal agency."⁹⁰²

As described in Part III.B, the federal agencies have, where necessary, determined through regulations the circumstances where permits or other approvals are required prior to the use and occupancy of federal lands. In general, failure by a federal agency to require the necessary approval represents a "failure to act" and may result in the non-permitted activity being enjoined.⁹⁰³

In *Maughan v. Vilsack*,⁹⁰⁴ a court declined to enjoin the State of Idaho from contracting to kill wolves in a national forest wilderness area.⁹⁰⁵ However, the court cautioned that its decision was only for the purposes of

⁸⁹⁶ *Id.* at 59–61, 66.

⁸⁹⁷ *Def. of Wildlife*, 627 F.2d 1238, 1239–40, 1249–50 (D.C. Cir. 1980) (citing 43 U.S.C. § 1732). Claimants also do not appear to be able to sue a state based on federal inaction. See *Wilderness Soc'y v. Kane County*, 632 F.3d 1162, 1169–71 (10th Cir. 2011) (explaining that environmental groups had no rights in federal lands that would give them standing to challenge defendant county's actions on those lands based on preemption under the Supremacy Clause of the U.S. Constitution).

⁸⁹⁸ *SUWA*, 542 U.S. at 61; *Def. of Wildlife*, 627 F.2d at 1240.

⁸⁹⁹ *SUWA*, 542 U.S. at 73; *Def. of Wildlife*, 627 F.2d at 1245, 1247.

⁹⁰⁰ See 40 C.F.R. § 1508.18 (2016) (defining "actions" subject to NEPA as including "circumstance[s] where the responsible officials fail to act and that failure to act is reviewable" under the APA or otherwise).

⁹⁰¹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); see *Lurman*, *supra* note 893, at 294–95 (explaining that NEPA attaches "if action were mandated (under a separate statute) but that action was not taken . . . this is failure to act").

⁹⁰² *Fund for Animals, Inc. v. Lujan*, 962 F.2d 1391, 1397 (9th Cir. 1992).

⁹⁰³ See *id.* Such injunctions are not limited to NEPA violations. See *Karuk Tribe of Cal. v. U.S. Forest Serv.*, 681 F.3d 1006, 1016, 1030 (9th Cir. 2012) (holding that USFS's approval of Notices of Intent to mine constituted "agency action" under the ESA and thus required consultation); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1283, 1299–1301 (1st Cir. 1996) (expansion of ski resort enjoined where USFS failed to require a National Pollutant Discharge Elimination System permit).

⁹⁰⁴ No. 4:14-CV-0007-EJL, 2014 WL 201702 (D. Idaho Jan. 17, 2014).

⁹⁰⁵ *Id.* at *1, *5 (accepting, for the purpose of the temporary restraining order and injunction analysis, the USFS's conclusion that "the activity is regulated by a State agency in a manner adequate to protect the lands and resources," which is one of the exceptions found in the USFS's special use permit regulations).

a temporary restraining order, and "USFS has not yet reached a determination regarding the [Idaho Fish and Game] program let alone concluded that a special use permit is required."⁹⁰⁶ Until that time, there was no federal action subject to NEPA.⁹⁰⁷ In *Wilderness Watch v. Vilsack*,⁹⁰⁸ the same court enjoined the use of data obtained by the State of Idaho under a special use permit to use helicopters in the same wilderness area.⁹⁰⁹ It concluded that the State "must obtain approval from [USFS] before undertaking [its] project in the [w]ilderness [a]rea," and "that any action taken by [Idaho] without [USFS] approval would be contrary to the Wilderness Act."⁹¹⁰

In *Friends of Columbia Gorge, Inc. v. Elicker*,⁹¹¹ the United States District Court for the District of Oregon construed the USFS special use permit regulations to apply to approval of a reintroduction plan that would use federal land to establish a population of mountain goats in the Columbia Gorge National Scenic Area.⁹¹² For this and other reasons, USFS was required to comply with NEPA.⁹¹³ In Utah, the state released mountain goats on land adjacent to the Manti-La Sal National Forest, which proceeded to occupy a research natural area on the national forest that was designated to protect plant species that would be vulnerable to trampling.⁹¹⁴ These species included three plant species listed as "sensitive" by USFS.⁹¹⁵ The United States District Court for the District of Utah held that "allowing" the mountain goats on national forest land was not a federal agency action, and that the same special use permit regulations did not require such permits

⁹⁰⁶ *Id.* at *5.

⁹⁰⁷ *See id.* at *6 (explaining that USFS's failure to require an EIS was not a final agency action).

⁹⁰⁸ 229 F. Supp. 3d 1170, 1183 (D. Idaho 2017), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹⁰⁹ *Id.* at 1177, 1183.

⁹¹⁰ *Id.* at 1182 (referencing Wilderness Act, 16 U.S.C. § 1133(c) (2012)). The injunction was based in part on a violation of NEPA. *Id.* In Part III.B.7.a.iii, *infra*, we assess other issues posed by this case, in particular, the Wilderness Act's requirement that USFS make a finding that the activity is "necessary to meet minimum requirements for the administration of the area" before issuing its approval. *But cf.* WildEarth Guardians v. U.S. Forest Serv., No. 4:14-cv-00488-REB, 2017 WL 1217099, at *1 & n.2, *5-9 (D. Idaho Mar. 31, 2017) (Predator hunting "derbies" organized by private parties and occurring on national forest lands did not meet any of the regulatory criteria requiring a special use authorization, and did not have effects subject to NEPA. However, the court struck documents submitted by plaintiffs suggesting such permits had been issued by USFS for six other organized hunts. BLM was initially a defendant in this case but the parties reached an agreement to settle those claims, regarding different regulatory language, out of court.).

⁹¹¹ 598 F. Supp. 2d 1136 (D. Or. 2007), *vacated*, No. 05-CV-646-BR, 2011 WL 3205773 (D. Or. July 27, 2011).

⁹¹² *Id.* at 1153, 1159; *see also* 36 C.F.R. § 251.50 (2016) (describing USFS's special use permitting system).

⁹¹³ *Friends of Columbia Gorge*, 598 F. Supp. 2d at 1155.

⁹¹⁴ *Utah Native Plant Soc'y v. U.S. Forest Serv.*, No. 2:16-cv-56-PMW, 2017 WL 822098, at *1-2 (D. Utah Mar. 2, 2017), *appeal filed*, No. 17-4074 (10th Cir. May 4, 2017).

⁹¹⁵ *Id.* at *1.

"every time state-managed wildlife enters federal land."⁹¹⁶ These cases indicate that it is incumbent on the land managers to evaluate any state action against the regulatory criteria for permits so that they can properly authorize (or deny) the use and occupancy of federal lands.

As noted in Part III.B, federal agencies are encouraged to complete MOUs with the states for cooperative management of fish and wildlife resources. It is the purpose of these MOUs to clearly delineate the authorities of the parties and assign responsibilities among them, and this should include identification of actions that would require a permit. It is critical that the assignment of authorities reflect the legal principles described above. Moreover, the MOU process should not be used to relinquish federal authorities without recognizing that such decisions may constitute actions subject to federal procedures required by the ESA or NEPA.⁹¹⁷ The agencies should expect scrutiny of the assignment of blanket authority to states using MOUs.⁹¹⁸ For example, the relinquishment of federal authority to manipulate water levels in a national wildlife refuge was enjoined because it constituted a federal action subject to NEPA.⁹¹⁹ Similarly, an MOU that delegated authority to the state to assert federal reserved water rights in the Black Canyon of the Gunnison violated the federal agency's nondiscretionary duties to protect federal resources.⁹²⁰ Conversely, BLM's decision to relinquish management of elk feeding grounds to the State of Wyoming through an MOU rather than through land use permits was upheld in *Greater Yellowstone Coalition v. Tidwell*⁹²¹ because FLPMA authorized BLM to enter into such agreements, rendering a permit requirement superfluous.⁹²² The court also affirmed the applicability of NEPA to the MOU in lieu of the permit process.⁹²³

⁹¹⁶ *Id.* at *4, *9, *11. However, the court also indicated that USFS would have authority to remove the goats and would "need to take a position" after sufficient study. *Id.* at *7. USFS had earlier told the state it objected to the reintroduction. *Id.* at *1-2. The authority to remove wildlife was established in *Hunt*, 278 U.S. 96, 100 (1928), and *Kleppe*, 426 U.S. 529, 545-46 (1975).

⁹¹⁷ See *Defs. of Wildlife*, 627 F.2d 1238, 1244 (D.C. Cir. 1980) ("[E]xamples of federal 'permission' [requiring compliance with NEPA] were such concrete acts as decisions 'to issue a lease, approve a mining plan, issue a right-of-way permit, or take other action to allow private activity. . .'" (omission in original) (quoting *Kleppe*, 427 U.S. at 399)).

⁹¹⁸ See *Gallatin Wildlife Ass'n v. U.S. Forest Serv.*, No. CV-15-27-BU-BMM, 2016 WL 3282047, at *9-10 (D. Mont. June 14, 2016) (finding NEPA violations in an EIS for a Forest Plan where USFS failed to disclose MOUs with the State of Montana and grazing permittees that acknowledged that the state would allow permittees to kill bighorn sheep to prevent comingling with domestic sheep), *appeal filed*, No. 16-35665 (9th Cir. filed Aug. 19, 2016).

⁹¹⁹ *Bunch v. Hodel*, 642 F. Supp. 363, 365 (W.D. Tenn. 1985); see also *High Country Citizens' All.*, 448 F. Supp. 2d 1235, 1242-43, 1249 (D. Colo. 2006) (holding that the relinquishment of a federal reserved water right was an agency action subject to judicial review).

⁹²⁰ *High Country Citizens' All.*, 448 F. Supp. 2d at 1241-42, 1245, 1253 ("A permanent relinquishment of a water right with a 1933 priority date for such a scientifically, ecologically and historically important national park must be viewed as a major action requiring compliance with NEPA.").

⁹²¹ 572 F.3d 1115 (10th Cir. 2009).

⁹²² *Id.* at 1119, 1127-28.

⁹²³ *Id.* at 1128.

An important take-away point is that MOUs cannot be used to evade legal obligations.⁹²⁴ Neither can they change a regulatory requirement, as that can only be done through APA rulemaking, nor can MOUs be used to alter statutory provisions, as that power is reserved to Congress.⁹²⁵ As a subsidiary point, if a federal agency were to use an MOU to transfer authority to a state to undertake actions that would be subject to federal requirements, such as those required by the ESA or NEPA, those requirements would attach to the MOU decision itself because that decision would constitute "affirmative conduct" necessary before a nonfederal actor could proceed.⁹²⁶

E. The National Wilderness Preservation System

While all agencies have the authority to assert federal supremacy over the management of fish and wildlife on federal lands in order to fulfill their statutory mission, in federal wilderness areas the affirmative obligation to preserve wilderness character—including fish and wildlife species within wilderness areas—is mandated to the federal land-managing agency.⁹²⁷

Courts have pointed out, "the Wilderness Act is as close to an outcome-oriented piece of environmental legislation as exists. Unlike NEPA, ... the Wilderness Act emphasizes outcome (wilderness preservation) over procedure."⁹²⁸ That outcome, as detailed above in Part III.B.7, is one where an area's wilderness character is protected in full; meaning as far as possible, without human manipulation; where otherwise-prohibited uses are limited only to those necessary for the purpose of preserving that area's wilderness character; where all commercial uses are prohibited, except those commercial services necessary for realizing *wilderness* purposes; and where each federal agency recognizes that whatever the original reason for an area's designation, once it is also designated as wilderness, management must conform to the Wilderness Act. Moreover, where subsequent legislation mentions wildlife management, those provisions must be read in tandem with the Wilderness Act, keeping in mind "the elementary rule" of

⁹²⁴ See *id.* at 1125, 1128 (requiring compliance with NEPA when a federal agency enters into an MOU).

⁹²⁵ See, e.g., *High Country Citizens' All.*, 448 F. Supp. 2d at 1249, 1252 ("This Court finds that the effect of the [MOUs] was actually to remove the administration of the Black Canyon resources from the National Park Service in direct contravention of [federal law]."); *Greater Yellowstone Coal.*, 572 F.3d at 1127 (explaining that FLPMA requires BLM to "ensure the uses approved through cooperative agreements are in compliance with other statutes imposing limitations on the uses of federal land and the activities of federal agencies").

⁹²⁶ See *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 54–55 (D.D.C. 2003) (explaining that "whether the federal agency must undertake 'affirmative conduct' before the non-federal actor may act" is a factor in determining whether an action is a "major Federal action").

⁹²⁷ *Wilderness Watch*, 229 F. Supp. 3d 1170, 1181–82 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal.*, CV-06-04-E-BLW, 2006 WL 3396731, at *6 (D. Idaho Nov. 21, 2006))), amended by No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹²⁸ *High Sierra Hikers Ass'n*, 436 F. Supp. 2d 1117, 1138 (E.D. Cal. 2006).

statutory construction that exceptions to the Act's overarching preservation mission are to be construed narrowly.⁹²⁹

We have reviewed dozens of agency-approved or state-proposed wildlife management actions in wilderness areas, and where errors in stewardship have been made we observed certain trends. It has long been noticed that the most common flaw in making a minimum requirements analysis or other evaluation document is that they are often "[w]ritten to support a pre-determined decision" where preserving wilderness character is not the default conclusion.⁹³⁰ But beyond that, we have observed a fundamental misunderstanding of many facets of the law and an apparent willingness to skirt legal obligations so as to accommodate more political desires. Two illustrative examples are analyzed below.

In 2007, FWS and the Arizona Game and Fish Department (AGFD) proposed to build two new wildlife waters in the Kofa Wilderness in Arizona, in addition to the sixty-five waters previously developed, to halt bighorn sheep population decline.⁹³¹ FWS authorized the construction as a project categorically excluded from detailed environmental analysis under NEPA.⁹³² It made a rudimentary minimum requirements analysis⁹³³ and approved the construction.⁹³⁴ The Ninth Circuit found that FWS had not provided a reasoned determination of necessity in employing the prohibited use of an installation.⁹³⁵ Its opinion created a litmus test for a minimum requirements analysis:

[A] *generic* finding of necessity does not suffice; the Service must make a finding that the structures are "necessary" to meet the "*minimum* requirements for the administration of the area" [T]he key question—whether water structures were necessary at all—remains entirely unanswered [T]he Service's own . . . [Investigative Report] identified many different actions [FWS could have taken]. . . . Importantly, in contrast to the creation of new structures within the wilderness, the Wilderness Act does not prohibit any of

⁹²⁹ *Spokane & Inland Empire R.R. Co. v. United States*, 241 U.S. 344, 350 (1916) ("[E]xceptions from a general policy which a law embodies should be strictly construed, that is, should be so interpreted as not to destroy the remedial processes intended to be accomplished by the enactment."); see *Wilderness Watch v. U.S. Forest Serv.*, 143 F. Supp. 2d 1186, 1206 (D. Mont. 2000); see also discussion *supra* Part III.B.7.b (discussing subsequently enacted, site-specific wilderness legislation).

⁹³⁰ WILDERNESS ADVISORY GRP., U.S. FOREST SERV., MINIMUM REQUIREMENTS ANALYSIS: FAQs AND COMMON ERRORS 16 (2015), <https://perma.cc/Q5MG-JNTV>.

⁹³¹ KOFA NAT'L WILDLIFE REFUGE & ARIZ. GAME & FISH DEP'T, INVESTIGATIVE REPORT AND RECOMMENDATIONS FOR THE KOFA BIGHORN SHEEP HERD 8–10, 23 (2007), <https://perma.cc/B362-GJUZ> [hereinafter KOFA INVESTIGATIVE REPORT]; U.S. FISH & WILDLIFE SERV., KOFA NATIONAL WILDLIFE REFUGE & WILDERNESS AND NEW WATER MOUNTAINS WILDERNESS INTERAGENCY MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT 43–44 (1996).

⁹³² KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., CATEGORICAL EXCLUSION: YAQUI AND MCPHERSON TANKS REDEVELOPMENT PROJECTS (2007), <https://perma.cc/6P7L-EJ46> [hereinafter REDEVELOPMENT CX].

⁹³³ *Id.*

⁹³⁴ See *Kofa*, 629 F.3d 1024, 1031 (9th Cir. 2010) (describing the minimal analysis and the construction process).

⁹³⁵ *Id.* at 1037.

those actions. . . . Yet nowhere in the record does the Service explain why those actions, alone or in combination, are insufficient to restore the population of bighorn sheep. . . . The documents as a whole demonstrate that the Service began with the assumption that water structures are necessary and reasoned from that starting point.⁹³⁶

Subsequently, FWS released a formal determination that concluded it was necessary to have built these two more wildlife waters in addition to the sixty-five already developed because the installations need to be no more than three miles apart for "[o]ptimal distribution of water, especially for lactating ewes."⁹³⁷

In the meantime, FWS authorized the killing of certain mountain lions in the Kofa Wilderness to limit predation on bighorns.⁹³⁸ The rationale was that "[a]lthough mountain lions are also a natural wildlife resource, . . . mountain lion predation is likely additive to other sources of mortality and sufficient to prevent [FWS] from attaining bighorn sheep population objectives."⁹³⁹ The explicit bighorn population objectives were "based on . . . the need to maintain a population large enough . . . to support regional and landscape level transplant programs," and to make it easier for hunters to locate "trophy rams."⁹⁴⁰ The minimum requirements analysis correctly identified the No Action alternative as the one that would best protect wilderness character.⁹⁴¹ However, the Preferred Alternative—the removal of "offending" lions—was chosen.⁹⁴² This choice, as with others made in this series of decisions, was based on supporting analyses that were fundamentally flawed.

One of the new tanks (Yaqui) is itself outside the wilderness, and only part of the catchment system is within the wilderness.⁹⁴³ The Yaqui could have been constructed without a catchment system, with water supplied by a tanker on the adjacent road outside the wilderness.⁹⁴⁴ As constructed, the Yaqui tank cannot have been the minimum necessary under any

⁹³⁶ *Id.* at 1037–38 (citation omitted). The court listed the options that should have been analyzed, including eliminating hunting, cancelling the transplant program, and killing predators. *Id.* at 1037.

⁹³⁷ KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., NECESSITY DETERMINATION: CONSTRUCTION OF THE MCPHERSON AND YAQUI WILDLIFE WATER CATCHMENTS 1, 4 (2014), <https://perma.cc/DR8D-G24N> [hereinafter NECESSITY DETERMINATION].

⁹³⁸ See KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., FINAL ENVIRONMENTAL ASSESSMENT: LIMITING MOUNTAIN LION PREDATION ON DESERT BIGHORN SHEEP ON THE KOFA NATIONAL WILDLIFE REFUGE 5 (2009), <https://perma.cc/22WH-ZAFU> [hereinafter LION EA] (analyzing various alternatives for limiting mountain lion predation on desert bighorn sheep, including the removal of certain mountain lions that have "killed two or more desert bighorn sheep within a six-month period").

⁹³⁹ *Id.*

⁹⁴⁰ *Id.* at 7, 10.

⁹⁴¹ *Id.* at 112–13.

⁹⁴² *Id.* at 104, 114.

⁹⁴³ REDEVELOPMENT CX, *supra* note 932, at 3.

⁹⁴⁴ See *id.* ("The Yaqui Tank Redevelopment Project is planned to take place immediately adjacent to the designated road that follows Moonshine Wash and as a result, is nearly all within the 200-foot-wide area that is outside of designated Wilderness.").

circumstance. Yet, FWS claims these two particular installations are among only twenty-four critical for bighorn survival in the Kofa National Wildlife Refuge.⁹⁴⁵ At the least, that would mean all the remaining wildlife water developments in the Kofa Wilderness fail the test of “necessity” by FWS’s own analysis. Therefore, these developments cannot be maintained and should be removed, since their presence manipulates the “community of life,” creates unnatural conditions in the desert environment, and violates the wilderness definition as “undeveloped Federal land retaining its primeval character and influence.”⁹⁴⁶

In addition, killing predators, while not explicitly prohibited by the Wilderness Act, is implicitly prohibited as an action that trammels “the earth and its community of life.”⁹⁴⁷ Perhaps in response to the vastly greater number of pictures of predators and mule deer than of bighorn sheep recorded at the guzzlers,⁹⁴⁸ FWS wrote: “Desert bighorn sheep will likely use the new water sources more frequently as they become familiar with the location of the waters.”⁹⁴⁹ There is no discussion of how the predators and mule deer became familiar with the locations so much faster than the sheep. To decrease predation on sheep, it would be more consistent with the area’s wilderness character to stop providing supplemental water for bighorn predators and their alternate prey that appear to be less well-adapted to the harsh desert environment of the Kofa Wilderness than desert bighorn sheep.⁹⁵⁰

In the end, these errors are dwarfed by the fundamental mistake of skewing management of the Kofa Wilderness to meet a population goal of 800 bighorns—“considered the carrying capacity of the refuge”—with the objective to re-establish them as a “transplant source herd.”⁹⁵¹ To do so, AGFD and FWS determined that they needed to provide water in all areas of suitable sheep habitat, including areas that were otherwise “unavailable” for sheep due to the absence of water sources.⁹⁵² Maximizing production is an

⁹⁴⁵ See Kofa Investigative Report, *supra* note 931, at 32 tbl.2 (listing twenty-four “[c]ritical bighorn sheep waters on the Kofa [National Wildlife Refuge],” including Yaqui and McPherson tanks).

⁹⁴⁶ Wilderness Act, 16 U.S.C. § 1131(c) (2012).

⁹⁴⁷ See KIW, *supra* note 636, at 7 (stating that the untrammelled quality of wilderness “is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness”); see also *supra* notes 638–641 and accompanying text (analyzing the untrammelled nature of wilderness).

⁹⁴⁸ Author Chris Barns, in analyzing the remote camera studies of the two new guzzlers, found that in the first year bighorn were seen utilizing the guzzlers only twice. The three top predators of bighorns (lions, bobcats, and coyotes) were documented at the installations over 500 times; mule deer were photographed over 800 times.

⁹⁴⁹ NECESSITY DETERMINATION, *supra* note 937, at 1.

⁹⁵⁰ See *id.* at 6 (describing how bighorn sheep can survive up to fifteen days without drinking water during the hot summer months); Bill Broyles & Tricia L. Cutler, *Effect of Surface Water on Desert Bighorn Sheep in the Cabeza Prieta National Wildlife Refuge, Southwestern Arizona*, 27 WILDLIFE SOC’Y BULL., 1082, 1085 (1999) (finding that the availability of perennial surface water did not affect bighorn populations on another desert wilderness refuge).

⁹⁵¹ Kofa Investigative Report, *supra* note 931, at 14, 19.

⁹⁵² *Id.* at 9.

agricultural model, not a wilderness model. In nature, not every nook and cranny is filled with a "desirable" species and devoid of "offending" animals. Although FWS claims that its objective is to "provid[e] the public with the opportunity to view wild sheep in their native habitat,"⁹⁵³ native habitat is not one with artificial water provided every three miles in an area cleansed of predators. Policy guidance from FWS is quite clear: "On wilderness areas within the Refuge System, we conserve fish, wildlife, and plants by preserving the wilderness environment."⁹⁵⁴ In the Kofa Wilderness, FWS has failed to do so by taking actions that degrade its untrammeled quality and that are not the minimum necessary, all for non-wilderness purposes.⁹⁵⁵

Sometimes federal agencies try to apply the law but are opposed not only by state agencies but by wilderness-oriented advocacy groups. In 2011, the Nevada Department of Wildlife (NDOW) requested a multi-year authorization from BLM's Ely and Southern Nevada District Offices for using helicopters to access wildlife water developments within designated wilderness areas.⁹⁵⁶ BLM failed to undertake any analysis to determine whether any water installations were necessary in the first place. However, in preparation for their draft Environmental Assessment (EA), BLM conducted a minimum requirements analysis on methods of access, concluding that helicopter access was necessary for fifteen of the twenty big game water developments but that the others could be accessed on foot or by horse.⁹⁵⁷ In the comment period following release of the draft EA, comments from an advocacy group supported helicopter access to all of the installations because it would be more economical for NDOW.⁹⁵⁸ In addition

⁹⁵³ NECESSITY DETERMINATION, *supra* note 937, at 2.

⁹⁵⁴ FWS WILDERNESS POLICY, *supra* note 437, § 2.16(A); *see also id.* § 2.16(B)(3) ("All decisions and actions to modify ecosystems, species population levels, or natural processes must be: (a) Required to respond to a human emergency, or (b) The minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including *Wilderness Act* purposes. In addition, such decisions and actions must: (i) Maintain or restore the biological integrity, diversity, or environmental health of the wilderness area; or (ii) Be necessary for the recovery of threatened or endangered species." (emphasis added)).

⁹⁵⁵ Other agencies have engaged in similar actions based on similarly flawed analyses. *See, e.g.,* U.S. FOREST SERV., PRELIMINARY ENVIRONMENTAL ASSESSMENT FOR AUTHORIZATION OF HELICOPTER LANDINGS IN WILDERNESS 8-9, 16 & tbl.3 (2014) (authorizing up to 450 helicopter landings for capturing bighorn sheep despite almost half of the bighorn habitat being outside wilderness); NAT'L PARK SERV., ISLE ROYALE NATIONAL PARK: DRAFT ENVIRONMENTAL IMPACT STATEMENT TO ADDRESS THE PRESENCE OF WOLVES, at iv, vii (2016), <https://perma.cc/BD8G-CT4G> (identifying a Preferred Alternative that restocks the island with wolves, despite correctly analyzing the No Action Alternative as the one that best preserves wilderness character).

⁹⁵⁶ *See* BUREAU OF LAND MGMT., ENVIRONMENTAL ASSESSMENT: ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA 1-4 (2011), <https://perma.cc/NWH6-9S52>.

⁹⁵⁷ *Id.* app. A. Access to one of the wildlife waters was determined to be as little as 0.2 miles from the boundary on a closed road. *Id.*

⁹⁵⁸ *See* Shaaron Netherton, Friends of Nevada Wilderness, Comment to *Environmental Assessment: Issuance of Authorizations to Nevada Department of Wildlife for Wildlife Water Development Inspection, Maintenance and Repairs within BLM Wilderness Areas in Nevada* (Dec. 30, 2011) (on file with authors) [hereinafter Friends of Nevada Wilderness Comment] ("[I]n these times of extremely tight budgets . . . we believe it is critical that this EA should help

to prioritizing economics over preservation, the letter contained two other fundamental errors. First, it asserted that NDOW “is responsible for the maintenance of these large game guzzlers.”⁹⁵⁹ To the contrary, at some point after wilderness designation, BLM needed to determine whether each of the water installations is “necessary to meet minimum requirements for the administration of the area” as wilderness.⁹⁶⁰ If so, it is BLM’s responsibility to maintain them—though BLM may ask the state to undertake that responsibility—because preserving wilderness character is solely a federal responsibility.⁹⁶¹ If not, no maintenance can be allowed, and eventually the installations should be removed to comply with the Wilderness Act.⁹⁶²

Second, the letter claimed: “It is clear in both the Clark and Lincoln County legislation that Congress intended that helicopter use be allowed.”⁹⁶³ However, Congress used the word “may” in the legislation, demonstrating its intent that helicopter use be considered, not that it be automatically approved.⁹⁶⁴ Senator Harry Reid specifically noted that while helicopter access may be needed for some monitoring and maintenance, “some guzzlers can be easily accessed after a short hike from a road.”⁹⁶⁵

In the end, BLM authorized NDOW helicopter access to all sites, referring to “[a]dditional information . . . obtained during the comment

facilitate cooperation between the BLM and [NDOW] on the issue of inspection and maintenance of wildlife water developments.”). This instance is not the only time this organization has urged BLM to prioritize nonconforming wildlife developments. See e-mail from Shaaron Netherton, Exec. Dir., Friends of Nev. Wilderness, to Neil Kornze, Bureau of Land Mgmt. (Apr. 1, 2014) (on file with authors) (asking that radio collars no longer be defined as an installation so sportsmen could put them on wildlife in wilderness).

⁹⁵⁹ Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁶⁰ See Wilderness Act, 16 U.S.C. § 1133(c) (2012) (requiring BLM to do a minimum requirements analysis).

⁹⁶¹ See discussion *supra* Part III.B.7.

⁹⁶² See 16 U.S.C. § 1133(c) (permitting installations only where they are “necessary to meet the minimum requirements for the administration of the area” as wilderness).

⁹⁶³ Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁶⁴ Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209(c), 118 Stat. 2403, 2412 (“Consistent with section 4(d)(1) of the Wilderness Act . . . the State may continue to use aircraft, including helicopters, to survey, capture, transplant, monitor, and provide water for wildlife populations”); Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(c), 116 Stat. 1994, 2005 (similar); see also Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329(c), 120 Stat. 2922, 3036 (similar). Under the Wilderness Act, preexisting uses of aircraft are “subject to such restrictions as the Secretary . . . deems desirable.” 16 U.S.C. § 1133(d)(1). Those restrictions are set forth in agency policy: “BLM has discretion to either allow or prohibit the continuation of aircraft use where it has already been legally established prior to the designation of a wilderness area. Administrative use of aircraft is normally authorized under section 4(c) of the Wilderness Act, only where it is necessary to meet minimum requirements for the administration of the area for the purpose of the Wilderness Act.” BLM MANUAL, *supra* note 673, § 1.6(C)(2)(b).

⁹⁶⁵ Letter from Harry Reid, U.S. Senator, to Robert A. Abbey, Dir., Bureau of Land Mgmt. (May 27, 2010) (on file with authors).

period" in disregard of the Wilderness Act and BLM's own analysis.⁹⁶⁶ This result degrades wilderness character by allowing prohibited uses that were shown not to be the minimum necessary—due, in part, to a mistaken reading of the extra special language in designating legislation.

As we have shown, the Wilderness Act unequivocally expresses the federal obligation to assert authority over fish and wildlife to assure the interests of all Americans in the preservation of wilderness character. We are troubled by the cases discussed above, and others, that demonstrate a problematic tendency on the part of some federal land agencies to reflexively acquiesce to state interests when contrary to wilderness law. The federal agencies must renew their dedication to preserving wilderness character.

F. Intergovernmental Cooperation

The states and AFWA have repeatedly asserted that there are not enough opportunities for intergovernmental cooperation in wildlife management and that more opportunities need to be created.⁹⁶⁷ Wildlife conservation absolutely requires intergovernmental cooperation and transboundary thinking beyond political jurisdictions. One early example of such cooperation can be found in the Lacey Act,⁹⁶⁸ which, among other things, provides federal penalties for transporting in interstate commerce any wildlife taken in violation of state law.⁹⁶⁹ Another example is provided by the Pittman-Robertson and Dingell-Johnson Acts, discussed in Part II.B, as both provide significant sources of federal funding for state wildlife management.

There is real value in constructive relationships between federal and state agencies, and we strongly encourage their development. To that end, there are three central points to be made:

- 1) Multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but they are not always fully utilized. For instance, the Sikes Act, ESA, FLPMA, NFMA, NWRSLA, and several others contain such opportunities.
- 2) Intergovernmental cooperation must be a mutual and reciprocal obligation in order to live up to the name and to be as effective as possible. Therefore, there ought to be equal opportunity for federal entities to comment on and participate in state wildlife management decision-making processes, and that is not always the case.

⁹⁶⁶ BUREAU OF LAND MGMT., DECISION RECORD FOR THE ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA (2012), <https://perma.cc/7TMU-HPFG>.

⁹⁶⁷ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 22 (suggesting that the cooperative language found in the Sikes Act could be strengthened and extended to all land management agencies).

⁹⁶⁸ Lacey Act Amendments of 1981, 16 U.S.C. §§ 3371–3378 (2012).

⁹⁶⁹ *Id.* § 3373(a).

- 3) Intergovernmental cooperation cannot be a euphemism for the idea that either entity always gets what it wants. It ought to be, and generally is, an opportunity for informing agency decision making in meaningful ways. The law determines which level of government has the final decision-making authority.

1. Existing Opportunities for Intergovernmental Cooperation at the Federal Level

In Part III.B of this Article, it was noted that the authorizing statutes for the various land units already provide multiple opportunities for intergovernmental cooperation at the federal level. For instance, in the NWRSIA and FLPMA's planning and land acquisition programs, substantive opportunities for intergovernmental cooperation are prescribed by statute.⁹⁷⁰ In addition to these opportunities for cooperation are those opportunities provided in other federal statutes and programs, such as NEPA, the Landscape Conservation Cooperative (LCC) network coordinated by FWS, the Joint Ventures program of FWS, and the State Wildlife Grants Program.⁹⁷¹

NEPA presents what is probably the best-known opportunity for intergovernmental cooperation. NEPA declares that it is the policy of the U.S. government to work "in cooperation with State and local governments" to pursue the "conditions under which man and nature can exist in productive harmony."⁹⁷² To carry out the policy of cooperation, NEPA requires the federal agency conducting an Environmental Impact Statement (EIS) to provide early notification to, and solicit the views of, any state entity which may be significantly impacted.⁹⁷³ Any disagreements about

⁹⁷⁰ See, e.g., National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. § 668dd(e)(3) (directing FWS to consult with "adjoining Federal, State, local, and private landowners and affected State conservation agencies" when preparing comprehensive conservation plans); FLPMA, 43 U.S.C. § 1701(a)(2) (2012) ("[T]he national interest will be best realized if the public lands and their resources are periodically and systematically inventoried and their present and future use is projected through a land use planning process coordinated with other Federal and State planning efforts.").

⁹⁷¹ For a review of these and other programs, see Vicky J. Meretsky et al., *A State-Based National Network for Effective Wildlife Conservation*, 62 BIOSCIENCE 970, 970-72 (2012) (describing collaborative conservation programs, including the Joint Ventures program and LCC network). See also NEPA, 42 U.S.C. § 4331(a) (2012) ("[I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."). See generally LANDSCAPE CONSERVATION COOPS., NETWORK STRATEGIC PLAN (2014), <https://perma.cc/4NGE-VU6W> (describing the strategic plan for the LCC network); *Joint Ventures Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/NGY8-AADQ> (last modified Nov. 12, 2015) (providing an overview of the Joint Ventures program); *State Wildlife Grant Program—Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/LKZ9-4QAT> (last updated July 20, 2016) (providing an overview of the State Wildlife Grant Program).

⁹⁷² 42 U.S.C. § 4331(a).

⁹⁷³ *Id.* § 4332(D)(iv).

impacts between federal and state agencies must be enumerated within the EIS.⁹⁷⁴ States may also obtain official cooperating agency status, which requires the lead NEPA agency to “[u]se the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.”⁹⁷⁵ This provides state governments with much greater access to the federal decision-making processes than the general public enjoys.

One example of successful cooperation wrought by NEPA is the EIS process that was initiated following the *Wyoming v. United States* case about the National Elk Refuge.⁹⁷⁶ In the aftermath of that decision FWS and NPS (which manages neighboring Grand Teton National Park) embarked on a joint-EIS process to develop a plan to guide the management of bison and elk across that federal landscape.⁹⁷⁷ Because of the intergovernmental integration and cooperation made possible by that process, the state chose to incorporate some of the recommendations from the EIS in their own Bison Brucellosis Management Action Plan in 2008.⁹⁷⁸

In an even more focused attempt to encourage integrated management, the LCC program was developed in 2010 in an attempt to facilitate collaboration between all levels of government, including federal, state, local, and tribal governments, as well as interested nongovernmental organizations, in order to “tackle large-scale and long-term conservation challenges.”⁹⁷⁹ There are twenty-two LCCs in the network.⁹⁸⁰ Each is self-directed by a voluntary steering committee, though the whole enterprise is coordinated through FWS.⁹⁸¹ The goals of the LCC program are to develop “science-based information about the implications of climate change and other stressors . . . ; [d]evelop shared, landscape-level conservation objectives and . . . strategies . . . ; [f]acilitate [scientific exchange]; [m]onitor and evaluate the effectiveness of LCC . . . strategies . . . ; [and d]evelop . . . linkages” between LCCs.⁹⁸² A 2015 National Academy of Sciences review concluded that the LCC program provided a framework for achieving landscape-level cooperation and “recognized the LCCs’ ability to create opportunities for identifying common conservation goals and leveraging

⁹⁷⁴ *Id.*

⁹⁷⁵ 40 C.F.R. § 1501.6(2) (2016).

⁹⁷⁶ See *supra* notes 151–154 and accompanying text.

⁹⁷⁷ U.S. FISH & WILDLIFE SERV. & NAT’L PARK SERV., FINAL BISON AND ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT 3 (2007), <https://perma.cc/7VUM-BETP>.

⁹⁷⁸ WYO. GAME & FISH DEP’T, JACKSON BISON HERD (B101) BRUCELLOSIS MANAGEMENT ACTION PLAN 8 (2008), <https://perma.cc/293Y-WM6F>.

⁹⁷⁹ *Beyond Boundaries*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/RT6U-R5QN> (last visited Nov. 11, 2017); see Order No. 3289, Ken Salazar, Sec’y of the Interior, Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources 3 (Feb. 22, 2010), <https://perma.cc/T4WQ-LKGL>.

⁹⁸⁰ LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 20.

⁹⁸¹ *Id.*; *Organizational Structure*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/C49A-TNXU> (last visited Nov. 11, 2017); *Landscape Conservation Cooperative Staff*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/E3PU-ZAGA> (last visited Nov. 11, 2017).

⁹⁸² LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 3.

efforts of diverse partners at a much greater scale than any one entity could achieve alone.⁹⁸³

Unfortunately, simply because cooperative processes are in place—through NEPA and many other statutes—does not always ensure that the federal agencies apply them in a way designed to elicit true state and local government cooperation. Bryan and others document several instances where federal processes are merely used as hoops to jump through rather than opportunities for true collaboration.⁹⁸⁴ Federal agencies will need to improve internal culture and education to ensure existing opportunities for collaboration are as successful as possible.

Furthermore, even when state and local governments take advantage of opportunities to participate in federal processes, their intention is not always true cooperation. Bryan and others write:

From the local government perspective, a guarantee of early and meaningful involvement in the federal land planning process is an important factor in determining whether to participate at all. . . . On the federal side, agencies desire local government participants who are well-informed about the federal planning process, do not use the process for political grand-standing, and reciprocate by including federal planners in local land use planning.⁹⁸⁵

For instance, there has been a movement recently among local governments to try to use the coordination clauses in FLPMA and NFMA to force federal agencies to conform their actions to the wishes of local interests.⁹⁸⁶ However, this is not a reasonable interpretation of the statutes, as was demonstrated in Part III.B of this Article. Both laws temper the coordination clauses with additional language that emphasizes that even though coordination is a worthy goal, it cannot come at the expense of federal agencies meeting their statutory obligations.⁹⁸⁷ Local and state governments

⁹⁸³ Press Release, Landscape Conservation Coop. Network, National Academy of Sciences Releases Its Review of the Landscape Conservation Cooperatives (Dec. 3, 2015), <https://perma.cc/PQV9-UYJ>.

⁹⁸⁴ See Michelle Bryan et al., *Cause for Rebellion? Examining How Federal Land Management Agencies & Local Governments Collaborate on Land Use Planning*, GEO. WASH. J. ENERGY & ENVTL. L., Spring 2015, at 1, 14–16. (“[C]ollaboration must be genuine and not perfunctory to truly be successful in the long term. . . .”).

⁹⁸⁵ *Id.* at 2.

⁹⁸⁶ Joshua Zaffos, *Counties Use a ‘Coordination’ Clause to Fight the Feds*, HIGH COUNTRY NEWS (May 11, 2015), <https://perma.cc/G7TP-62FR>.

⁹⁸⁷ See NFMA, 16 U.S.C. § 1604(e) (2012) (requiring land and resource management plans to comply with the agency’s multiple use and sustained yield mandate); FLPMA, 43 U.S.C. § 1712(c)(9) (2012) (“The Secretary shall . . . [coordinate] to the extent consistent with the laws governing the administration of the public lands . . .”). Even the Public Lands Council, an interest group which represents cattle and sheep producers who hold public grazing permits, has recognized that this is a disingenuous reading:

Unfortunately, some local governments have taken the BLM consistency requirement to mean that by simply handing the BLM their land use plan, the BLM will be forced to comply with it. Not only is this incorrect, it undermines the ongoing negotiation and information sharing process that is at the core of coordination. Experienced

must work to improve their own use of federal processes and to get involved knowledgably with the intention of being good partners.

2. Opportunities to Cooperate at the State Level

If states are truly looking for meaningful cooperation between federal and state entities regarding wildlife management, then significant opportunities for federal input in state decision making must exist as well. State and local governments regulate the uses of private and state lands that are adjacent to federal lands, and that may cause spill-over effects onto federal lands.⁹⁸⁸ For example, the National Parks Conservation Association (NPCA) recently complained that the proposed Greater Yellowstone grizzly bear delisting plan “[f]ails to provide [NPS] a formal seat at the table to work with state agencies on the management of park bears that occasionally move beyond park borders.”⁹⁸⁹ Without formal mechanisms to promote and institutionalize intergovernmental cooperation, those issues will rarely be considered. Federal law, regulation, and policy encourage intergovernmental cooperation, but there does not appear to be a similar emphasis found in state law and regulation. Again, cooperation, to be effective, must be a two-way street.

For example, when it comes to local land use decisions that have obvious impacts on wildlife, there is rarely an opportunity for federal involvement in the decision making. One exception is Oregon, where “local governments are specifically instructed to collaborate with federal agencies in areas such as natural resources, estuaries, and coastal shorelands.”⁹⁹⁰ Oregon might serve as an example of how other states could modify laws and regulations to encourage such cooperation. “[W]estern states could do much to advance the issue of local-federal land use planning by simply noting, in nonadversarial language, the importance of that issue in their enabling legislation.”⁹⁹¹ For true cooperation to be successful, local, state, and federal governments must work as partners.⁹⁹² To that end, states should create similar opportunities for federal agencies to engage in state and local decision making.

coordinators recognize that the BLM has no obligation to adhere to any local plan or policy that is inconsistent with federal laws and regulations.

PUB. LANDS COUNCIL, A BEGINNER'S GUIDE TO COORDINATION 10 (2012), <https://perma.cc/YW3C-B3CE>; see *About PLC*, PUB. LANDS COUNCIL, <https://perma.cc/manage/create> (last visited Nov. 11, 2017).

⁹⁸⁸ See Bryan et al., *supra* note 984, at 1–5 (providing an overview of local and state land use planning).

⁹⁸⁹ Stephanie Adams, *Iconic Grizzlies Deserve a More Thoughtful Plan*, BOZEMAN DAILY CHRON. (Oct. 15, 2016), <https://perma.cc/W6MN-6NGP>.

⁹⁹⁰ Bryan et al., *supra* note 984, at 4.

⁹⁹¹ *Id.* at 5.

⁹⁹² *Id.* at 2.

3. Cooperation Does Not Equal Federal Acquiescence

In none of the cooperation sections reviewed in Part III.B does the statute in question *require* the federal government to follow state preferences. And in all cases, the statutes do not *permit* the federal agency to relinquish its statutory obligations, even in the face of state dissent. Cooperation under these federal statutes is an opportunity for other levels of government to have privileged access to the decision-making process, to ensure that concerns are considered, and available data is exchanged.

Agencies should absolutely determine if it is possible to meet the needs of other governmental entities, but they cannot be expected to jettison their own statutory or constitutional obligations to reach that goal. For instance, in Alaska, where the state determined that the requirements of ANILCA conflicted with the state constitution, the resolution was that the state could not be forced to implement that statute.⁹⁹³ Likewise, if a federal agency determines that a state's request conflicts with its own legal mandates, it too must refuse to acquiesce to them.⁹⁹⁴ However, in the absence of legal conflicts, we encourage state and federal entities to seriously consider, and if possible accommodate, the interests of other governmental entities.

"[W]ildlife move across eco-regions . . . but management approaches change across arbitrary boundaries."⁹⁹⁵ It is crucial, therefore, that all levels of government cooperate and coordinate their efforts as much as is possible given the legal framework in which they operate. As the court in *Wyoming* stated: "Wildlife management policies affecting the interests of multiple sovereigns demand a high degree of intergovernmental cooperation."⁹⁹⁶ A structure for such cooperation is still largely absent from state processes, and while such a structure is already embedded in federal programs, federal agencies could still improve its implementation in order to better fulfill its intent.

V. CONCLUSION

This is a tumultuous time to be writing about public lands, federalism, and wildlife. Each has been impacted by the deep ideological fissures, polarization, and partisanship characterizing modern American politics. Of course, there has always been a tension between federal and state interests in the management of federal lands and resources. Some of the earliest and most precedential disputes in the field initially revolved around wildlife management and the respective powers of federal and state governments. Slowly, over time, the courts answered these questions and made clear the extensive powers of the federal government to manage public lands and the wildlife thereon. These include *Missouri v. Holland* (1920), *Hunt v. United States* (1928), *Kleppe v. New Mexico* (1976), *Hughes v. Oklahoma* (1979),

⁹⁹³ *McDowell*, 785 P.2d 1, 3, 9 (Alaska 1989).

⁹⁹⁴ See discussion *supra* Part III.A.4.

⁹⁹⁵ Bryan et al., *supra* note 984, at 2 (omission in original).

⁹⁹⁶ *Wyoming*, 279 F.3d 1214, 1218 (10th Cir. 2002).

and dozens of other cases at all levels of the judicial system. A consistent pattern of primary federal authority emerges from these cases, but even where the Supreme Court corrected itself in overturning *Geer v. Connecticut*, it did so carefully and constructively, finding in favor of the federal government and interstate commerce but also recognizing the "legitimate state concerns for conservation and protection of wild animals."⁹⁹⁷

A tension between federal and state interests is embedded in federal land and resources law. In each of the statutes reviewed in Part III.B, Congress required these lands and resources to be managed in the national interest and recognized that federal authority is superior to that of the states. At the same time, Congress appreciated the historical and important position of the states in managing wildlife, and these statutes accordingly provide them a meaningful role to play in federal lands planning and management.

While the law is clear, the politics of wildlife management is not. In 1981, George Coggins and Michael Ward reviewed the law of wildlife management on federal lands and concluded that the "jurisdictional imbroglio is more political than legal."⁹⁹⁸ Nothing has changed in this regard. As discussed in Part II, some state interests continue to insist on their "sovereign rights" to manage wildlife on federal lands, notwithstanding the decisions made by the courts and Congress over the years. On the other hand are federal land agencies that are often in self-denial about their responsibilities for wildlife management and conservation. Too often adopting an overly narrow view of their responsibilities, we found federal land agencies applying their authorities in an inconsistent fashion, to the dismay of the states and those outside interests willing to challenge them.

The most unfortunate consequence of the federal-state conflicts reviewed here is that they draw attention away from the practice of wildlife conservation. A more productive way to proceed in the future is by working more constructively within the carefully crafted legal framework provided by the U.S. Constitution and federal land law rather than against it, and by embracing the conservation obligations that are inherent in federal lands and wildlife trust management.

⁹⁹⁷ *Hughes*, 441 U.S. 322, 335-36 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁹⁹⁸ George Cameron Coggins & Michael E. Ward, *The Law of Wildlife Management on the Federal Public Lands*, 60 OR. L. REV. 59, 60, 84 (1981). Coggins and Ward note that, in creating the "delicate allocation of management jurisdiction" in federal land law, "Congress has been extremely solicitous of state sensibilities" and that "[s]ome members of Congress applaud . . . the federal self-denial." *Id.* at 75, 83-84. They conclude that "[t]he main legislative theory seems to be on the order of 'let's just muddle through as best we can and let the courts handle the hard cases.'" *Id.* at 84-85.

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PERSPECTIVE

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WILDLIFE HEALTH AND PUBLIC TRUST RESPONSIBILITIES FOR WILDLIFE RESOURCES

Daniel J. Decker,¹ Krysten Schuler,² Ann B. Forstchen,³ Margaret A. Wild,⁴ and William F. Siemer^{5,6}

¹ Human Dimensions Research Unit, Department of Natural Resources, 101 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

² Animal Health Diagnostic Center, Cornell University College of Veterinary Medicine, 240 Farrier Road, Ithaca, New York 14853, USA

³ Division of Habitat and Species Conservation, Florida Fish and Wildlife Conservation Commission, St. Petersburg, Florida 33701, USA

⁴ National Park Service, Wildlife Health Branch, Biological Resources Division, 1201 Oakridge Drive, Suite 200, Fort Collins, Colorado 80525, USA

⁵ Human Dimensions Research Unit, Department of Natural Resources, G18 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

⁶ Corresponding author (email: wfs1@cornell.edu)

ABSTRACT: A significant development in wildlife management is the mounting concern of wildlife professionals and the public about wildlife health and diseases. Concurrently, the wildlife profession is reexamining implications of managing wildlife populations as a public trust and the concomitant obligation to ensure the quality (i.e., health) and sustainability of wildlife. It is an opportune time to emphasize the importance of wildlife health, specifically to advocate for comprehensive and consistent integration of wildlife health in wildlife management. We summarize application of public trust ideas in wildlife population management in the US. We argue that wildlife health is essential to fulfilling public trust administration responsibilities with respect to wildlife, due to the central responsibility of trustees for ensuring the well-being of wildlife species (i.e., the core resources of the trust). Because both health of wildlife and risk perceptions regarding threats posed by wildlife disease to humans and domestic animals are issues of growing concern, managing wildlife disease and risk communication vis-à-vis wildlife health is critical to wildlife trust administration. We conclude that wildlife health professionals play a critical role in protecting the wildlife trust and that current conditions provide opportunities for important contributions by wildlife health professionals in wildlife management.

Key words: Public trust, risk communication, wildlife health, wildlife trust administration.

INTRODUCTION

In light of the attention currently being paid to wildlife diseases, it seems evident that wildlife health would be a vitally important aspect of wildlife population management (Buttke et al. 2015), but this was not always the case. For most of the 20th century, disease normally was not considered to be significant in wildlife management because it was believed that disease did not have population-level effects. This conventional perspective has been nullified (Wobeser 2006), and mounting examples to the contrary have emerged: white-nose syndrome in bats, chytrid fungus in amphibians, chronic wasting disease in cervids, mycoplasmal conjunctivitis in songbirds, West Nile virus in corvids, viral hemorrhagic septicemia in fish, etc. Most wildlife managers now realize that wildlife

diseases demand specific consideration. This situation undoubtedly will continue given the trends in many of the main drivers of the disease surge: climate change, increasing human population encroachment into natural areas, global travel, and introduction of exotic animals, contaminants, and pathogens into native habitats in the US (Binder et al. 1999; Daszak and Cunningham 2000; Jones et al. 2008, 2013).

Although disease is a large component of wildlife health management activity, the concept of wildlife health we use herein is broader, consistent with that proposed by Craig Stephen (2014, pp. 429–430):

A modern definition of wildlife health should emphasize that 1) health is the result of interacting biologic, social, and environmental determinants that interact to affect capacity to cope with change; 2)

health cannot be measured solely by what is absent but rather by characteristics of the animals and their ecosystem that affect their vulnerability and resilience; and 3) wildlife health is not a biologic state but rather a dynamic social construct based on human expectations and knowledge.

This definition reflects a sociocultural-ecological-systems perspective increasingly embraced in contemporary wildlife resource^a management.

Here we describe the role of wildlife health management from the standpoint of fulfilling public trust responsibilities of government. We assert that condition or health of wildlife matters fundamentally in wildlife trust administration. Trust administration responsibilities arise from the legal understanding that wildlife are a valued public resource to be managed by government for the benefit of the general public. The public entrusts protection and management of wildlife resources to state and federal agencies (Organ et al. 2014). Wildlife health and mitigation of wildlife disease are part of the administration of this public trust and deserve attention from the responsible agencies (Decker et al. in press). Our underlying premise is that wildlife health professionals should be cognizant of the argument for wildlife health being essential in wildlife trust administration. It is an opportune time to articulate the role of wildlife health in wildlife management because of the salience of wildlife health and disease^b in the public mind and professional wildlife managers' conservation agenda.

We briefly summarize current thinking about public trust ideas for wildlife management in the US (e.g., Public Trust Doctrine). We then share a definition of wildlife

management that emphasizes a focus on benefits and consequences associated with human-wildlife coexistence (Riley et al. 2002; Decker et al. 2012a, 2013b, 2014). We assert that both health of wildlife and risk perceptions of humans regarding threats posed by wildlife disease to themselves, their families, and domestic animals are issues of growing concern for conservation. We argue that managing risk communication vis-à-vis wildlife health and wildlife disease is a critical aspect of administration of wildlife as a public trust resource. We conclude that current attention to public trust obligations of wildlife agencies provides an opportunity to communicate the state of health of wildlife and their ecosystems as an essential component of conservation and the pivotal role of wildlife health professionals in wildlife management.

MAJOR CONSIDERATIONS

Public trust thinking—The foundation of wildlife management

Society's expression of the fundamental value of natural resources such as wildlife is reflected in common law, referred to as the Public Trust Doctrine (Sax 1970). According to prevailing interpretations of this legal doctrine (e.g., Horner 2000; Batcheller et al. 2010), wildlife in the US are managed by state (primarily) and federal governments as public trust resources for the benefit of current and future generations (Organ and Batcheller 2009). State and federal laws further clarify trust responsibilities of government for wildlife resources (Musgrave and Stein 1993; Bean and Rowland 1997).

The wildlife management community (public and private practitioners, academics, and wildlife agencies) in the US has been examining what it means to manage wildlife as a public trust resource in the 21st century; agencies have been reaffirming their commitments and obligations (Batcheller et al. 2010; Decker et al. 2013a). The attention to public trust thinking (i.e., longstanding ideas about public ownership of natural resources that include but are broader than those normally articulated as the Public Trust Doctrine; Hare

^a The concept of *wildlife resources* includes habitat as well as the wildlife species using that habitat.

^b Although we emphasize wildlife health, we do not mean to imply that all aspects of disease are deleterious; the value of natural disease in population, multispecies, and ecosystems dynamics and the importance of disease in ecological and evolutionary processes have been well established (Vander Wal et al. 2014). Understanding and protecting these processes when natural are also a responsibility of wildlife management.

and Blossey 2014) is important during this time when transformation of state wildlife agencies from a focus on a narrow set of stakeholder interests to more inclusive public interests has been encouraged (Jacobson and Decker 2008; Jacobson et al. 2010; AFWA 2016). Public trust thinking can have a steadying effect as wildlife agencies deal with the uncertainties associated with change; that is, specific agency objectives and processes may be adjusted, but the higher-order purposes of conservation and deeper philosophy of the government-citizen relationship expressed in public trust thinking endure. Principles for governance of wildlife based on public trust thinking and norms of good governance have been proposed recently with the thought that these principles can guide agencies, their partners, specific stakeholders, and citizen beneficiaries in general to effect wildlife management consistent with public trust ideals (Decker et al. 2016).

Principles of trusteeship (e.g., Organ et al. 2014) and descriptions of the roles of various participants in the administration of public wildlife resources (Smith 2011) have emphasized that a responsibility of special concern to trust administrators is assurance of intergenerational fairness (i.e., keeping options open for future generations). Scott (1999) asserts that the Public Trust Doctrine obligates the present generation to regularly review current scientific knowledge in relation to threats to or enhancement of “natural capital” for future generations. We interpret this as the mandate to protect and enhance wildlife populations (including their health) and the complex environments in which they live.

Attention to the condition of the wildlife resources within the public wildlife trust was recently highlighted by Organ et al. (2014). They articulate three key functions that public wildlife managers fulfill under Public Trust Doctrine: sustaining trust assets, developing trust assets, and distributing trust benefits. For the first function, “sustaining trust assets—protective custody,” Organ et al. (2014, p. 411) assert the following:

At minimum, the core function of wildlife trust administration is protection of the

corpus of the trust (i.e., the wildlife resource). One reason for the centrality of this function is that in the absence of a resource of value, there is no need for a trust. Protection of the corpus in wildlife conservation does not simply involve being an attentive custodian of the trust for the current generation of citizens; an intergenerational responsibility in perpetuity is expected. Emerging from this situation, discussions about wildlife trust administration usually refer to applying the precautionary principle (Kriebel et al. 2001). As we have alluded to previously, functionally this results in risk aversion. This means risks need to be identified, better yet anticipated, so trust managers can mitigate negative effects to the extent possible and adjust and bound beneficiaries’ expectations of benefits they will receive.

In the context of wildlife health and disease management, this suggests that risk to the wildlife resource be minimized and protective measures taken even if some cause-and-effect relationships impacting health are not fully understood.

Wildlife management defined

The scope of wildlife management in the US has evolved with respect to the breadth of species managed, the diversity of stakeholder interests served, the enormity of the threats compared to the opportunities for conservation, and the magnitude of positive and negative impacts experienced by human communities interacting with wildlife. One contemporary definition of wildlife management reflects public trust thinking by adopting the position that wildlife management is motivated by society’s desire for valued outcomes or benefits that can be produced from managing public wildlife resources (Decker et al. 2012a). Expectations for such outcomes give rise to management typically aimed at 1) sustaining biodiversity and related ecological services, 2) providing renewable use and enjoyment of wildlife, and 3) minimizing negative consequences of human-

wildlife interactions on both humans and wildlife (Decker et al. in press).

Human experiences with wildlife arise from many kinds of interactions between people and wildlife and among people because of wildlife. Experiences with wildlife can be of many kinds (direct or vicarious), vary in intensity and duration, and occur across different scales (temporal, geospatial, jurisdictional) and at multiple levels (local, regional, statewide, multi-state, continental, etc.). Outcomes or effects of wildlife experiences can be positive or negative and may take many forms (e.g., economic benefits or costs, threats to or enhancement of human health and safety, ecological services provided by wildlife and their habitats, and physical, mental, and social benefits produced by recreational enjoyment of wildlife). From this perspective, wildlife management can be defined as the guidance of decision-making processes and implementation of practices that influence interactions between people, wildlife, and wildlife habitats, and among people about wildlife, to benefit wildlife and add value to people's lives (adapted from Decker et al. 2012a).

This definition of wildlife management is consistent with the Public Trust Doctrine, whereby wildlife management agencies are expected to deliver benefits for society, that is, to produce impacts valued by the public (Decker et al. 2014). Although tradeoffs producing winners and losers are often inevitable in wildlife management, in aggregate, management actions are expected to result in higher net positive outcomes for society than would occur in the absence of management intervention. Consequently, in practice this is operationalized as two broad categories of actions: those that create positive effects (e.g., improving health of wildlife populations) and those that reduce or eliminate negative effects (e.g., avoid anthropogenic disease transmission to unaffected populations of wildlife). Thus, wildlife managers attempt to enhance, regulate, or prohibit various experiences that people might have with wildlife for the purpose of influencing the nature and magnitude of positive and negative outcomes. Depending on the

need, management actions are aimed at individual wild animals, wildlife populations, wildlife habitats, domestic animals, and people. Accordingly, wildlife management programs often focus on protection or manipulation of wildlife populations and habitats, as well as on regulation of wildlife use (e.g., hunting, trapping) and other human-wildlife interactions (e.g., feeding or viewing wildlife). However, wildlife management is evolving to include a broader array of activities, including increasing efforts to improve wildlife health.

Wildlife health and disease management in a public trust context

Wildlife health and disease management is an important aspect of responsible public wildlife trust administration because wildlife disease and poor wildlife health can increase mortality and decrease reproduction, thereby diminishing wildlife managers' effectiveness in sustaining or restoring wildlife resources. When poor wildlife health impedes fulfillment of public trust responsibilities to current and future generations, wildlife managers typically address two challenges: 1) *health risks* posed to wildlife populations or humans and domestic animals and 2) *public perceptions of risks* posed to wildlife, humans, and domestic animals. Addressing public risk perceptions can be just as consequential for wildlife trust administration as addressing direct effects of disease on wildlife populations. For example, if people cease participation in wildlife-dependent recreation out of excessive concern about risks of contracting disease from wildlife, the benefits of the public wildlife resource are lessened. Even decisions about whether or not and how to manage wildlife risks are affected by risk perceptions. For example, conflict over management actions taken to manage risk of brucellosis transfer from bison (*Bison bison*) to livestock can be rooted in differences in risk perception between stakeholders (Bidwell 2009).

Management for wildlife health therefore contributes in at least two ways to wildlife resource management as a public trust activity: 1) preserving the quality and quantity

of the trust assets (wildlife resources) for future generations (keeping options open for future benefits) and 2) delivering benefits from trust management, including reduction of negative impacts associated with wildlife (perceived or real risk of disease transmission).

These elements of public trust administration are consistent with the core philosophy of animal health professionals. The philosophical connectivity of wildlife health to wildlife conservation is made explicit in the strategic plan of the American Association of Wildlife Veterinarians, which identifies objectives that include enhancing the contribution of veterinary medicine to the welfare of the wildlife resource, promoting animal management and preventative medicine as it relates to free-ranging species, and recognizing disease syndromes in their broadest sense as potentially influenced by habitat conditions (AAWV 2007). This ideology, encompassing the well-being of populations and communities, is in the tradition of “One Health” (Zinsstag et al. 2011) rather than the traditional role of providing individualized health care to domestic animals.

Many state and federal agencies, the entities primarily responsible for wildlife trust administration, have added wildlife health expertise to their staff. Most have access to wildlife veterinarians and have established relationships with veterinary diagnostic laboratories (Siemer et al. 2012). These agencies are incorporating wildlife health and disease more explicitly in their scope of effort. For example, the Florida Fish and Wildlife Conservation Commission (FWC) has a mission that reflects public trust thinking: “managing fish and wildlife resources for their long-term well-being and the benefit of people” (FWC 2016, p. 1). Some FWC activities include surveillance, detection, and monitoring of disease and other factors that impact wildlife health (e.g., water quality and quantity, habitat changes, harmful algal blooms), as well as an understanding of disease impacts on wildlife populations and potential subsequent impacts on ecosystem health and public health. The National Park Service, with its

mission to preserve natural and cultural resources unimpaired for current and future generations, approaches wildlife health differently through its Wildlife Health Program. The National Park Service does not specifically manage for the health of individual species but instead seeks to maintain healthy ecosystems (National Park Service 2006). Consistent with the future generational outlook of public trust administration, both of these wildlife health programs are concerned about the long-term impacts of introduced pathogens and nonnative species on native wildlife populations and ecosystems.

Managing wildlife health can be the most cost-effective method to prevent disease outbreaks, aligning with expectations for efficient use of funding for wildlife trust administration. Eradicating an already-invaded pathogen of wildlife is likely infeasible and extremely costly (Wobeser 2002; Horan and Fenichel 2007). For instance, multiple agencies in Wisconsin together spent over \$32 million during the first five years of the chronic wasting disease (CWD) outbreak in that state’s wild white-tailed deer (*Odocoileus virginianus*) herd with the Wisconsin Department of Natural Resources contributing 83% of these funds (Stuiber et al. 2006). The response to this single outbreak in an isolated portion of the state caused redirection of limited financial and personnel resources from other wildlife and environmental programs. Despite these efforts, CWD increased in prevalence and geographic distribution (WDNR 2016), and opposition to further CWD management grew (Vaske et al. 2004).

Broad recognition of wildlife health concerns and public expectations of wildlife management: Risk perception and communication

Growing concern about effects of wildlife health and disease in wildlife conservation is not limited to conservation insiders. Wildlife disease is a well-established category of concern in wildlife management (Riley et al. 2002) and has become more prevalent in studies of human-wildlife interactions. Generally, concern deepens as perceived risks to self, significant others, and domestic animals

heighten. Studies documenting such concern have been conducted with different kinds of stakeholders (e.g., hunters, farmers, urban residents) in a variety of disease transmission contexts (Dorn and Mertig 2005; Vaske et al. 2009; Vaske 2010).

Thus, wildlife disease presents two different, serious challenges to management of wildlife as public trust resources. The most obvious is the direct effect of diseases on wildlife populations. Disease outbreaks strain efforts to maintain the quality and sustainability of the basic trust assets: wildlife populations and habitats. The second challenge, the effects of risk perception among members of the public, may be less obvious. Social amplification of risk (Kasperson and Kasperson 1996) can occur as individuals, organizations, and government agencies communicate with the public about disease issues that affect livestock production and wildlife-related recreation or tourism (Bidwell 2009). Social amplification of risk, per se, is not a bad thing. In the event of a true risk, amplification (replication or expanding the range of the message) is important. Over-inflated risk perceptions, however, can lead to exaggerated public concerns and over-reaction and therefore have potential to interfere with wildlife trust administration.

Public perception of wildlife health is affected by first-hand observations and second-hand reports of wildlife condition. Observation of sick animals and massive die-offs sway public perception and often elicit a visceral response followed by increased public expectations of "it's the wildlife agency's responsibility to keep wildlife alive and healthy." In some cases, such as very small populations (e.g., endangered species or isolated populations), health concerns are of a genetic nature, with some of the manifestations of genetic problems quite visible to the public (e.g., the kinked tail of the Florida panther [*Puma concolor coryi*]; Hedrick 1995; Land and Lacy 2000).

Exaggerated risk perceptions about wildlife health and wildlife disease, especially when they involve zoonotic agents, can diminish public receipt of benefits of wildlife by decreasing enjoyment of wildlife presence in

the environment. If the public benefits of wildlife diminish, then essentially the value of the wildlife trust diminishes, which is antithetical to expectations of wildlife trust administration. Examples abound. Hunter reluctance to handle and consume deer in areas where CWD has been detected (Gigliotti 2004; Brown et al. 2006) could markedly reduce benefits derived from hunting, especially as prevalence of infected animals increases (Vaske 2010). A 2004 survey revealed that a majority of respondents from states with high incidence of reported cases of Lyme disease had reduced their use of wooded and grassy areas as a means to reduce their exposure to tick bites (Herrington 2004); parents restricting opportunities for their children to experience the outdoors because of perceived risks of wildlife-associated disease obviates benefits of wildlife inhabiting nearby natural areas and may reduce families' appreciation of such areas. Family concerns about exposure of beloved companion animals to Lyme disease or other wildlife-associated diseases may have similar effects. Concerns about spread of disease from wildlife to other domesticated animals, for example, farmer concerns about transmission of bovine tuberculosis from elk (*Cervus elaphus*) in a national park to adjacent livestock (Brook and McLachlan 2006), also augurs poorly for strong public support of wildlife conservation. Some wildlife professionals have speculated that the cumulative effect of risk perceptions could be lack of support for conservation (e.g., resistance to habitat preservation adjacent to human residential areas; intolerance of wildlife in human neighborhoods; opposition to restoration of species known to be associated with diseases of concern) and intolerance of wildlife (Decker et al. 2012b). These responses deplete the yield of current benefits from public wildlife resources and fundamentally threaten the sustainability of such resources, which in turn threatens options for future generations.

Communication challenges

When wildlife disease is considered a major risk by the public, and negative impacts

manifest as outlined earlier, wildlife managers will often find that the usual tools for influencing size and distribution of a wildlife population are inappropriate, insufficient, or unacceptable. Furthermore, misguided public calls for reducing negative impacts by depleting the wildlife resource may be contradictory to public trust administration obligations (e.g., to future generations). Often the response of wildlife management agencies to inflated risk perceptions among lay people has been to simply provide the public with more information. Such responses are based on a cognitive deficit (or knowledge gap) model (Hansen et al. 2003). A cognitive deficit approach assumes that giving people information about an issue will lead to increases in knowledge, leading to change in attitudes and beliefs, which in turn will motivate behavior changes desired by the communicator. Unfortunately, research and practical experience across a range of issues demonstrate that mere exposure to facts is unlikely to cause much societal change in beliefs, attitudes, and behaviors (Stern 1999; Kollmuss and Agyman 2002; Brown 2009). To be effective, risk communication strategies need to consider the dynamic system of social, psychological, and situational factors that can mediate attitude, belief, and behavior change (Hansen et al. 2003).

Moreover, communication about wildlife health and disease is difficult from the perspective of maintaining public support for wildlife conservation (Decker et al. 2010, 2011, 2012b; Evensen et al. 2012). For example, if people need to modify behaviors to reduce risk associated with wildlife disease, how do wildlife managers inform and motivate them in a way that results in protective behaviors but avoids public backlash against wildlife? It seems timely to be expanding wildlife health professionals' roles in educating and working with human health professionals on coordinated public communication, particularly when the message may be coming primarily from the public health arena.

The complicated nature of zoonotic and some nonzoonotic disease events in wildlife can make communicating with the public challenging (Rickard et al. 2013). These

situations require concise communication strategies and familiarity with effective social messaging, yet agency capacity for dealing with risk communication about wildlife diseases is limited (Siemer et al. 2012). Fortunately, communication researchers (e.g., Roh et al. 2015, Lu et al. 2016) recently have shown that carefully crafted messages regarding wildlife disease can increase conservation intent and avoid negative reaction to wildlife disease risk communication. Message testing may be required to accomplish this positive outcome, but the potential to obviate backlash against conservation of wildlife and their habitats argues strongly in favor of the investment. Therefore, effective risk communication is a valuable tool for discharging public trust responsibility and should be in the wildlife resource manager's toolkit.

CONCLUSIONS

Wildlife health professionals can play important, often pivotal, roles in wildlife management, conservation, and public health messaging concerning zoonotic diseases in wildlife. The confluence of several trends may together set the course for wildlife health considerations in wildlife management for decades to come. Those trends are 1) broadening concept of wildlife health to be more than absence of disease, 2) activism among wildlife health professionals to become more mainstream in wildlife management, 3) incidence of novel pathogens causing unprecedented mortality and threatening persistence of numerous wildlife species, 4) emergence of zoonotic disease originating in wildlife populations, 5) rising public expectations that wildlife management will include attention to wildlife-associated disease, 6) growing concern about decline in wildlife-focused/nature-based outdoor activity, and 7) revival of public trust thinking in state and federal wildlife management agencies.

Some things must change to take advantage of what wildlife health professionals can bring to public wildlife trust administration. For example, historically most wildlife health

activities were reactive rather than proactive. However, it is generally easier to prevent new diseases than control or eradicate existing ones. To protect wildlife assets effectively, we need to focus effort on avoiding potential health risks of all kinds rather than on mitigating them reactively (often at great expense and with poor results). Traditional human and domestic animal disease solutions, such as vaccination and biosecurity, are costly and often not practical for wildlife (Wobeser 2002). Attempts to control or eradicate disease through culling require careful analysis to ensure that the response is not more harmful to the wildlife resource than is the disease and thus contrary to public trust obligations. Conversely, redirecting energies to wildlife and ecosystem health and disease prevention is consistent with effective wildlife trust administration. Ironically, however, the exertions of wildlife health professionals to participate more fully in mainstream wildlife management have not emerged from a prevention perspective. They are fueled by wildlife conservationists' and public wildlife managers' concern about the increasing rate of zoonotic disease and their growing recognition that public perceptions of wildlife health and disease are adversely affecting people's behavior and creating expectations for management attention that may not be beneficial to wildlife or humans.

The paradigm shift from fixing wildlife disease to producing wildlife health is in an early stage. This change is occurring simultaneously with attentiveness of wildlife agencies to public trust principles (Decker et al. 2016), where preserving the integrity of the core assets of the wildlife trust and production of multiple benefits from it are imperatives. This confluence presents an opportunity for wildlife health professionals to provide expertise and guidance that will firmly embed wildlife health as a key component of sound wildlife trust administration and an imperative in wildlife management.

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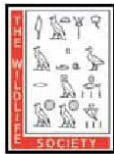
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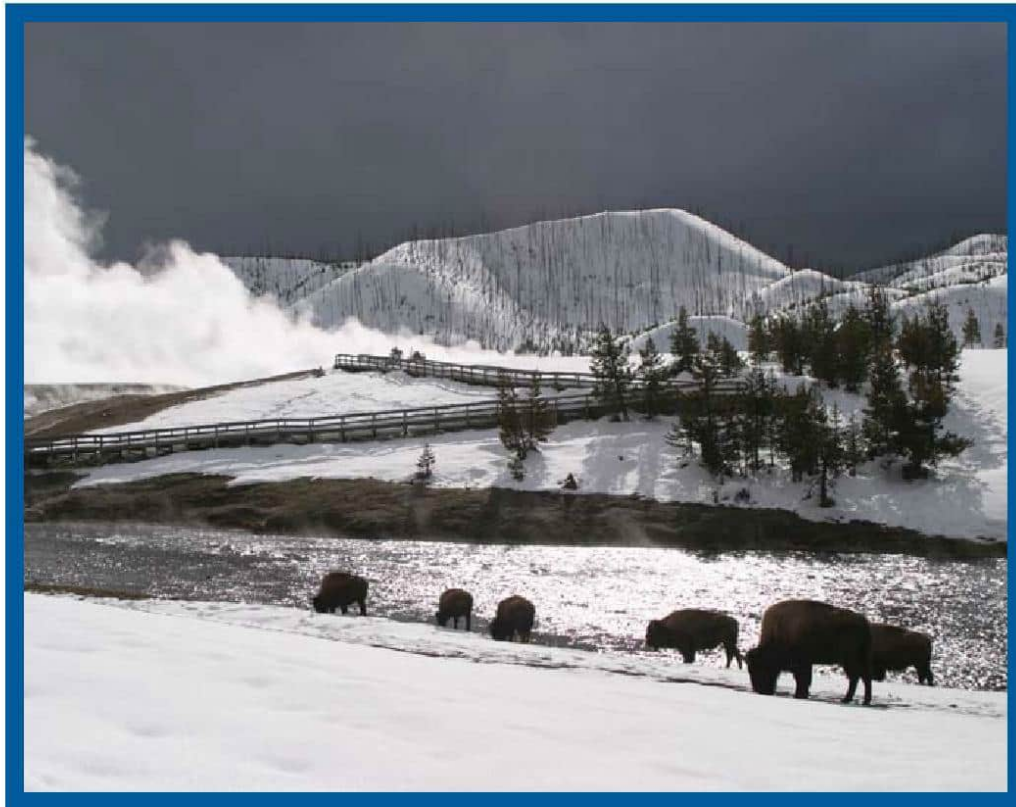
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The Wildlife Society



The Public Trust Doctrine

Implications for Wildlife Management and
Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

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“Defenders of the short-sighted men who in their greed and selfishness will, if permitted, rob our country of half its charm by their reckless extermination of all useful and beautiful wild things sometimes seek to champion them by saying that “the game belongs to the people.” So it does; and not merely to the people now alive, but to the unborn people. The “greatest good for the greatest number” applies to the number within the womb of time, compared to which those now alive form but an insignificant fraction. Our duty to the whole, including the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose, and method.”

Theodore Roosevelt (1916)

Armed for a hunt, Theodore Roosevelt
makes ready to ride, circa 1900.



Credit: Underwood and Underwood/Library of Congress

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Wildlife Society
Association of Fish and Wildlife Agencies
Western Association of Fish and Wildlife Agencies
Wildlife Management Institute

Technical Review Committee on the Public Trust Doctrine

Gordon R. Batcheller (Chair)

New York State Division of Fish, Wildlife
and Marine Resources
625 Broadway
Albany, NY 12233-4754

M. Carol Bamberg

General Counsel
Association of Fish and Wildlife Agencies
444 North Capitol Street, N.W.
Suite 725
Washington, D.C. 20001

Laura Bies

The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

Thomas Decker

Vermont Fish and Wildlife Department
103 South Main Street
Waterbury, VT 05671-0501

Steven Dyke

North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095



The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

David Guynn

Department of Forestry and Natural Resources
260 Lehotsky Hall
Clemson University
Clemson, SC 29634-0317

Michael McEnroe

North Dakota Chapter of The Wildlife Society
7455 Brook Loop
Bismarck, ND 58503

Michael O'Brien

Nova Scotia Department of Natural Resources
136 Exhibition Street
Kentville, NS B4N 4E5

John F. Organ *

U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

Shawn J. Riley

Department of Fisheries and Wildlife
2D Natural Resources Building
Michigan State University
East Lansing, MI 48824

Gary Roehm

18425 Lost Knife Circle #203
Gaithersburg, MD 20886

* The findings and conclusions in this article are those of the author and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

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Front cover illustration: Bison roam the winter snows near Midway Geyser Basin in Yellowstone National Park

Cover photo courtesy of Stephen Hoerold/iStockphoto

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Foreword

Presidents of The Wildlife Society (TWS) occasionally appoint *ad hoc* committees to study and report on selected conservation issues. The reports ordinarily appear as technical reviews or position statements. Technical reviews present technical information and the views of the appointed committee members, but not necessarily the views of their employers.

This technical review focuses on the legal underpinnings and application of the Public Trust Doctrine as it pertains to wildlife management in the United States and Canada. The review was a collaborative effort by TWS, the Association of Fish and Wildlife Agencies (AFWA), the Western Association of Fish and Wildlife Agencies (WAFWA), and the Wildlife Management Institute (WMI).

Acknowledgments

In July 2006, the North Dakota Game and Fish Department hosted the annual meeting of the Western Association of Fish and Wildlife Agencies in Bismarck, North Dakota. The two-day plenary session, "Keeping the Public's Wildlife Public," focused on the Public Trust Doctrine and the implications for the North American Model of Wildlife Conservation. WAFWA subsequently adopted a resolution in 2006 agreeing to develop a strategic plan for strengthening the Public Trust Doctrine among member states and provinces, and to facilitate a comprehensive review of the status of the Doctrine in cooperation with AFWA, TWS, and WMI. In March 2007, a memorandum of understanding was signed by the cooperating entities to develop this technical review.

The Committee expresses its sincere appreciation and recognition to the North Dakota Game and Fish Department and WAFWA for serving as the catalyst to begin the work of evaluating the status of the Public Trust Doctrine in the U.S. and Canada. The Committee also expresses its gratitude to AFWA, TWS, and WMI for their support and encouragement. In particular, the Committee appreciates the legal resources provided by TWS and AFWA necessary to the completion of this technical review.

Meeting facilities and logistic support were kindly provided by Michigan State University, the U.S. Fish and Wildlife Service in Bismarck, and the North Dakota Game and Fish Department.

The Committee appreciates the support and constructive review by members of TWS Council, and particularly by members of the Technical Review subcommittee—John McDonald, Thomas Ryder, Bruce Thompson, and Don Yasuda—who provided oversight of the work of the Committee.

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SYNOPSIS

The Public Trust Doctrine (PTD), with its origin in Roman civil law, is an essential element of North American wildlife law. The Doctrine establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public. Fundamental to the concept is the notion that natural resources are deemed universally important in the lives of people, and that the public should have an opportunity to access these resources for purposes that traditionally include fishing, hunting, trapping, and travel routes (e.g., the use of rivers for navigation and commerce).

The PTD is also recognized as an essential foundation of what has been termed the "North American Model of Wildlife Conservation" (the Model; Geist 1995). This model is viewed as an important construct of law, policy, program framework, and scientific investigation that has led to the protection, conservation, and restoration of wildlife populations in the U.S. and Canada (Geist *et al.* 2001). The underpinnings of the PTD and the future relevance and successful application of the Model may be at risk due to recent changes in society, government policies, and case law (Organ and Mahoney 2006).

Several significant threats have been identified that directly or indirectly erode or challenge the PTD in North America (e.g., Geist and Organ 2004). These threats undermine existing state, provincial, and federal laws, as well as governmental policies and programs. Moreover, they inhibit sound conservation practices for fish and wildlife resources. Approaches to wildlife conservation that for many decades have afforded protection and ensured the sustainability and conservation of wildlife populations are dependent on the legal underpinnings of the PTD. The degree and magnitude of the threats are not universal, though the following issues have been recognized as significant challenges: inappropriately claiming ownership of wildlife as private property; unregulated commercial sale of live wildlife; prohibitions on access to and use of wildlife; personal liability issues; and a value system oriented toward animal rights (Organ and

THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION

The North American Model of Wildlife Conservation has seven distinctive components (Geist *et al.*, 2001):

1. Wildlife as a public trust resource.
2. Elimination of markets for wildlife.
3. Allocation of wildlife by law.
4. Wildlife can only be killed for a legitimate purpose.
5. Wildlife is considered an international resource.
6. Science is the proper tool for discharge of wildlife policy.
7. Democracy of hunting.

Mahoney 2006, Organ and Batcheller 2009). These threats in various ways are potentially harmful to the long-standing tenet that wildlife is a public trust resource.

Concerns regarding these threats and their overall effects led to this technical review, which includes an assessment of the current status of state and provincial statutes and case law related to the PTD. This review examines the benefits of the PTD and also outlines the role of government agencies and their stakeholders in maintaining public trust resources and the rights, privileges, and benefits that the PTD bestows upon the public. Recommendations are set forth with the objective of enhancing the PTD. Securing the PTD is seen as a significant action relevant to the continued protection, conservation, and public use of wildlife resources in North America.

INTRODUCTION

Wildlife professionals have used the Model to describe the system of conservation and natural resource management that has developed over the past two centuries in the U.S. and Canada

(Geist 1995). The PTD—as it relates to water resources, submerged lands, and by extension to fish, wildlife, and other natural resources—provides the cornerstone upon which the highly successful Model was built.

In support of the Model, the North Dakota Chapter of TWS requested that TWS adopt the seven principles of the Model as a basis for guiding and providing input on wildlife management policy, work to enshrine the Model into international treaty law between Canada and the U.S., develop education and information strategies in support of the Model, and seek the support of other conservation organizations to pursue similar actions.

Following the 2006 WAFWA annual conference in North Dakota, a resolution was adopted to encourage the development of a strategic plan to strengthen application of the PTD among member states and provinces and to facilitate a legal analysis, in cooperation with AFWA, WMI, and TWS, of the current status of the Doctrine in member states and provinces.

In March 2007, TWS approved a position statement on the Model, as well as a proposal to prepare a technical review of the PTD in collaboration with WAFWA, AFWA, and WMI. The purpose of this technical review was to: (1) synthesize and interpret existing materials on the PTD as it relates to wildlife management and conservation; (2) review the status and scope of state and provincial legislation as it relates to the PTD; and, (3) identify components that should be included in state or provincial statute, state or provincial wildlife agency charter, or other authorizations and executive proclamations to ensure a legally defensible PTD. Questions that guided the technical review committee focused on legal “ownership” of wildlife, origins of state or provincial laws addressing issues of wildlife management and conservation, clarity of agency authority to manage wildlife, legal tenets that provide evidence the PTD is in place, variability among laws or protection among jurisdictions or among various wildlife species, and competing agency authorities (i.e., among state wildlife and agriculture departments, or between state and federal agencies).

AN OVERVIEW OF THE PUBLIC TRUST DOCTRINE

The Trust Defined and Why it Matters

Simply defined, a trust is a collection of assets committed or entrusted to one to be managed or cared for in the interest of another. The party to whom the trust assets are committed is commonly referred to as the trustee, whereas the party for whom the assets are being managed is referred to as the beneficiary of the trust. Accordingly, the PTD holds that publicly owned wildlife resources are entrusted to the government (as trustee of these resources) to be managed on behalf of the public, the beneficiaries. Consequently, governmental institutions do not own trust resources; rather, they are owned by the public and are entrusted in the care of government to be safeguarded for the public's long-term benefit.

The PTD has been described by some as the cornerstone of the Model (Geist *et al.* 2001, Geist and Organ 2004, and Prukop and Regan 2005). This viewpoint holds that the PTD establishes the core principles central to the Model—the notion that wildlife is a public resource, managed for the common good, and held in custodianship by a cadre of trained professionals who serve as trustees (Brulle 2000) and are held accountable by the beneficiaries, the public.

Alternative models have developed in other countries and are frequently based on privately owned fish, wildlife, and habitat managed for personal or corporate gain. In such cases, the general public may receive little or no apparent benefit from wildlife resources. A number of undesirable outcomes may result from a system of wildlife management not anchored on a PTD foundation including:

- (a) a diminished connection or indifference toward wildlife resources stemming from a disassociation with nature, which means wildlife may become irrelevant to the general public thereby reducing public support for conservation.
- (b) wildlife resources that are viewed as an artifact of the past, separated from modern life, to be seen and appreciated yet

FISHERIES AND THE PUBLIC TRUST DOCTRINE

Navigation, access to public water, and indeed the privilege to fish (*Martin v. Waddell*, 1842) have all been a part of the Public Trust Doctrine. Fisheries conservation and wildlife conservation are intertwined institutionally throughout North America. The technical review committee chose to focus on wildlife conservation and exclude specific reference to fisheries for a number of reasons:

- Fisheries conservation and wildlife conservation arose from different origins.
- Historically, wildlife conservation is largely attuned to restoration, while fisheries conservation is primarily attuned to propagation.
- Commercial harvest is integral to fisheries conservation, while its elimination has been a cornerstone of wildlife conservation.
- Institutionally, federal (U.S.) fisheries oversight is split between the Interior and Commerce Departments, while federal trust authority for wildlife is primarily contained within the Department of Interior.

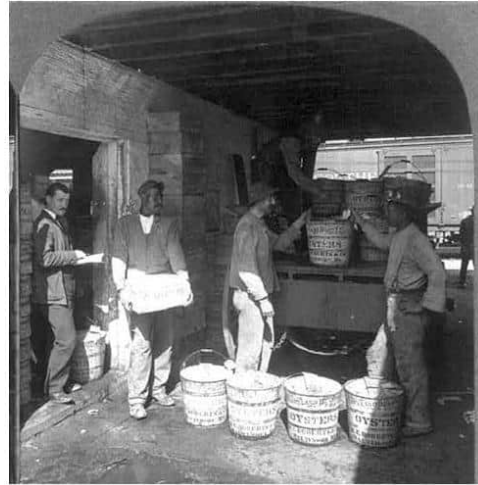
These and other factors cloud the linkage between wildlife and fisheries and the resultant 'noise' would hinder addressing public trust applications for both within the same document.

with a lack of understanding and acceptance of sustainable use, and

- (c) wildlife resources viewed as a liability or threat to be minimized to the extent possible rather than an asset to be conserved and managed for the benefit of current and future generations.

History of the Public Trust Doctrine

The roots of the PTD can be traced to early Greek and Roman civil law. By the sixth century Roman civil law, The Justinian Institutes,



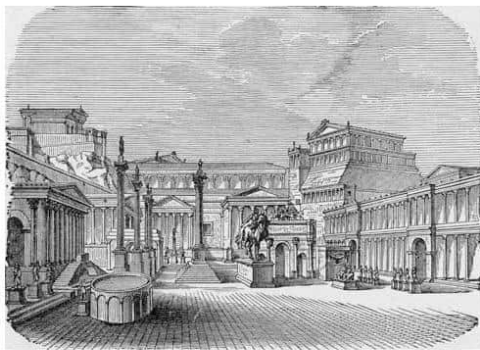
Credit: Library of Congress

Workers in Baltimore prepare oysters for shipping in 1905. Oyster harvest was at the center of the 1842 U.S. Supreme Court decision in *Martin v. Waddell*, which established a central tenet of the Public Trust Doctrine—public ownership of public resources.

the legal texts of the time, stated: *"By the law of nature these things are common to all mankind: the air, running water, the sea, and consequently the shores of the sea"* (Koehl 2006). Thus, common property could be owned by no one, affording all citizens access to it. Roman civil law was reaffirmed by the English Magna Carta in 1215 AD, and redefined by English common law in 1641. English disfavor for "ownerless property" caused them to express the Roman concept in a less assertive way by assigning ownership of common property to the king, not for his private use, but as a trustee of these properties for the benefit of the people (Horner 2000, Henquinet and Dobson 2006, Organ 2006). In earlier times this arrangement resulted in the dispersion of privileges taken or allowed by royalty (Blumm and Ritchie 2005). Regarding waters, this introduced the concept of common easements for public navigation and fishing with an understanding that the Crown owned submerged lands and shorelines in trust for the people (Henquinet and Dobson 2006).

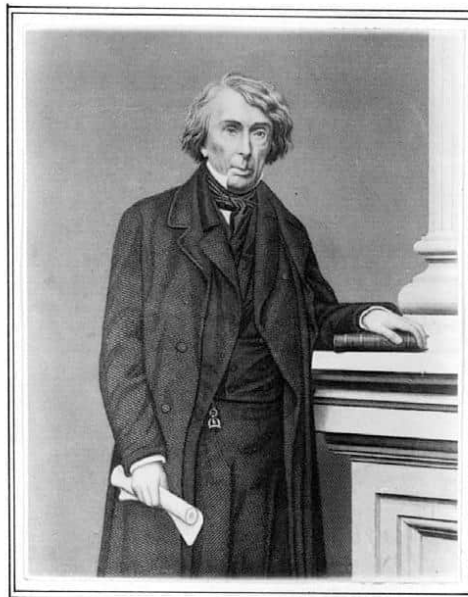
In the U.S., English common law was applied to the 13 colonies, and eventually redefined and assigned to the states by the courts following America's independence (Henquinet and Dobson 2006). In doing so the American courts abolished the English system of royal prerogatives and reestablished or restored and strengthened the full public trust concept (Blumm and Ritchie 2005). In 1821 the New Jersey Supreme Court, in deciding *Arnold v. Mundy*, corrected England's diversions from Roman civil law, which were only partially restored by the Magna Carta, by stating that the ownership of water and underlying lands transferred to New Jersey's citizens upon statehood, thus returning public trust law closer to the original Roman concept (Henquinet and Dobson 2006).

The first federal court decision affirming the PTD occurred in 1842 when the U.S. Supreme Court in *Martin v. Waddell* found that the public held a common right to fish in navigable and tidal waters of New Jersey because they and their underlying lands were owned by the state for the common use by the people. Subsequent court findings reaffirmed such public ownership including cases addressing the Equal Footings Doctrine (*Shively v. Bowlby* 1894), which described rights of states newly admitted into the Union (Henquinet and Dobson 2006).



Credit:Eon Images

The Roman Forum still stands as a symbol of the empire that established the broad principles of a "public trust" nearly two millennia ago, ensuring public access to common property.



Credit:Library of Congress

In 1842, U.S. Supreme Court Chief Justice Roger B. Taney cited the Magna Carta in *Martin v. Waddell*, the ruling that established the basis for the Public Trust Doctrine in the United States.

Traditional public interests protected by the PTD were navigation, commerce, and fishing. Subsequent court cases mainly addressed these three interests during the 20th Century. However, *Geer v. Connecticut* (1896) included "wild fowling" within a state's trustee responsibilities. Although partially reversed in *Hughes v. Oklahoma* (1979), state statutes and state courts continue to assert state trusteeship of wildlife. Recent case law has markedly expanded the application of the Doctrine. For example, the California Supreme Court in *Marks v. Whitney* (1971) opined that considering the changing needs of the public, a state is not bound to protect just the traditional interests addressed by early case law. Rather, that court found that ecological protection was a public interest afforded oversight by the Doctrine (Henquinet and Dobson 2006). Other recent case law has expanded the relevance of the Doctrine to

include such diverse topics as wildlife habitat; the open seas; environmental protection from development, pollution, and invasive species; recreational activities such as swimming, parks, and historic monuments; public health; bathing; flood prevention; aesthetic values such as open and scenic beauty; diversion of water for domestic, industrial, and agricultural purposes; religious and cultural interests; and even the electromagnetic spectrum (Cottriel 1996, Steneljem 2005, Henquinet and Dobson 2006, Organ 2006, and Simmons 2007).

In Canada, as a part of the British Commonwealth of which the reigning British monarch is the symbolic head of state, common or public property is referred to as assets of the "Crown." Most of the provincial statutes relating to public lands and wildlife describe ownership as "vested in His/Her Majesty in the right of the Province," which in modern times implies held in trust for the benefit of the people. For example, the Nova Scotia Wildlife Act states the following in reference to ownership of wildlife: "... the property in all wildlife situate within the Province, while in a state of nature, is hereby declared to be vested in Her Majesty in right of the Province and no person shall acquire any right or property therein otherwise than in accordance with this Act and the regulations."

In contrast, after review of the basis and application of the PTD in Canada, Henquinet and Dobson (2006) concluded that only a rudimentary PTD, related to the public's right to navigate and fish in navigable waters, existed in Canada. Those authors indicated few instances of case law in Canada that dealt with public trust issues, and virtually no articulation of a PTD.

The Yukon and Northwest Territories have incorporated the concept of public trust into statutes related to natural resources. Section 6 of the Northwest Territories Environmental Rights Act (1990) states the need "to protect the integrity, biological diversity, and productivity of the ecosystems in the Northwest Territories" and the "right to protect the environment and the public trust." The Environment Act of the Yukon, passed in 1991, recognizes that the government is a "trustee of the public trust to

protect the natural environment from actual or likely impairment." At this time the concept of public trust established in these statutes has not been tested in court.

Although Canadian courts obviously are not bound by U.S. case law, it may be considered in their deliberations. Koehl (2006) summarized recent favorable comments in regard to the principle of the PTD in a judgment by the Supreme Court of Canada. The reference to the PTD was particularly interesting in that previous Canadian references were in cases dealing with water resources and the cited case dealt with forests (damage caused by a fire negligently started by a logging company). The author suggested that discussion of the PTD in the case allowed for optimism that Canada's courts may expand application to other natural resources. Until there is a broader acceptance of a doctrinal concept in Canada similar to the PTD applied in the U.S., the actions of natural resource managers will be driven more by a desire to implement "wise policy" to protect the public interest than by a legal obligation imposed by a public trust.

Collectively, case law and history illustrate the flexibility of the PTD to meet the contemporary needs of the public. The PTD is neither inflexible nor static (Steneljem 2005). Flexibility is considered one of the strengths of the Doctrine, and is a prerequisite of its continued effectiveness for future generations (Annear 2002, Steneljem 2005, Henquinet and Dobson 2006). Sax (1970) described capability to respond to contemporary concerns as one of the three factors the PTD must achieve to remain effective. The other two factors he cited include the general public's understanding that it describes a legal right, and that it be enforceable against the government. For a more complete discussion of the history of the PTD, refer to Sax (1970), Cottriel (1996), Horner (2000), Grant (2001), Blumm and Ritchie (2005), Henquinet and Dobson (2006), Organ (2006), and Simmons (2007).

Relationship to the North American Model

Maintaining the elements of the PTD must be ensured to maintain the integrity of the Model



Credit: SUNY-ESF Archives / Franklin Moon Library

As governor of New York in 1928, Franklin Delano Roosevelt visits the New York College of Forestry, where a cadre of wildlife scientists gained training to protect forest resources for future generations.

(Geist and Organ 2004). Pioneer conservationists developed the model of conservation practiced on the North American continent during the 19th and early 20th centuries. This Model is globally and historically unique and thus far has demonstrated success in contributing to the conservation of wildlife in the U.S. and Canada. The Model evolved in response to the continental demise of once abundant wildlife resources due to unregulated economic markets that placed value only on harvested wildlife. It asserts that wildlife is a public resource, and therefore should be managed by governmental trustees as a public trust for the benefit of all people.

If the public's ownership of wildlife, or the value they place in it, is compromised, the Model could be jeopardized. Threats to the PTD (e.g., inappropriate or unsustainable commercialization and privatization of wildlife) exist and are increasing. If these threats prevail, the trust (wildlife populations or their habitats, water quantity and quality) could become mismanaged, or the public may lose access to these resources resulting in their value to the public becoming diminished. Lack of awareness and understanding of the benefits and responsibilities of the Doctrine leading to social and legal indifference by the trustee (government) or the

beneficiary (the public itself) could therefore create grave consequences for conservation.

Other threats (e.g., animal-rights values) claim a social or moral consciousness asserting that non-human animals are sentient (have the ability to suffer) and therefore, like humans, may not be owned. This concept is in direct conflict with the central premise of the PTD, which holds that wild animals are a publicly owned resource that can be renewably and sustainably managed.

The Role of the Trustee

Within a trust relationship the trustee manages assets that belong to others. The trustee therefore must be accountable to the beneficiaries of the trust. The PTD requires accountability of government for its actions in managing publicly owned assets. The public, as beneficiary of the trust, has legal rights to enforce accountability upon its government, typically through litigation and less commonly via elections or ballot initiatives.

These critical elements of the Doctrine were made clear in 1892 by the landmark U.S. Supreme Court case *Illinois Central Railroad Co. v. Illinois*. The court supported the Illinois Legislature in rescinding a prior grant by the

THE ROLE OF FEDERAL AGENCIES IN THE PUBLIC TRUST DOCTRINE

Federal natural resource agencies, including the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, Bureau of Land Management, Canadian Wildlife Service, Parks Canada, and others have public trust roles and responsibilities. The U.S. Constitution provides for the federal government to act as trustee when wildlife interests come under the purview of any of three clauses: the Property Clause, the Commerce Clause, or the Supremacy Clause (Bean and Rowland 1997). The Migratory Bird Treaty Act and Endangered Species Act are grounded in the Supremacy Clause (federal treaty-making power), and the Lacey Act is grounded in the Commerce Clause. However, the charge to this technical review committee was to assess the adequacy and variability of state- and provincial-based legal authorities and to develop recommendations for strengthening the PTD at this level. Therefore, we do not address federal implications in this paper.

state to the railroad of submerged land in Lake Michigan along virtually the entire shoreline of Chicago. The court, in acknowledging the public ownership of submerged lands in navigable waters and the state's role in holding these lands in trust for the public, found that the state was not empowered to relinquish the trust's assets. Such a grant would have substantially impaired the public's rights and exceeded the state's authority as trustee of the land (Sax 1970, Horner 2000, Henquinet and Dobson 2006, Simmons 2007).

This important case had several meaningful contributions to the development of the PTD. It expanded the application of the Doctrine to navigable waters not influenced by tides, and it clearly defined the role and responsibility of the governmental trustee. The court found the state could no more abdicate its trust over property than it could its police powers in the administration of government and the preservation of the peace (Sax 1970, Horner 2000, Stenehjem 2005).

The Role of the Beneficiaries

The public is the beneficiary of the trust for whom assets are managed. Trustee accountability for those assets is necessary for the PTD to be effective, and will be best served with an informed and engaged public. Public input into decision-making processes will help assure trustee understanding of and responsiveness to contemporary needs, as well as public understanding of competing demands on trust resources. Courts in California, Connecticut, Indiana, and Minnesota have explicitly granted the public legal standing under the PTD, albeit without explicitly referencing wildlife resources. (Case law that addresses wildlife in the context of the PTD are summarized beginning on page 21.)

THREATS TO THE PUBLIC TRUST DOCTRINE

Privatization and commercialization of wildlife

There is widespread and frequent use of the terms "privatization" and "commercialization" when discussing fish and wildlife resources. They often mean distinctly different things to some people, whereas others have difficulty distinguishing the difference among the two. Therefore, it is helpful to offer an important distinction to help frame this discussion.

In some states and provinces it is lawful to own domesticated native or exotic animals whose ancestry is of a recent wild origin (e.g., game farms that propagate elk, white-tailed deer, upland game birds, falconry, alligator farms, and fur farms). Management practices that characterize these operations include genetic husbandry (e.g., raising game species with "trophy" antlers and the sale of genetic material to game farms), marketing meat and parts (e.g., antlers), and hunts within fenced enclosures. The legal status of captive animals held under these conditions varies among state and provincial agencies, including whether they remain "trust resources" or private property. This raises an important legal question: Is a wild animal enclosed within a large fenced area and ostensibly "free roaming" the property of the private landowner or part of the public trust? Is there a distinction between the status of a wild animal

that happens to be enclosed by a fence, and an animal deliberately placed within an enclosure? These are central legal issues associated with the PTD and wildlife conservation in North America, but they have not yet been conclusively addressed in case law.

Although the captive wildlife industry is regulated to varying degrees by state agricultural or wildlife agencies, there are several potential problems, including the transmission of diseases to free-ranging populations (Lanka *et al.* 1990; Demarais *et al.* 2002). Some states now require double-fencing or other assurances that captive animals may not escape to the wild, but a uniform approach has not been adopted. Captive operations can have problems with animals escaping into the wild, wild animals entering private enclosures, or both (Fischer and Davidson 2005). This lack of separation among captive and wild individuals has serious negative ramifications to the general health and well-being of wild populations, particularly with respect to maintaining genetic purity and spreading disease (Geist 1995; Demarais *et al.* 2002).

In those instances where wild animals are found and reported inside high fenced op-

erations, the animal is frequently euthanized as most regulatory entities will not allow its release to the wild because of disease concerns. In some instances the operator may release the animal back into the wild without reporting it to avoid attention by the regulating agency, or may simply illegally incorporate the animal into its business venture. In each of these instances, the wildlife ceases to belong to the public. With the confirmation of chronic wasting disease in 16 states and two provinces (Chronic Wasting Disease Alliance 2009), many wildlife jurisdictions require or advocate for the use of double perimeter fences to avoid nose to nose contact among wild ungulate populations on the outside and captive populations inside. Where states or provinces assign primary regulatory jurisdiction to their agricultural agencies, their respective wildlife agencies may not have sufficient authority to initiate safeguards and protective measures on the captive wildlife industry to protect free-ranging wildlife maintained in the public trust (Lien 2002).

Generally, commercialization places monetary value on wildlife and their parts, and as a result provides an incentive or reward for their use. Placing monetary value on dead or live wildlife has the potential to threaten the public ownership of wildlife resources by raising the incentive for privatization. This may apply to the illegal trafficking of live wildlife by collectors (e.g., the exotic pet trade), or the illegal sale of wildlife parts (e.g., migratory bird feathers, sturgeon roe). Illegal taking of wildlife is a theft from the public trust thus violating the PTD. The Lacey Act (1900) was adopted by the U.S. Congress in response to the threat to wildlife populations caused by commercial exploitation—primarily the millinery trade's unregulated and unsustainable demand for the feathers of herons, egrets, and other water birds.

It is widely recognized that the unregulated commercial use of wildlife is often unsustainable. However, in most jurisdictions some commercialization of wildlife is allowed under highly regulated legal regimes. In North America it is generally accepted that wildlife belongs to the public until it is lawfully taken, at which point it becomes the private property of the tak-



Credit: North Dakota Game and Fish Department

A fenced enclosure on a game farm near Turtle Lake, North Dakota prevents white-tailed deer from leaving the owner's property. Keeping deer and other wildlife captive can lead to disease transmission and, on a broader scale, threatens a key tenet of the Public Trust Doctrine: that wildlife should not be privately owned and should be accessible to all.



Credit New York State Department of Environmental Conservation

Fur traders scout pelts at an auction in Herkimer County, New York—part of the legal market for wildlife products. Lawful trapping, guided by oversight from wildlife professionals, is consistent with the North American Model of Wildlife Conservation.

er. “Lawfully taken” is a critical distinction in the legal analysis, as are other regulations that may apply. Once deemed private property, the disposal of dead wildlife and its parts is subject to the regulation of the appropriate jurisdiction. For example, it is common for the non-edible parts of lawfully taken, non-migratory wildlife species to be legally sold, traded, or bartered. The sale of heads, hides, horns, or antlers of lawfully taken wildlife is legal in many states and provinces. Trapping is an important wildlife management tool in most of North America, and the pelts of furbearing animals lawfully taken during regulated trapping seasons are an important form of legal commerce. However, most jurisdictions do not allow the sale of legally taken live game species or edible portions of legally taken game. There is also growing recognition that some taxa, such as reptiles, are heavily exploited for commercial reasons and additional regulation of commercial activities is needed.

In some cases there may be little distinction between privatization of wildlife and its commercialization. Commerce in captive (privately owned) wildlife species may threaten the public trust in several ways. The markets created from this industry may provide incentive to some people to illegally exploit those markets with publicly owned wildlife or their parts. These

incentives can promote unethical practices or even illegal harvest of wildlife to supply the markets created by the commerce associated with privately-owned wildlife. Moreover, the commercialization and privatization of wildlife contradicts the very premise of a “public” resource and would render the PTD and the Model moot.

Access to Wildlife

Although there are differences among states and provinces, the public is having an increasingly difficult time gaining entry to hunt or trap on private property or reach tracts of public land (Responsive Management/National Shooting Sports Foundation 2008). Recently the sporting press recognized the issue of private land access to public land, and in one article suggested purchasing “gateway properties” that border public land to gain nearly “exclusive access” (Howlett 2008). The amounts of fees being paid vary widely and depend on the type and duration of the hunt. This is particularly disconcerting because a large segment of the hunting public either cannot afford additional user fees or is philosophically opposed to paying a trespass or access fee to hunt (Duda *et al.* 1998). As a result, some members of the public unable or unwilling to pay access or trespass fees have become solely dependent on public lands. Others may stop hunting due to the frustration of not having a place to hunt or because of overcrowding on public land. If the hunting public becomes disenchanted with either the quality of the hunt or having to pay too high a price to hunt, they may quit hunting (Responsive Management/National Shooting Sports Foundation 2008), and consequently could also stop supporting wildlife conservation efforts. Over time, access for other uses of wildlife (e.g., observation) may also be compromised. Collectively and cumulatively, the loss of access to wildlife for a diversity of uses is likely to erode support for public custodianship of wildlife resources, a central premise of the PTD.

The relationship between public access and private property can extend to public lands where private ownership patterns may legally preclude

access to public lands. "Gateway properties" that occur at the boundaries of public lands can legally preclude access to public lands. In some cases these private properties may entirely surround public lands. Checkerboard land patterns of alternating sections (square miles) of public and private lands may legally limit access to very large expanses of public land. Public access agreements to these areas, negotiated between the private landowner and state or federal fish and wildlife agencies, are often the most effective means to provide public access to wildlife occurring on these lands. Concern by private landowners for mistreatment of their private lands by the public and the cost associated with acceptable access agreements may provide barriers to public access that are often unsolvable. Private ownership patterns that reduce or eliminate reasonable access to public lands may also render wildlife inaccessible to a majority of people.

In several states, guides and outfitters are increasingly using bait to lure big game animals from public land (e.g., national wildlife refuges, national grasslands, national parks, and state wildlife management areas) to private lands managed for fee hunting. This practice redistributes or stockpiles public wildlife to areas that are not open to public hunting or inaccessible to hunters not willing to pay to hunt on private land. In an impact similar to fencing, these actions jeopardize the democracy of hunting, a central tenet to the Model (for a review of these issues see Dunkley and Cattet 2003; Ermer et al. 2005).

Public Indifference

The strength of the PTD is the value that the public assigns to the trust's assets. If the public grows indifferent to wildlife, or worse, adopts a negative perspective, the Doctrine will have greatly diminished value. Historically, this has tended to occur in situations where wildlife resources were owned by an aristocracy and public access was prohibited (Manning 1993). In this context, where the general public had no ownership of wildlife or a right to make use of it, citizens were indifferent to its protection. In extreme cases they coveted wildlife as

just another possession of the privileged class, resulting in widespread poaching (Geist 1985). Changing perspectives may occur to some degree as the general public finds wildlife of little value to them if they are precluded from its use by high cost or lack of access. Should the management of the trust's assets disenfranchise people, their interest in conserving these assets may wane. As they sense less personal ownership or value, less utility or inequitable access to their assets, their proprietorship may decrease.

Public antipathy towards wildlife may increase when people experience property damage (e.g., deer-vehicle collisions, crop depredation) or the competition it creates for their livelihood (e.g., wildlife depredations on crops or forage). Still others may fear wildlife as a danger to their personal safety (e.g., hazards from bears, wolves, cougars, or coyotes). Another component leading to negative opinions toward wildlife and trustees is opportunity for participation (or lack thereof) in wildlife management decisions. When those decisions are viewed as being made mostly by agencies in consultation with limited constituents (e.g., farmers and hunters), the remainder of the stakeholders (usually a majority) may feel disenfranchised. If the beneficiaries of the trust cease to value the trust assets, the trust becomes vulnerable to those who wish to take it from



Credit Eric Nuse/Vermont Fish and Wildlife Department

For these hunters in Vermont, and for many outdoor enthusiasts, a successful hunt is one way to feel a sense of value about wildlife and other public trust resources.

them. Indifference by the public for their wildlife resources makes the trust's assets valueless, eliminating the need for trusteeship. Therefore, the trustee has an important role in ensuring that the beneficiaries' interest in the trust's assets is maintained.

Lack of Understanding of Natural Systems

Dissociation of people from nature has been identified as a growing trend with potentially profound implications for how future generations of North Americans may value wildlife (Louv 2008; Shepard 1982). For example, the estimated number of "avid wildlife observers" declined 16 percent between 1991 and 2006 (11,927,000 vs. 9,970,000 avid participants, respectively) and they are growing older (USFWS 2009). Similarly, the number of "wildlife watchers" also declined over this same period, dropping from 76,111,000 in 1991 to 71,132,000 in 2006, a 7 percent decline.

The extent to which these trends may mitigate the growing dissociation from nature is unknown. We know little about the attitudes, values, and knowledge of wildlife-watchers (avid or casual), or to what extent they are aware of their rights under the public trust and whether trustee actions fulfill their interests. Of potential risk is a waning of interest in and awareness of local populations of wildlife to the point where advocacy for their conservation and protection of their habitats is minimal. Participation in consumptive activities may continue to decline, and opposition to those activities may increase, threatening the primary funding base for management of all trust wildlife, not just game species (Organ and Fritzell 2000). In addition to threats to funding, foundational elements of the public trust could be threatened with increasing social antipathy toward consumptive uses of wildlife. Sax (1970) stressed that a fundamental responsibility of trustees is to maintain trust resources for particular uses, including traditional uses and natural uses peculiar to a resource. Harvest (i.e., angling, hunting, trapping) has been suggested as an example of a traditional and natural use (Organ and Batcheller 2009).

Interagency Disputes over Jurisdiction

Conflicting missions and values between different state agencies may complicate the conservation and management of wildlife, and consequently threaten the fulfillment of public trust obligations. Legislative mandates that transfer a portion of wildlife management responsibilities (e.g., predator and other wildlife conflict management, game and fur farming, wildlife disease management, and human health protection) from state/provincial wildlife agencies to the state/provincial/federal agricultural, health or other departments or municipal governments may threaten the PTD depending on how these agencies manage the public trust resources. For example, predators managed solely by a state agricultural agency to reduce damage to livestock may not have the necessary conservation protections afforded with management by a fish and wildlife agency charged with providing conservation benefits to a broad array of stakeholders.

In 1996, Colorado enacted a law defining "depredating animal" and giving the Colorado Department of Agriculture "exclusive jurisdiction over the control of depredating animals," including game species, for the express purpose of reducing economic losses to agriculture. However, under existing statutes, the Colorado Division continues to be liable for damage claims resulting from damage caused by wildlife. Moreover, an agricultural agency may not value scientifically-based management of these resources if the sole focus is on the protection of agricultural interests. In situations where certain wildlife management responsibilities have been fully or partially legislatively re-assigned, the resulting management may not be in the best interest of the beneficiaries, or may advantage a particular segment to the detriment of the greater public trust. In such situations, the Doctrine may be compromised.

Animal Rights

Animal rights is a philosophical movement, with specific views on the relationship of humans to other forms of animal life. A basic tenet

of animal rights philosophy is that animals, including wildlife, are sentient and therefore should not be viewed as property. According to Gary L. Francione (Francione 1996), "...animal rights theory is not 'utopian'; it contains a nascent blueprint for the incremental eradication of the property status of animals." Public trust law is based on the premise that certain things are public property (Sax 1970). If the animal rights philosophy was to become law (whether adopted by legislative bodies or by referenda), wildlife would no longer be property, and would therefore fall out of the public trust.

CURRENT STATUS OF THE PUBLIC TRUST DOCTRINE IN STATE AND PROVINCIAL LAW

An analysis of each jurisdiction's statutory and constitutional law provides a measure of the strength of the PTD in the U.S. and Canada. The following parameters were evaluated to provide an assessment of the status of the PTD in North America:

1. **Inclusive definition of fish and wildlife.** Does the jurisdiction have a clear and inclusive definition of fish and wildlife that provides for adequate identification and protection of the trust resources? Inclusiveness means that the definition should address the status of vertebrates and invertebrates living in a wild state and in captivity, and address all life stages of those species.
2. **Clear statement of public ownership of wildlife.** Is it clear that fish and wildlife are owned by the public or by the people of the state or province, or in some cases by the state or province itself? This statement of ownership should include all fish and wildlife in the jurisdiction; resident or migratory, native or introduced. Ideally this statement will make clear that the governments manage fish and wildlife in trust for the people.
3. **A clear delegation of management responsibility to the trustees for the beneficiaries.** Is the responsibility of the trustees to manage fish and wildlife for the

RULES AND REGULATIONS NOT ANALYZED

Our review of the status of the Public Trust Doctrine in the United States relied on a review of state constitutions, statutory law, and case laws. Administrative rules and regulations were not included. Rules and regulations are promulgated by agencies, under statutory authority. While they have the force of law, rules and regulations are more likely to change frequently and thus are not an ideal vehicle for jurisdictions to use to codify the PTD. Because of this, and also due to the chance that any review of rules and regulations would be outdated before it could be published, our review of the current status of the PTD of the states and provinces did not include administrative rules and regulations.

public clearly and completely delegated to one or more governmental agencies, or to an individual within an agency, with the legal authority to manage fish and wildlife in the jurisdiction for the benefit of the public?

4. **A mission and purpose of the trustees that serves the interest of the beneficiaries.** The mission and purpose of the agency must serve the interests of all of the beneficiaries. The trustee cannot manage trust assets in an inequitable manner nor can it gift assets for private benefit. For example, if a public asset such as predators were assigned to a state or provincial agency as trustee, and the agency's role is described as managing predator populations in a self-sustaining manner for the benefit of future generations, the purpose of the PTD would be served. On the contrary, the purpose of the PTD would not be served if the purpose of the agency is described solely as preventing economic impact to agricultural producers.
5. **Accountability for the trustees' actions, decisions, and policies.** There should be a clear mechanism to evaluate the performance of trustees, and for public beneficiaries to hold them accountable for their actions. The actions of the trustees are

Criteria	States					Provinces				
	Constitution		Statute		Not Found	Constitution		Statute		Not Found
	+	-	+	-		+	-	+	-	
Inclusive definition of wildlife	0	0	38	10	2	0	0	13	0	0
Clear statement of public ownership of wildlife	1	0	38	3	10	0	0	7	0	6
Clear delegation of management responsibility	2	0	48	0	0	0	0	13	0	0
Mission and purpose appropriate to PTD	2	0	44	4	0	0	0	7	0	6
Accountability of trustees	2	1	38	11	0	0	0	13	0	0

Table 1: Number of States or Provinces meeting Public Trust Doctrine criteria through constitutional or statutory language (entities where criteria are addressed in both documents are counted twice). **Language is rated either satisfactory (+) or deficient (-).**

transparent and clearly described, thereby facilitating evaluation and accounting. Examples of accountability mechanisms include requirements for public participation and the full disclosure of accomplishments and failures.

Each jurisdiction's wildlife legislation and its constitutional provisions were examined with these five factors in mind to determine whether or not wildlife had been recognized as a public trust resource in the state or province. Each state and province's legislative and constitutional provisions were evaluated using the five criteria (see Table 1).

Jurisdictional case laws and their inclusion of wildlife are another component of determining the strength of the PTD. In addition to the summary of case law that follows, a table was developed to better distill how wildlife, and the PTD in general, have been treated in each state (see Table 2).

In Canada the PTD has not taken root in statutory or case law on the same level as in the

U.S. Although each province has adopted an inclusive definition of wildlife, not every province has created a clear statement of public ownership of wildlife. Seven of the provinces do have language that vests some type of public ownership over wildlife. As described in the following summary of PTD case law, Canada has almost no case law dealing with the PTD, therefore the provinces were not included in the case law analysis.

Findings: Public Trust Doctrine and Wildlife Legal Summary

In the U.S., the PTD in its traditional form is firmly rooted in statutory and case law. The PTD has traditionally been used to protect the public's right to use navigable waterways and to protect each jurisdiction's sovereign ownership of those waterways to hold in trust for the public's use. In recent times, a movement has taken place in both statutory and case law to extend the PTD to other natural resources. Some of these resources include beaches, parks, and

Criteria	Yes	No	Not Treated
PTD Recognized as valid legal doctrine	41	1	8
PTD discussed in relation to wildlife	15	3	32
PTD extended to resources other than navigable waterways	21	6	23
Court grants standing under PTD	4	6	40

Table 2: Number of States addressing the Public Trust Doctrine in State case law.

wildlife habitat areas apart from wildlife itself. Case law has been slow to recognize extension of the Doctrine, whereas statutory law has quickly evolved to place more natural resources within the realm of PTD protection.

Few states have case law recognizing wildlife as a public trust resource. Many states and provinces have already adopted statutes that either explicitly or implicitly confer upon wildlife status as a public trust resource. Indeed, bringing wildlife into the PTD through statutory measures appears to be the best way to accomplish the goal of extending the Doctrine in this area.

State Statutes

State statutory law is the main legal vehicle for giving public trust status to wildlife. In many states, the statutory provisions do this in an indirect manner through implicit trust language. For example, New Hampshire's statute states that: "It shall be the policy of the state to maintain and manage [wildlife] resources for future generations" (N.H. Rev. Stat. §212-B:2). While not a direct statement identifying wildlife as a trust resource, the language definitely has the aim of preserving wildlife for the public interest. Similarly, North Carolina's statute reads: "The enjoyment of the wildlife resources of the State belongs to all of the people of the state" (N.C. Gen. Stat. §113-133.1).

Georgia has strong statutory language, explicitly granting wildlife public trust resource status. The statute provides that: "Wildlife is held in trust by the state for the benefit of its citizens and shall not be reduced to private ownership except as specifically provided for in this title" (Ga. Code §27-1-3). Ohio and West Virginia have similar statutes, with Ohio holding title to all wild animals "in trust for the benefit of all the people" (Ohio Rev. Code §1531.02), and West Virginia holding title to all wild animals "as trustee for the people" (W. Va. Code §20-2-3). These three states provide clear statutory language that identifies wildlife as a public trust resource.

Kentucky has broad language, both in protection of wildlife and in furtherance of the public interest. The statute provides that state policy is "to protect and conserve the wildlife of the Commonwealth to insure a permanent and continued supply of the wildlife resources of this state for the purpose of furnishing sport and recreation for the present and future residents of this state" (Key. Rev. Stat. §150.015). This language serves the dual purpose of protecting wildlife while coincidentally insuring that the public will still enjoy the right to engage in activities such as hunting and fishing.

As of early 2010, 33 states have adopted the Wildlife Violator Compact, which includes in Sec. 11: "The participating states find that wildlife resources are managed in trust by the respective states for the benefit of all their residents and visitors." This language implies the existence of the PTD in those states, which is important because many states that did not previously have strong implicit or explicit trust language in their statutes have adopted the Compact. (Eight other states are currently considering adoption of the Compact.)

Clear "ownership" language pertaining to wildlife is important to firmly establish wildlife as a public trust resource. Forty-one states currently claim some type of ownership of their wildlife. The language varies between claiming ownership by the state and ownership by the people of the state. While the distinction may seem superfluous because of our states' republican form of government, a statute that places ownership in the "people" is a stronger indication that wildlife is a public trust resource. An example is North Carolina: "The marine and estuarine and wildlife resources of the State belong to the people of the State as a whole...The enjoyment of the wildlife resources of the State belongs to all of the people of the State" (N.C. Gen. Stat. §113-133.1). This type of language better imbues the purpose of confirming wildlife to be a public trust resource rather than language that merely states, for example, that: "All wildlife found in this state is the property of the state." Language clearly placing ownership of wildlife in the people residing in a state is important because of the

need to establish standing to enforce the PTD in individuals, rather than state governmental agencies.

Case Law

Nearly every state recognizes some form of the PTD in its common (case) law, however few states specifically address wildlife in case law. Typically, it is in the traditional form of state sovereignty over the navigable waterways of the state. Any extension of the Doctrine appears to have encompassed a limited number of resources such as beach access and parkland. Most cases that discuss the PTD relate it to the right of commerce and fishing in the state's navigable waterways.

Few states have case law that explicitly discusses the PTD in relation to wildlife, and even fewer discuss it in terms that may extend the PTD to wildlife itself. In Alaska, the case of *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988) spelled out perhaps the clearest recognition of wildlife as a trust resource by relying on the state's Constitution. The court in *Owsichuk* held that a common use clause in the Constitution of Alaska was intended to engraft certain trust principles, guaranteeing public access to the fish, wildlife, and water resources of the state.

In Illinois, *Wade v. Kramer* (1984) made it clear that it was "undoubtedly true that the State has a type of guardianship or trust over wildlife in the state." This ruling came well before Illinois had adopted the Wildlife Violator Compact. Because the ruling came before the Compact was adopted, it is clear that common law in Illinois fully recognizes wildlife as a trust resource.

A recent case from California involving the impacts of wind farms on bird mortality (*Center for Biological Diversity v. FPL Group, Inc.*) included an explanation of how wildlife falls under the umbrella of the Public Trust Doctrine by citing a California Supreme Court case stating that public trust duties for birds and wildlife are primarily derived from statute (*Environmental Protection and Information Center v. California Dept. of Forestry & Fire Protection*). Common law recognition of wildlife as a public

trust resource is important in states where it is not statutorily recognized, as was the case in Illinois before it adopted the Wildlife Violator Compact. When the PTD is codified through the state's statutes, however, common law recognition becomes less important. Once adopted by statute in a state, the only course for the state's courts to take would be to overturn the statute if found invalid or to modify its meaning through judicial interpretation.

State Constitutions

Inclusion in a state's constitution provides a strong foundation for the PTD. However, few states have constitutional provisions clearly articulating the PTD.

Alaska's Constitution, Article 8, §3, states that: "Wherever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use." This was held to mean that the state "intended to engraft certain trust principles guaranteeing access to the fish, wildlife, and water resources of the state," according to the Alaska Supreme Court in *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988). Louisiana's Constitution sets out the requirement that the state is "to protect,



Credit: © 2005 David Monniaux/Wikimedia Commons

Policymakers at the California State Legislature and at other state legislatures around the nation can pass laws regulating sustainable use of natural resources and other key elements of the Public Trust Doctrine.

conserve, and replenish all natural resources, including the wildlife and fish of the state, for the benefit of its people."

A constitutional provision is a legally robust means to establish wildlife as a public trust resource, though changing a state constitution is obviously a long and difficult process. Also, amending a state constitution is not ironclad as problems of enforceability and standing could arise if challenged in court.

Canada

Just over half of the provinces and territories have incorporated language on the public ownership of wildlife in their statutes. Nonetheless, this is an indication of the intent to treat wildlife as a public trust resource. Case law is at this point non-existent as to any explicit mention of the "public trust." The case of *Green v. Ontario* (1973) purports to apply a statutory form of the PTD, but it is nothing like the common law PTD that has developed in the U.S. Certainly there are no cases that compel provinces or territories to hold certain natural resources in "trust" for the people. The rights of the citizens in Canada that could be analogous to the rights enjoyed in the U.S. under the PTD are the right to navigate and fish. However, the Canadian Parliament retains the primary authority to modify these rights.

Need for Stronger Statutes

The PTD is both a common law principle, primarily associated with waters and their resources (e.g., commercially valuable fish species), and one based on statutes defining public trust duties and responsibilities. In the United States, the PTD in its traditional form is firmly established in both state common law and statutory law. However, the extension of the PTD to specifically cover wildlife is not well-established. In Canada, the legal underpinnings of the PTD, especially as it applies to wildlife, are even weaker, resting mainly on provincial codifications of wildlife ownership. A model

broad-based statutory framework that could be put in place throughout the states and provinces would have to address some key issues.

First, three conditions must be met for the PTD to be an effective tool: (1) it must contain some concept of a legal right in the general public; (2) it must be enforceable against the trustee (government); and (3) it must be capable of interpretation consistent with contemporary concerns (Smith 1980).

Second, any model statutory language must be carefully drafted to avoid the PTD being used negatively to eliminate the traditional recreational/sporting benefit of wildlife. As noted earlier, traditional and natural uses peculiar to a resource must be provided for as part of the public trust (Sax 1970), and hunting has been identified as such a use (Organ and Batcheller 2009). Additionally, funding for management of wildlife as a trust resource comes primarily from consumptive user fees. Keeping these issues in mind while using language from existing statutes, a successful model statutory framework could be developed to extend the PTD to wildlife as a public trust resource in each state and province.

THE BENEFITS OF STRENGTHENING THE PUBLIC TRUST DOCTRINE

The PTD is a long-time cornerstone of the most successful model of wildlife management and it has fostered the public's interest in conserving wildlife resources in North America. With few exceptions, however, it rarely is supported by state or provincial constitutional law, and inconsistently by statute. This presents a degree of insecurity to its consistent application, now and in the future.

The PTD is largely supported in case law but with less clarity than statutory law. Case law often is less precise and subject to greater, often inconsistent, interpretation. Courts of equal authority, representing different jurisdictions, may arrive at opposite conclusions.

Statutory and constitutional law is made by elected representatives of the people (e.g.,

Congress, Parliament, and Legislatures) or by the direct will of the people (i.e., ballot initiative or referendum), but case law, by design, lacks a public participation component.

As case law regarding the PTD continues to evolve and its scope of application continues to expand, new interpretations will be created that may revise current understanding, making current “protections” afforded by the Doctrine potentially uncertain in the future. Managing diverse public assets may cause conflicts for the trustees and the beneficiaries. For example, property protection through flood control may cause conflict with environmental quality or the welfare of fish and wildlife. In such situations, trustees may have to assume the authority to decide preference of one over another. These decisions likely are to be challenged through litigation. Courts eventually may redefine the Doctrine by assigning priority of trust assets for use by competing interests. Current uses may be viewed by some as privileges rather than rights. In turn, privileges may be viewed as increasingly unacceptable uses of public trust assets as has emerged in the case of commercial fishing versus the survival of fish stocks (Henquinet and Dobson 2006).



Credit: New York State Archives

Surrounded by their harvest of rabbit and deer, two hunters pose for the New York State Conservation Commission, circa 1920. A strong Public Trust Doctrine can help ensure that public agencies remain the stewards of natural resources.

The benefits of strengthening the PTD for the benefit of wildlife resources are clear. Codifying the Doctrine in statute, or amending state constitutions to include it may secure its future, clarify its purpose, and ensure that its principles are more consistently applied and less subject to interpretation.

RECOMMENDATIONS

The following recommendations are intended to help trustees of the public's wildlife ensure that the PTD extends to wildlife and the public's access to wildlife in their state or province and continues to do so in the future. They also serve to inform key stakeholders and other beneficiaries of key strategies for strengthening the PTD.

Statutory Changes

State and provincial wildlife agencies should review their constitutional or statutory authorities that address the principles of the PTD, and where absent or inadequate, strengthen their authority with new legislation. Although amending the state or provincial constitution to include the Doctrine would provide the strongest legal protection, we recognized that changing a constitution is a long and difficult process. Therefore, we recommend that states and provinces enshrine the PTD as it applies to wildlife in state/provincial law. In particular, those states that have adopted the Wildlife Violator Compact, which implicitly recognizes the PTD, should move to formally codify the PTD in their states.

We offer language containing several key elements to provide guidance to states and provinces seeking to protect the PTD.

Model Statutory language:

1. The state declares that wildlife is held in trust by the state for the benefit of its citizens:
 - a) to protect and conserve the wildlife of this state or province;

- b) to ensure the permanent and continued abundance of the wildlife resources of this state or province;
 - c) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - d) to ensure that wildlife resources will not be reduced to private ownership except as specifically provided for in law.
2. Individuals have an equitable right of access to wildlife as a public trust resource:
- a) to ensure a permanent and continued abundance of wildlife resources of this state or province;
 - b) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - c) to ensure that wildlife resources will not be reduced to private ownership, except as specifically provided in law.

This language makes it clear that wildlife is held in trust for the people of the state or province, will not be squandered or mismanaged by the state or province as trustee, and allows for balance between conservation and recreation. The language also prohibits government from transferring wildlife resources to private ownership, except as provided by law. The "except as specifically provided for in this title" language gives jurisdictions some leeway to provide for preserve and management areas.

Administrative Law (Rules and Regulations)

While administrative rules were not summarized and included in this review, these rules and regulations promulgated by agencies or regulatory boards have the force of law. These rules (along with administrative policy and standard operating procedures) are an important instrument to further codify and provide consistent and frequent reinforcement of public trust Doctrine tenets related to wildlife resources. These rules (and challenges to them) also represent a venue by which future case law will be established, potentially strengthening the Public Trust Doctrine.

Outreach and Education

Increased awareness of the PTD and its importance among the public, and wildlife professionals and wildlife students in particular, can be facilitated through fostering educational opportunities. The Western Association of Fish and Wildlife Agencies is developing an outreach plan to explain the PTD and the Model to a target audience including high school students (T. Gray, 2009, pers. comm., Arizona Game and Fish Department). When completed, piloted, and finalized, this curriculum will also be available for adoption by other state agencies. Additionally, the Conservation Leaders for Tomorrow program (www.clft.org) features a lesson on the North American Model, including the PTD. The Wildlife Society and state agencies should further promote outreach efforts on the Model and the PTD.

CONCLUSIONS

The Public Trust Doctrine is a crucial element of the Model. Geist and Organ (2004) identified emerging threats that challenge the PTD in North America, thereby jeopardizing the legal underpinnings for wildlife conservation. In particular, a trend towards the commercialization and privatization of wildlife challenges the notion of trust species held in custodianship by competent authorities (both state, federal, and provincial agencies) for broad public benefits. A corollary to this threat is the loss of public access to wildlife via highly controlled land access systems managed by private individuals.

Central to protecting the PTD is assuring that legal institutions are in place within each competent authority to clearly establish the PTD's applicability to wildlife. While a number of jurisdictions address the notion of public ownership of wildlife (and the associated trust responsibilities of those jurisdictions), the need for a broad-based statutory framework was confirmed as needed to unequivocally bring wildlife conservation programs within the PTD framework. To this end, model statutory authority is offered as a template to strengthen the PTD throughout North America.

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The Wildlife Society

5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814-2144
301-897-9770
301-530-2471 Fax
TWS@wildlife.org



Association of Fish and Wildlife Agencies

444 North Capitol Street, NW
Suite 725
Washington, DC 20001
202-624-7890
202-624-7891 Fax
info@fishwildlife.org



Western Association of Fish and Wildlife Agencies

522 Notre Dame Court
Cheyenne, WY 82009
307-638-1470
307-638-1470 Fax
larry.kruckenberg@wgf.state.wy.us



Wildlife Management Institute

1440 Upper Bermudian Road
Gardners, PA 17324
717-677-4480
swilliams@wildlifemgt.org

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November 1, 2016

Patricia O'Connor, Supervisor
Bridger-Teton National Forest
Box 1888
Jackson, WY 83001

Re: Dell Creek and Forest Park elk feedgrounds on the Bridger-Teton National Forest

Dear Supervisor O'Connor:

We understand the Bridger-Teton National Forest may soon be issuing Special Use Permits to continue elk feeding at the Dell Creek, Forest Park, and/or other feedgrounds. Please consider these comments, submitted on behalf of the Sierra Club Wyoming Chapter and Western Watersheds Project, and place them in the project file for these permits. Please also place the referenced attachments in their entirety in the project file.

The Sierra Club is a national non-profit conservation organization founded in 1892 with more than 3,000 members and supporters in Wyoming and 2.4 million members and supporters nationwide. Its mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

Western Watersheds is a non-profit conservation organization founded in 1993 with the mission of protecting and restoring western watersheds and wildlife through education, public policy initiatives, and litigation. Headquartered in Hailey, Idaho, Western Watersheds Project has 2,000 members and field offices in Idaho, Montana, Oregon, Wyoming, Arizona and California.

We have several concerns about permitting and operating elk feedgrounds on the Bridger-Teton National Forest (BTNF). Some of our concerns are whether some elk feedgrounds have undergone lawful analysis under the National Environmental Policy Act (NEPA), and

whether the BTNF has followed its own regulatory requirements in permitting elk feedgrounds. Other concerns deal with follow up actions committed to by the BTNF in the Alkali Creek elk feedground December 2015 Final Record of Decision.

We understand that old Special Use Permits (SUP) issued by the Bridger-Teton National Forest allowing the Wyoming Game and Fish Department to undertake operations at Dell Creek elk feedground and Forest Park elk feedground have expired or will expire on December 31, 2016.

The Special-Use Permit for Dell Creek Elk Feedground from the U.S. Department of Agriculture Forest Service dated 08/02/96 (BTNF 1996) lists the "Expir. Date" as 12/31/16 at the top of the first page. However, on page 2 of the Permit it states that "This permit will expire at midnight on 12/31/2015."

The Amendment for Special Use Authorization dated 9/6/13, and the U.S. Department of Agriculture Forest Service Special Use Permit for Forest Park elk feedground dated June 15, 1998 (BTNF 1998) shows on the first page of the Special Use Permit that the "Term Date" is "Dec. 31, 2016."

Thus both SUPs will either expire on December 31, 2016 or the Dell Creek SUP already expired last December 31, 2015, and the Forest Park SUP will expire at the end of this year. Among other requests listed at the end of this letter, we request that the BTNF explain to us what is the correct date of expiration for the Dell Creek Elk Feedground Special-Use Permit. And, if the SUP for Dell Creek Elk Feedground has already expired, the BTNF needs to explain if elk feeding activities occurred after the expiration of the Permit, and what plans there are, if any, for continuing elk feeding at the Dell Creek site in the future. As your agency has acknowledged, under 36 CFR 251.50, an authorization is required for this use of National Forest System lands. We are concerned that the BTNF may have violated their own regulations in allowing elk feeding to continue without the necessary permit in place.

The BTNF must comply with the National Environmental Policy Act (NEPA)

If the Bridger-Teton National Forest intends to allow the Wyoming Game and Fish Department to conduct winter feeding of hay to elk at either or both the Forest Park and Dell Creek sites beyond the expiration dates of the existing (or recently expired) permits, the BTNF must comply with the NEPA and conduct a thorough environmental analyses of the proposed actions. We remind you that in prior litigation on these feedgrounds, the Tenth Circuit Court of Appeals noted that while the Forest Service did not need to conduct *supplemental* analysis on the Forest Park and Dell Creek feedgrounds, the Forest Service's *approval and issuance of feedground permits* were a major federal action under NEPA. *GYC v. Tidwell*, 572 F.3d 1115 (10th Cir. 2009).

Thus, an EIS is necessary at this permit issuance stage to identify significant problems, develop adequate alternatives, describe mitigations and achieve solutions in an appropriate timeframe for longstanding problems.

The BTNF may not merely issue one-year permits to continue elk feedgrounds with no or minimal NEPA because the BTNF is required by NEPA to take a "hard look" at the disease impacts of authorizing elk feedgrounds and conducting elk feedground operations on USFS lands.

The BTNF has never conducted an environmental analysis under NEPA for Dell Creek elk feedground; whereas the circa 1980 EA for Forest Park is some 36 years old and could not have

considered the serious disease implications of elk feeding with the advance of Chronic Wasting Disease (CWD) across Wyoming in these intervening years.

An agency may avoid an EIS only if the action will have no significant impact. 40 C.F.R. § 1508.9(a), 1508.13. The NEPA regulations list ten factors that help determine whether an agency action “may” cause significant impacts and therefore require an EIS. 40 C.F.R. § 1508.27(b). The factors include: effects that are “highly uncertain or involve unique or unknown risks” or “likely to be highly controversial,” *id.* § 1508.27(b)(5), (4); “[u]nique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, [] wetlands, [] or ecologically critical areas,” *id.* § 1508.27(b)(3); “[t]he degree to which the action . . . may cause loss or destruction of significant scientific, cultural, or historic resources,” *id.* § 1508.27(b) (8); and the presence of cumulative impacts, *id.* § 1508.27(b)(7). The presence of even just “one of these factors may be sufficient to require preparation of an EIS in appropriate circumstances.” *Ocean Advocates v. U.S. Army Corps of Engineers*, 402 F.3d 846, 865 (9th Cir. 2005).

Numerous factors are triggered here, as explained in more detail below and in the attached scientific articles. The inherent and unavoidable concentration of elk during artificial winter feeding increases the risk of CWD and is a significant effect on the environment; winter feeding of elk also increases the prevalence of brucellosis and other diseases in the herd. This makes winter elk feeding highly controversial and with effects that have unique risks to the entire Greater Yellowstone ecosystem’s elk population. The Greater Yellowstone ecosystem is certainly an ecologically critical area; and the action may cause the loss or destruction of its significant wildlife resources. The disease spread furthered by these feedgrounds will cause significant cumulative impacts to ripple across the ecosystem, such as on all species that rely upon elk as a food source. These risks are not speculative, but real and imminent, in light of the fact that a mule deer infected with CWD was **found only 18 miles from the Forest Park feedground in 2016**. Because elk feedgrounds have a significant effect on the environment, the BTNF may not avoid the hard look required by NEPA by invoking a “categorical exclusion” and issuing a Decision Memo. In addition, the BTNF may not avoid or escape their NEPA obligations by failing to address their own permitting requirements.

Changed conditions and newer scientific findings

The BTNF should be aware of the changed conditions and newer scientific findings during the years since Forest Park and Dell Creek were last permitted in 1998 and 1996 respectively. See in particular BTNF employee Tyler Johnson’s June 2014 Chronic Wasting Disease Literature Review Technical Report, Appendix 7 to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015.

Some of the many important findings described in that June 2014 review by Johnson include:

“Owing to highly efficient direct transmission of CWD among cervids the number,

duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD.” p.5

“Cross et al. 2013 demonstrated that in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed.” p.6

“(E)lk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area.” p.6

“Studies on naturally occurring populations of elk have shown that mortality from chronic wasting disease *by itself* can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello et al. 2014 emphasis in original).” p.7

“(S)tudies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National forest and nearby areas.” p.7

“Free-ranging elk herds in Wyoming (Cross et al. 2013, Williams et al. 2014) and Canada (Vander Wal et al. 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km2 Elk density at the average state feedground in Wyoming is 1976.6 elk/km2, based on the reported average of 600 elk on 75 acres.” p.8

The current BTNF Supervisor, Patricia O’Connor, has also recently acknowledged that elk feedgrounds should cease on USFS lands.

“The continued westward expansion of chronic wasting disease detected during the 2015 hunting season punctuates the need for exploring opportunities for change. In making this decision, I am recommending that the WGFC/WGFD transition away from the need for supplemental feeding for elk. Use at Alkali Creek feedground is not intended to be permitted in perpetuity. My staff will prepare a report annually that identifies changing conditions and recommends any needed adjustment in feedground management.” (O’Connor 2015:5 in Final Record of Decision for the Alkali Creek elk feedground SEIS)

“I clearly understand and acknowledge that the Commission’s action of feeding results in artificially high concentrations of elk during winter and early spring which increases disease transmission (Johnson, 2014; Appendix 7; and Appendix 3 in the 2015 Final SEIS).” (Id.:6)

“When chronic wasting disease becomes established on the Bridger-Teton National Forest, there is a moderate to strong likelihood that the population limiting effects of chronic wasting disease to elk, mule deer, and moose may be hastened by supplemental feeding.” (Id.:6)

“The 2008 special use permit issued to the Commission for use of National Forest System land for elk management activities at Dog Creek, Fall Creek, Fish Creek, Muddy Creek and Upper Green River Feedgrounds will be amended to add authorization for use at Alkali Creek Feedground. However, this amendment will not occur until the WGFD Chronic Wasting Disease Management Plan update is completed and a review by the Forest Supervisor finds that the plan adequately addresses risks and management options for feedgrounds on National Forest System lands. If the plan is not completed prior to initiation of feeding for the winter of 2015-2016, a one year temporary permit will be issued.” (O’Connor 2015:4 in Final Record of Decision for the Alkali Creek elk feedground SEIS) Additionally, the Final ROD for Alkali Creek feedground requires the WGFD to, “Annually report chronic wasting disease mitigation actions that have been taken with regards to feedground management on National Forest System lands in western Wyoming.” (Id.)

“(C)hronic wasting disease mitigations will require an even greater collaborative interagency effort to manage.” (Id.:7)

In addition, one or both of these elk feedgrounds are also located in known Canada lynx habitat (USFWS 2014, BTNF 2016a), grizzly bear occupied and Demographic Monitoring Area (WGFD 2016), wolverine dispersal corridors (BTNF 2016b), and known gray wolf habitat (USFWS, et al. 2015). Canada lynx, grizzly bears and gray wolves are protected under the Endangered Species Act, and the wolverine is being considered for ESA protection by the US Fish and Wildlife Service. Since the promulgation of elk feedgrounds by the BTNF affects the health of prey species such as deer, moose and elk, elk feedgrounds have the potential to adversely affect all of these protected carnivores. This needs to be evaluated in an EIS. Due to these impacts on ESA-listed species, the Forest Service also needs to consult under the ESA on any permit renewal, even a temporary one.

CWD exists in western Wyoming in the elk feedgrounds region

It is indisputable that CWD is now in western Wyoming in the region where the WGFD and the US Fish and Wildlife Service feed some 22,000 densely concentrated elk at 23 locations each winter. A moose tested positive for CWD in Star Valley in 2008 (Moose Hunt Area 23). Three doe mule deer tested positive for CWD in Green River, Wyoming, in late 2012 (Deer Hunt Area 132). A dead doe mule deer positive for CWD was discovered in Star Valley early summer of 2016 (Deer Hunt Area 145). A buck mule deer harvested by a hunter near Dubois, Wyoming, tested positive for CWD (Deer Hunt Area 128). All these CWD endemic areas are either west of the Continental Divide in Wyoming, or adjacent to the Continental Divide; all are near- or are connected via cervid migrations to- elk feedgrounds.

Forest Park elk feedground in the Greys River drainage is only **13 miles** from where the CWD-infected moose was found in 2008, and only **18 miles** from where the CWD-infected mule deer was found in 2016. It is actually located within a CWD endemic area as determined by the Wyoming Game and Fish Department. Dell Creek elk feedground near Bondurant, Wyoming, is along the migratory path of mule deer from the lower Green River Basin; CWD was found in mule deer in the town of Green River in 2012. Dell Creek feedground is bracketed by CWD endemic areas 31 miles to the northeast (Deer Hunt Area 128), and 26 miles to the southwest (Deer Hunt Area 145), respectively. Elk, deer and moose are known to share habitats throughout this

region; it is virtually assured that elk, deer and moose move from CWD endemic areas to currently non-endemic areas every year. The risk is significant that elk that attend both Forest Park and Dell Creek will be or already are exposed to CWD.

Given the proximity of the disease, the catastrophic risk of intraspecific and cross-species infection to herds of elk, deer and moose from CWD, the persistence of the infectious prions in soil and plants, and the known harmful effects of concentrating hundreds and thousands of elk for months each winter in the face of this infectious and fatal disease, the BTNF must consider and thoroughly analyze alternatives to elk feedgrounds. Merely “monitoring” elk feedgrounds for symptomatic elk or other cervids is not sufficient and does virtually nothing to mitigate the risk to elk, nor does removing symptomatic elk or other cervids. In addition to the expeditious and complete phase out of elk feedgrounds, the BTNF must require appropriate disposal of the carcasses of CWD-infected elk or other cervids discovered and/or removed by the WGFD or anyone. Additionally, the BTNF must not allow hay harvested from CWD endemic areas to come onto BTNF lands. The BTNF may not permit elk feedgrounds without conducting a thorough Environmental Impact Statement.

Conclusion

We request from the Bridger-Teton National Forest:

1. A letter explaining the discrepancy among the dates in the Dell Creek SUP, and what is the correct date of expiration of the Special Use Permit for Dell Creek elk feedground. If Dell Creek elk feedground SUP expired at the end of 2015, and no one-year permit was issued and elk feedground operations were conducted regardless, we request an explanation of what elk feedground operations if any were conducted thus far in 2016 absent the SUP.
2. A detailed description of the efforts the BTNF has undertaken to assure that hay potentially containing infectious CWD prions harvested from CWD endemic areas is not transported to and placed on elk feedgrounds on BTNF lands to supply elk with feed during the winter.
3. A detailed description of the methods of disposal of portions or entire carcasses of CWD infected wildlife found by agency personnel on USFS lands in Wyoming.
4. A detailed description of the collaborative discussions and actions undertaken by both the WGFD and the BTNF to implement the April 2016 WGFD CWD Management Plan.

We look forward to your response to these requests in writing within twenty working days from the receipt of this letter. Note: In addition to this letter, we intend to submit a Freedom of Information Act request for copies of relevant existing documents held by the Bridger-Teton National Forest.

Sincerely,

Lloyd Dorsey, Conservation Director
Sierra Club Wyoming Chapter

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POB 12047 Jackson, WY 83002
307-690-1967
lloyd.dorsey@sierraclub.org

Jonathan Ratner, Director
Western Watersheds Project – Wyoming Office
PO Box 1160
Pinedale, WY 82941
Wyoming@WesternWatersheds.org

Attachments: Note, these documents are believed to be in the possession of the Bridger-Teton National Forest in Jackson, Wyoming. Therefore, in the interest of conserving paper and costs, we will submit only the first pages of the documents or specific maps as indicated by the list below. We also provide the URL for the documents. In the emailed version of this letter, we will submit some documents attached to the email, or we will submit the link to where the document is already archived on the BTNF website or elsewhere.

1. Bridger-Teton National Forest. 1996. Special Use Permit Issue Date 08/02/96 for Dell Creek Elk Feedground.
2. Bridger-Teton National Forest. 1998. Special Use Permit Issue Date June 15, 1998 for Forest Park Feedground.
3. Bridger-Teton National Forest. 2016a. Oil and Gas Leasing in Portions of the Wyoming Range in the Bridger Teton National Forest DSEIS. Jackson, WY. Figure A-9a. Northern Rockies lynx planning area occupied lynx habitat and lynx core habitat map. P. 12 Appendix A. Jackson, WY. At: <http://www.fs.usda.gov/project/?project=48737>
4. Bridger-Teton National Forest. 2016b. Oil and Gas Leasing in Portions of the Wyoming Range in the Bridger Teton National Forest DSEIS. Jackson, WY. Figure A-21. Wolverine dispersal corridors. Map, p. 25 Appendix A. Jackson, WY. At: <http://www.fs.usda.gov/project/?project=48737>
5. Johnson, Tyler. June 2014 Chronic Wasting Disease Literature Review Technical Report, Appendix 7 to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015. Entire Appendix 7 at: <http://www.fs.usda.gov/project/?project=39126>
6. O'Connor, Patricia M.. December 2015. Final Record of Decision Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System

land for their Winter Elk Management Activities at Alkali Creek Feedground. Final Record of Decision at: <http://www.fs.usda.gov/project/?project=39126>

7. US Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Contiguous United States Distinct

7

Population Segment of the Canada lynx and Revised Distinct Population Segment Boundary. FR Doc. 2014-21013 Filed 09/11/2014 publication date 09/12/2014. Map p. 54846. At: https://www.fws.gov/policy/frsystem/title.cfm?title=Endangered%20and%20Threatened%20Wildlife%20and%20Plants&doc_type=final&date=14

8. US Fish and Wildlife Service, National Park Service, Wyoming Game and Fish Department, Wind River Indian Reservation, and USDA Wildlife Services. 2015. Wyoming Wolf Recovery 2015 Annual Report. Map p. WY-3. At: [https://www.fws.gov/mountainprairie/es/species/mammals/wolf/2016/WY_Annual_Report-2015%20Final%20\(1\).pdf](https://www.fws.gov/mountainprairie/es/species/mammals/wolf/2016/WY_Annual_Report-2015%20Final%20(1).pdf)

9. Wyoming Game and Fish Department. 2016. Wyoming Grizzly Bear Management Plan. Figure 1. Boundary Mapping (Map of grizzly bear Primary Conservation Area, Demographic Monitoring Area, 2014 Grizzly Bear Distribution, etc.) P. vi. Cheyenne, WY. At: <https://wgfd.wyo.gov/WGFD/media/content/PDF/Wildlife/Large%20Carnivore/GBMgmt-Plan-Approved-5-11-2016.pdf>

Western State Management of Wintering Elk

Document prepared for "Elk Feedgrounds: A Challenge We Can Take On" public collaborative process.

Ben Wise, Jackson Region Wildlife Disease Biologist

Wyoming Game and Fish Department

December 2021



Photo by Mark Gocke



Introduction:

Elk management in the western United States is complex and highly variable from state to state. Elk are managed by the respective state in which they reside, and individual state wildlife management agencies have developed policies for elk management that help meet individual state goals. State wildlife management agencies must weigh a variety of complex issues in developing and implementing elk management policy. There is often a multitude of biological, social, and political factors that influence elk populations and how elk are managed. Wintering elk populations pose a number of issues ranging from landowner tolerance, disease management, habitat availability, winter severity, and public demand for wildlife that have to be taken into consideration when developing management plans. One of the management tools that has been implemented throughout the western United States over the last century to mitigate issues related to wintering elk populations is supplemental feeding. The states that have implemented supplemental wildlife feeding programs did so in an effort to mitigate for loss of native winter ranges, disease management, damage/conflict, and loss of habitat connectivity due to expanding development (i.e., highways, subdivisions, rural and residential development, etc.). This document was created as a reference on elk management policy, including winter feeding policy in seven states; Wyoming, Montana, Idaho, Colorado, Utah, Oregon, and Washington (Table 1). **The information was compiled directly from respective state wildlife management agency publications, including State Wildlife Management Plan, Elk Management Plan, Habitat Management Plan, and Damage Management Plan publications, as well as any relevant state statutes and regulations.** This document should only be used as a reference, and additional questions about state wildlife management should be directed to the respective state wildlife management agency.

Table 1. Supplemental Winter Elk Feeding by State (as well as approximate numbers for reference)

State	Supplemental Winter Elk Feeding	Approximate number of Elk Fed/winter	Total Elk Population
<i>Wyoming</i>	YES	22,000-24,000	110,000 (2020)
<i>Idaho</i>	EMERGENCY	150-300	120,000 (2020)
<i>Montana</i>	NO	0	170,000 (2020)
<i>Colorado</i>	EMERGENCY	0	287,000 (2018)
<i>Utah</i>	YES	500-600	81,000 (2020)
<i>Oregon</i>	YES	1,200-8,000	126,000 (2019) *71,000 Rocky Mtn *55,000 Roosevelt
<i>Washington</i>	YES	Up to 4,300	60,000 (2020) *45,000 Rocky Mtn *15,000 Roosevelt

Wyoming

Elk Management:

- The Wyoming Game and Fish Department's (WGFD) management goals and objectives (e.g., bull-to-cow ratios, herd objectives, and hunting seasons) are set through a public review process that requires public input and a final departmental recommendation to be approved by the Wyoming Game and Fish Commission (Commission).
- Elk management in Wyoming is conducted on a regional basis by area managers and varies considerably throughout the state.
- Objectives are evaluated every five years to determine if any population objective changes are warranted. Any objective changes are approved by the Commission.
- Populations are managed to ensure healthy, sustainable populations of wildlife persist as well as allowing for sustainable harvest of wildlife by the public.
- Herd unit management objectives can be based on one (or more) of the following techniques;
 - A.) Post-season population objectives
 - B.) Mid-winter trend count objectives
 - C.) Landowner and hunter satisfaction objectives
- Population Management Strategies:
 - A.) Recreational - Hunting seasons are designed to maintain an adequate number of breeding animals in the population. The Recreational Management Strategy generally results in increased recreational opportunities for sportsmen.
 - B.) Special - Hunting seasons are designed to maintain higher post-season male ratios in pronghorn, mule deer, and elk herds, and older age class animals in bighorn sheep and moose herds. The Special Management Strategy results in a greater opportunity to harvest an older aged or larger male animal.
 - C.) Private Lands - The Private Land Management Strategy is used in areas where hunting access is very difficult. Local managers focus on building landowner relationships to facilitate access and hunter management.

Damage Prevention/Mitigation

- The WGFD is responsible for damage investigations, mitigation, and monetary payments regarding big game, trophy game, and game bird damages in accordance with statute (Wyoming Statute 23-1-901) and Commission regulations (chapter 28). In accordance with the law, landowners can submit a claim to the WGFD for compensation from wildlife damages.
- Measures used by WGFD personnel to prevent wildlife damage include scare devices, harassment techniques, repellents, fencing, trapping, issuing of "kill" permits, and modifying hunting seasons. In evaluating damage to estimate monetary losses, techniques used include animal counts and associated consumption rate and/or AUM conversation, fecal analysis, enclosures, production records, and necropsies.
- Common law in America, which has been continually reinforced in the United States courts, holds that the people of the state own the wildlife. No individual holds an absolute property right to wildlife regardless of the status of the land on which the animal is found. Since wildlife belongs to everyone, the courts contend that everyone must share in its keep. As a result, courts have ruled the states are immune from liability for damage caused by wild animals, unless the state assumes that responsibility. Wyoming has assumed limited liability through legislation for some species of wildlife and under specific circumstances.

- Wyoming Statute W.S. § 23-2-101(e) provides a funding source for the payment of big or trophy game animal and game bird damage claims. That source of funding is generated from a nonresident application fee of \$15 and a resident application fee of \$5 for any limited quota big or trophy game license issued through a drawing or for a wild bison license. The statute provides for 25% of the fees collected from license applications to be set aside to establish and maintain a fund of \$500,000 to compensate landowners or lessees for property damaged by big or trophy game animals and game birds.
- Wildlife damage management is a major component of the WGFD's Wildlife Management Program. Considerable efforts are made to prevent damage, including hazing, providing materials for stored crop stackyard fences, relocating trophy game animals, increasing harvest, depredation seasons, and, as a last resort, "kill" permits.
- A landowner may submit a verified claim requesting compensation for damage. Claimants must meet all statutory and regulatory requirements in notifying WGFD personnel and filing the claim. WGFD personnel investigate the claim and verify the claimed damage using guidelines established by the WGFD in The Handbook of Wildlife Depredation Techniques. Claimants who do not wish to accept the WGFD's offer of payment may appeal the claim to the Commission. If the claimant wishes to appeal the decision of the Commission, the claim may be taken to a three member arbitration board. If there is a "mistake of law" due to arbitrators exceeding their powers, the claim can be heard by the appropriate District Court.
- In accordance with Chapter 28, a claimant shall not be eligible to receive an award for damage caused by big game animals, trophy game animals, or game birds unless hunting for the species for which damage compensation is claimed has been permitted during authorized hunting seasons on the land for which the verified claim has been filed. For an award to be allowed, the claimant shall permit hunting during authorized hunting seasons if the species of big game animals, trophy game animals, or game birds for which the verified claim was filed were present on the claimant's privately owned or leased land and adjoining Federal or State land during authorized hunting seasons delineated in subsection (C) (1). If the species of big game animals, trophy game animals, or game birds for which the verified claim has been filed were not present on the claimant's privately owned or leased land and adjoining Federal or State land during the authorized hunting seasons as delineated in subsection (C) (1), for an award to be allowed the claimant shall permit hunting during authorized hunting seasons delineated in (C) (2) and (C) (3) if requested by the WGFD. The claimant shall permit hunting during authorized hunting seasons delineated in (C) (2) and (C) (3) without access fees to hunters or the WGFD.
 - A.) For a claimant to be eligible to receive an award for damage compensation on leased private land, the landowner of the leased private land shall not, in any manner, restrict hunting access for the species for which damage compensation is claimed on the land for which the verified claim has been filed, or any adjoining Federal or State land.
 - B.) The claimant shall not, in any manner, restrict hunting access to their privately owned land, leased private land or any adjoining Federal or State land within the hunt area for which the damage occurred in accordance with this section.
 - C.) Authorized hunting seasons include:
 - 1.) Hunting seasons as established by Commission rule and regulation;
 - 2.) Depredation prevention hunting seasons as approved by a District Wyoming Game and Fish Commissioner and the Chief Game Warden; or,
 - 3.) Lethal taking of wildlife through a kill permit as approved by a District Wyoming Game and Fish Commissioner and the Chief Game Warden
- The WGFD shall determine if hunting was permitted during authorized hunting seasons for the species of big game animals, trophy game animals, or game birds for which the verified claim

has been filed. For an award to be allowed, the WGFD shall have to determine the claimant allowed sufficient numbers of hunters to access his privately owned or leased land and adjoining Federal or State land to harvest more than the number of big game animals, trophy game animals or game birds recruited in the preceding 12 months into the segment of the population responsible for doing damage. The claimant shall contact the game warden to whom he reported the damage to determine how many big game animals, trophy game animals, or game birds meets the requirement of more than the number of big game animals, trophy game animals or game birds recruited in the preceding 12 months into the segment of the population responsible for doing damage. An award may be allowed if the WGFD determines a reduction in big game animals, trophy game animals or game birds affects the WGFD's ability to sustain the population at the objective the Commission has established for the herd unit.

Winter Wildlife Feeding Policy and Operations:

- Supplemental Feeding of Elk/Wild Bison - The Commission is granted statutory authority to provide for the feeding of game animals, birds, and fish of Wyoming when conditions warrant such feeding as necessary. The purpose of this policy is to define the role of the WGFD in support of the Commission's efforts to fulfill its responsibilities with respect to feeding wildlife
- Under most conditions, the Commission discourages the private, intentional feeding of big and trophy game animals (WS 23-3-309). In order to maintain established elk herd unit population objectives in the Jackson/Pinedale regions, the Commission directs the WGFD to provide supplemental feed for elk as provided in this policy.
 - WS 23-3-309. Intentional feeding of elk; penalty.
 - A.) No person shall intentionally attract or feed any elk by depositing, placing, distributing, or scattering feed that results in commingling with livestock.
 - B.) Nothing in this section shall prohibit:
 - 1.) Any normal or accepted agricultural management practice;
 - 2.) Any elk feeding program authorized or conducted by the WGFD;
 - 3.) Any legal form of baiting elk as authorized by commission rule and regulation;
 - 4.) Any feeding of elk for the purpose of reducing the opportunity for contact with livestock when undertaken with prior notice to the WGFD;
 - 5.) Any feeding of elk outside a brucellosis surveillance area designated pursuant to Wyoming livestock board rules and regulations.
 - C.) A first violation of this section constitutes a low misdemeanor punishable as provided in W.S. § 23-6-202(a) (v). A second or subsequent violation of this section constitutes a high misdemeanor punishable as provided in W.S. § 23-6-202(a)(ii).
- The Commission recognizes the importance of supplying supplemental feed to elk at the 22 existing WGFD feedgrounds and the National Elk Refuge. The Commission also recognizes that without such feeding, the elk populations would have decreased significantly to levels that could be supported by the limited native range forage.
- The Commission directs the WGFD to provide adequate supplemental feed to support healthy and productive elk at the 22 WGFD feedgrounds and work cooperatively with the U.S. Fish and Wildlife Service to provide adequate feed to support healthy and productive wintering elk/wild bison on the National Elk Refuge. It is recognized that the Commission approved herd unit

population objectives exceed established total feedground quotas for each herd unit due to the presence of some elk wintering on native range. Recognizing that elk population objectives for each herd unit exceed the number of elk to be maintained on feedgrounds and the unpredictability of elk distribution considering habitat conditions, weather, and other factors that may influence the distribution of elk on WGFD operated feedgrounds, the Commission directs the WGFD to strive to manage feedgrounds for the total feedground elk quotas for each elk herd unit as listed in Table 2.

Table 2. Herd Unit Feedground Quotas.

<i>Herd Unit</i>	<i>Quota</i>	<i>Elk Feedground</i>	<i>Quota Distribution</i>
<i>Afton</i>	1,750	Greys River	1,000
		Forest Park	750
<i>Piney</i>	2,150	Bench Corral	250
		Finnegan	400
		Franz	450
		Jewett	650
		North Piney	400
<i>Fall Creek</i>	3,950	Camp Creek	900
		Horse Creek	1,250
		Dog Creek	800
		South Park	1,000
<i>Green River</i>	1,975	Black Butte	500
		Green River Lakes	675
		Soda Lake	800
<i>Hoback</i>	1,000	Dell Creek	400
		McNeel	600
<i>Jackson</i>	2,450	Alkali	800
		Fish Creek	1,000
		Patrol Cabin	650
<i>Pinedale</i>	1,800	Fall Creek	700
		Muddy Creek	600
		Scab Creek	500

- The number of elk on the National Elk Refuge is to be maintained in accordance with a mutually agreed upon number established cooperatively by the Commission through the WGFD and the U.S. Fish and Wildlife Service.
- The Commission directs the WGFD to not develop and operate any additional feedgrounds without pre-approval by the Commission while in session, except when an emergency occurs. When an emergency is identified, temporary feeding operations may be conducted when agreed upon by the WGFD Director and the District Commissioner(s) where the emergency feeding is requested/warranted. The commission recognizes there may be

situations where emergency feeding of wildlife shall be necessary. To the extent that any action taken pursuant to the above-mentioned responsibilities may be more specifically addressed in another Commission policy, the more specific policy should control.

- Feedground Operations: - In 1912, federal legislation was appropriated to purchase hay and feed elk on the present day National Elk Refuge. In 1929, the WGFD initiated operation of three supplemental elk feedgrounds in the Greys River, Gros Ventre River, and Green River drainages in an effort to prevent large-scale die-offs of elk during severe winters.
- Wyoming's first damage law was enacted in 1939, imposing limited liability on the Commission to pay for damages to crops caused by big game animals. This legislation created a significant financial burden to the Commission and largely contributed to the establishment of Wyoming's elk feedgrounds. Wildlife managers found it was easier and less expensive to feed elk in key problem areas rather than continually try to keep elk out of haystacks.
- Elk were fed at many different locations during the 30-plus years following the creation of the damage law, primarily to prevent damage to stored and fed hay and growing crops. Many sites were temporary, and only small amounts of hay, or cake, were fed. The WGFD has fed elk in at least 51 different locations since 1948. Many of the present feeding sites were started in the late 1940s and early 1950s, and by the early 1960s the present elk feedground system was mostly in place, with the last feedground started in 1979 (Forest Park).
- Currently, the WGFD manages 22 state-operated elk feedgrounds. The 22 state feedgrounds are located in Teton, Lincoln, and Sublette counties on BLM, Forest Service, state, and private landholdings. Annually, the average number of elk fed on all 22 state feedgrounds (not including the National Elk Refuge) since 1975 is approximately 13,788 elk. The highest number recorded was in 2005-06, when the WGFD fed a total of 17,140 elk. Conversely, the lowest number of elk fed since 1975 occurred during the winter of 1976-77, when only 4,964 elk were fed. The number of elk fed on the refuge has ranged from 0 to 10,736, and since 1970 have averaged 7,035.
- Elk are typically fed with a team of draft horses and a sleigh, although tractors are used at a few feedgrounds. Elk are fed seven days a week, with most feedgrounds starting in late November and ending in mid-April. Small square bales of grass or alfalfa hay are generally used, except where mechanized equipment is used, and large, square bales can be fed. Feeders try to disperse elk as much as possible and feed on clean snow each day if possible.
- The WGFD purchases between 5,000-9,000 tons of hay annually, with an average of 6,550 tons. Certified weed-free hay is used at feedgrounds on Commission-owned lands, as well as those on U.S. Forest Service and BLM lands. Most hay is purchased from Teton, Lincoln, and Sublette county ranches, with some hay coming from WGFD -owned lands in Fremont County. The WGFD contracts the hauling and stacking of hay, which typically takes about four months to complete. Each feedground has sheds where hay is stored.
- Elk feeders are contracted seasonally by the WGFD and may feed at one or more feedgrounds. Elk are generally fed between eight and ten pounds of hay/head/day. Since 1975, the feeding season has ranged from 64 to 152 days, depending on the severity of the winter and feedground location, with the average length of the feeding season being 122 days. This equates to approximately 0.5 ton of hay per elk each year. Over the last 12 years, there has been a general decline in the number of days fed and the number of elk fed days (a metric that incorporates elk abundance) on most feedgrounds following increased efforts to shorten feeding season length combined with generally milder winters.

- In July 2021, the Wyoming Legislature passed Wyoming Statute 23-1-305 - Closure of elk feedgrounds; alternative feeding sites; reporting requirements. This statute codified the following requirements for the closure of any permanent feedground in Wyoming.
 - Requires that any permanent elk feedground closure by the Commission will require an order by the Governor
 - Commission shall consult with the Wyoming Livestock Board on recommended elk feedground closure
 - At least one public meeting in an area where elk feedground closure would occur
 - Commission is authorized to contract/lease private lands for feedgrounds for the purpose of relocating feedgrounds that could be closed
 - Does not prevent the WGFD from operating current elk feedgrounds, start/ending feeding dates, and emergency elk feeding operations

Idaho

Elk Management:

- Population monitoring is the backbone of Idaho Department of Fish and Game (IDFG) elk management program. Monitoring provides wildlife managers with information to evaluate management goals and allows informed decision-making. Monitoring should include an estimate of population size, as well demographic information such as age and sex ratios. Aerial surveys should be conducted frequently enough to establish population trends and timely enough to enable managers to influence these trends.
 - A.) Statewide Elk Management Direction - The IDFG has developed statewide objectives based on elk hunter survey results, recent aerial surveys, current elk population status, and the potential for herd growth in some areas. Idaho Department of Fish & Game Idaho Elk Management Plan proposed statewide elk management objectives include:
 - 1.) Continue to offer general-season elk hunting opportunities by managing elk and predator populations and improving elk habitat
 - 2.) Enhance mature bull hunting opportunity
 - 3.) Aid elk hunters in selecting hunting areas that align with their desired hunting experience
 - 4.) Maintain the "A-B" elk tag structure, with adjustments to meet the needs and interests of today's hunters
 - 5.) Implement measures to reduce elk-caused crop and property damage
 - 6.) Improve public involvement in elk management decision-making
 - 7.) Reduce the potential for disease to impact elk or livestock
 - 8.) Increase public knowledge and understanding of elk biology, management, and hunting
 - B.) Elk Zone Management Direction
 - 1.) The IDFG will continue to manage elk using the zone management system. The zone system allows herd management based on local habitat, weather, and herd movements while providing a variety of hunting opportunities.
 - 2.) The number of elk that can be supported in any given management zone is influenced by many factors, including weather, habitat quality, predation, hunter harvest, and the need to minimize elk-based crop and property damage (agricultural impacts). One or more of these "limiting" factors can often prevent an elk herd from growing further or limit the ability of wildlife managers to maintain current elk herd numbers.
 - 3.) For each proposed elk zone, IDFG staff identified the limiting factors using flight surveys, elk population trends over ten or more years, changes to available habitat, reported agricultural impacts (crop and property damage), known or suspected causes of elk mortality, assessments of predator populations and predation impacts, and other data and elk management experience. The severity of each identified limiting factor was classified as low, moderate, or high. Limiting factors common to most Idaho elk populations are agricultural impacts (crop and property damage), predation, and habitat. The severity of these limiting factors varies across Idaho and even within zones.
 - 4.) IDFG staff proposed 10-year management direction and population objectives for each elk zone and objectives and strategies to maintain or improve elk herd performance and provide greater hunter satisfaction. Finally,

using public input, IDFG staff refined the management direction, objectives, and strategies for each zone.

Damage Prevention/Mitigation:

- Preventing crop and property damage (depredation) is a priority management objective for IDFG, and our response to depredation complaints is directed by Idaho Code 36-1108. Each region's Landowner-Sportsmen Coordinator has the responsibility to assist landowners in minimizing or eliminating depredations. Typical strategies to reduce depredations include hazing, permanent fencing, depredation hunts, kill permits, continued use agreements targeted general or controlled hunts and perpetual easements.

Winter Wildlife Feeding Policy and Operations:

- The Idaho Fish and Game Commission recognizes that big game populations should be maintained under natural conditions and by naturally available forage. Winter forage is the major limiting factor that determines the size of the big game populations, and it must be maintained if these animals are to prosper and propagate. The IDFG will work with appropriate land management agencies in an effort to maintain winter ranges in a condition suitable to meet big game management objectives, including the restoration of ranges damaged from such long-term impacts as disease, weed infestation, and/or overgrazing. These restorations could include temporary solutions for short-term impacts caused by fire and/or drought. In order to maintain these winter ranges, big game numbers must be controlled through adequate harvest. We, therefore, do not sanction any widespread supplemental winter feeding programs.
 - A.) Big game animals, especially elk, when concentrated by supplemental feeding, are very susceptible to infectious disease, which can be transmitted to livestock and to other big game animals. Every effort should be made to lessen this threat.
 - B.) We are aware that big game harvests and weather vary from year to year throughout the state. In most years, snow depths, temperatures, and animal body condition do not create adverse conditions for wintering animals. However, there are times when unusual weather patterns may create critical periods of stress when winter forage becomes limited, unavailable, or animals are forced into areas involving public safety. We recognize that we cannot manage game populations for these extreme weather conditions—nor should we.
 - C.) The IDFG is authorized to feed big game only if the following conditions exist:
 - 1.) To prevent damage to private property or for public safety when other methods of preventing damage and providing safety measures are determined to be impractical, inappropriate, or ineffective, and the amount of damage or cost of protection is expected to exceed the cost of feeding.
 - 2.) To prevent excessive mortality of big game populations in drainages that would affect the recovery of the herd. Some mortality should be expected, especially from the young and old segments of the population.
 - D.) It is the responsibility of all field personnel to advise the Regional Supervisor of weather, animal conditions and numbers, and public input on situations that meet the feeding criteria outlined above. If the Regional Supervisor, in consultation with the regional winter feeding advisory committee, determines that the criteria has been met and that an emergency exists, he/she will inform the Wildlife Bureau of his/her decision, and the Wildlife Bureau will notify the Director's Office, Enforcement Bureau, and the

Communications Bureau. The regional big game operational plan will then be implemented.

- IDFG maintains a nearly-annual elk feeding operation (Bullwhacker) in the Warm Springs Creek area, west of Ketchum. The intent of this site is to prevent elk from attempting to overwinter within Ketchum, which historically was winter habitat.
- IDFG has also decommissioned four winter feeding operations in Northeast Idaho (Rainey Creek, Victor, Teepee Creek, and Conant Creek) at the recommendation of the Idaho Governor's Wildlife Brucellosis Taskforce in an effort to reduce disease transmission risk.

Montana

Elk Management:

- In practice, Montana Fish, Wildlife and Parks (FWP) elk number objectives have been or will be established using the following considerations.
 - A.) The history of long-term trend counts and discussions with landowners on many areas indicate to biologists at what count level and under what conditions agricultural damage complaints become more frequent or excessive. Objectives for number of elk counted will be established below levels of excessive damage problems. For other areas, especially on public lands in northwestern Montana, elk numbers are below levels sustained in the past.
 - B.) Input from sportspersons, public land managers, and the general public will also be considered.
 - C.) Increasingly, in problem areas, Community Working Groups are formed to help all stakeholders come to consensus about objectives for elk numbers and potential solutions to elk management problems in the area.
 - D.) FWP has come to recognize that in some areas and for some elk populations, demand for antlerless harvest with current regulations is less than is necessary to reduce the elk population from current levels to the objective. A substantially more liberal regulation package than traditionally used may be necessary to reduce the elk populations to objective levels. Once objective levels are met, regulations can be modified to maintain stable populations under average environmental conditions. These objective levels may be lower than ecological potential and driven more by sociological tolerance.
 - E.) Elk populations in portions of some Elk Management Units (EMU) may be almost entirely inaccessible to hunters during the general hunting season or accessible to only a few hunters. To avoid over-harvest of accessible elk on public lands or private lands open to hunting, the inaccessible elk may not be included in objective numbers. Trend count number objectives may include only elk normally accessible to general hunting (if they are a distinct segment), though hunter access negotiations will continue. Elk occupying these "refuges" may be counted separately where practical (if they are a distinct segment) and sub-objectives established that could be operative if access negotiations are successful. If significant harvest of these "refuge" elk is possible with special management at some times and locations, they should be included in objective levels.

Damage Prevention/Mitigation:

- The general hunting season is FWP's primary tool for regulating wildlife populations. However, hunter access, weather, and other factors can reduce the effectiveness of the general season harvest in controlling wildlife populations in any year or series of years. Some areas may experience chronic wildlife damage to agricultural products regardless of elk population levels, but damage complaints may increase in other areas when elk populations have increased over several years.
- Two Montana Supreme Court decisions have ruled that private landowners are expected to accommodate a certain amount of wildlife use of their private lands. However, if a combination of circumstances result in wildlife use of private land at "unreasonable levels" that cause

problems for landowners, the state, with some exceptions, assumes responsibility to help eliminate, prevent or resolve these problems. By law (87-1-225 MCA) FWP is required to respond to all big game damage complaints. MCA 87-1-225 states:

- A.) Subject to the provisions of subsection (2), a landowner is eligible for game damage assistance under subsection (3) if he;
 - 1.) Allows public hunting during established hunting seasons; or
 - 2.) Does not significantly reduce public hunting through imposed restrictions.
- B.) FWP may provide game damage assistance when public hunting on a landowner's property has been denied because of unique or special circumstances that have rendered public hunting inappropriate.
- C.) Within 48 hours after receiving a request of complaint from any landholder or person in possession and having charge of any land in the state that wild animals of the state, protected by the fish and game laws and regulations, are doing damage to the property of crops thereon, the FWP shall investigate and arrange to study the situation with respect to damage and depredation. The FWP may then decide to open a special season on the game or, if the special season method is not feasible, the FWP may destroy the animals causing the damage. The FWP may authorize and grant the holders of said property permission to kill or destroy a specific number of animals causing the damage. No wild ferocious animal damaging property or endangering life shall be covered by this section.
- D.) FWP Game Damage Policy states that the following definitions (A) and (B) shall be used to determine game damage assistance eligibility
 - 1.) "Allows public hunting" is defined as "allows hunting without charge or consideration and without restrictions (as defined in (B)) to members of the general public during established seasons. For purposes of game damage assistance eligibility, hunting must be allowed for the species for which the complaint has been made.
 - 2.) "Does not significantly reduce public hunting through imposed restrictions" is defined as "does not impose restrictions which prevent the general public hunter harvest of the species for which the complaint is made. Such restrictions may include:
 - i.) Species of animals hunters are allowed to hunt;
 - ii.) Portion of land open to hunting;
 - iii.) Time period during which land is open to hunting;
 - iv.) Fees charged; or
 - v.) Other restrictions which render harvestable animals inaccessible.
- E.) FWP Damage Policy further indicates that field personnel should respond quickly and effectively to game damage situations, employing game damage abatement activities on a progressive scale of intensity, from the least dangerous or harmful to the wildlife doing the damage up to and including lethal methods such as damage hunts and kill permits. Generally speaking, the progressive steps for the use of game damage techniques are:
 - 1.) Dispersal through the use of noisemakers and repellants, or other activities agreed upon which would serve to haze animals away from an area;
 - 2.) Physical barriers such as snow fence, mesh wire, panels, permanent stackyards or electric fence used to protect harvested, stored crops; fence barriers will not be provided for protection of unharvested crops standing in the field.

- 3.) Damage hunts during the periods of August 15th to the opening of fall Commission –established seasons and from the close of fall Commission-established seasons through February 15th ;
- 4.) Kill permits used by landowners or, in rare instances, FWP personnel.

Winter Wildlife Feeding Policy and Operations:

- ELK FEEDING POLICY

- A.) Past experience in Montana and elsewhere has shown that artificial feeding of game animals is not a sound game management program - neither economically nor biologically. It is expensive, is not good for the animals, and not good for the range upon which these animals are dependent. It can only be justified under extreme winter conditions which indicate a winter loss of major proportions is imminent. Therefore, when it has been determined that extreme winter conditions exist on FWP owned lands, an emergency feeding program may be undertaken and the following regulations shall be policy:
 - 1.) Invite local sportsman's groups to participate in the program;
 - 2.) Feed only hay of high quality free from all forms of pollution;
 - 3.) Feed hay in sufficient quantity so that at least some hay is left uneaten; (this normally means about 12 pounds per animal per day) ;
 - 4.) Feed will be scattered over large areas in an attempt to maintain a normal distribution;
 - 5.) FWP will determine feeding areas and only those areas will be utilized; these are wild animals and consideration must be given to the establishment of feeding areas located specifically to avoid harassment.
- B.) In the Gallatin River drainage the elk feeding policy for the FWP is as follows:
 - 1.) For the area in the vicinity of the northwest corner of Yellowstone National Park: encompassed by the drainages of Buffalo Horn Creek, Cinnamon Creek, Wilson Creek, Teepee Creek, Lodgepole Creek, Sawmill Creek, Monument Creek, Sage Creek, and the portion of Taylor Creek below the Taylor Narrows, there will be no feeding, whether hay or other food supplements, of elk.
 - 2.) For the remainder of that portion of the Upper Gallatin Canyon where elk feeding is not excluded by the provisions of subsection (2) (a) , the following guidelines are the elk feeding policy of the FWP.
- C.) Purpose. The purpose of this plan is to establish criteria for the monitoring and evaluation of winter conditions for a portion of the Upper Gallatin elk herd in order to avoid catastrophic losses during a severe winter.
 - 1.) The FWP is responsible for managing the wildlife on national forest lands in Montana. The forest service, however, has responsibility for the management of wildlife habitat, necessitating the two agencies work closely together in game management within the boundaries of the national forest. Yellowstone national park contains a portion of the Upper Gallatin elk habitat. The three agencies therefore coordinate their responsibilities under a cooperative agreement for the management of the Upper Gallatin elk herd.
 - 2.) In any winter, regardless of severity, natural elk mortality will vary from 1% to 10%. Nature has the ability to recover losses rapidly. The ratio of calves to adult cows may vary from 25% to 60% in a given year. Elk herds have the

potential of doubling their size within two years. Nevertheless, a loss in excess of 15% of the total herd could be considered catastrophic, necessitating feeding or other emergency measures.

- D.) Objective. The objective of this plan is to establish guidelines for evaluating winter conditions affecting Upper Gallatin elk and the condition of the elk themselves. An additional objective of this plan is to establish guidelines for feeding, should the need arise, that will minimize damage to soil, vegetation, and water while providing for the needs of elk through a crisis period. It is hoped that elk feeding when needed can be achieved through the cooperative efforts of concerned citizens working with the FWP and the forest service.
- E.) Background. Research has shown that once animals are suffering from severe malnutrition, feeding may do no good. Also, once animals have become weak from use of reserve body fat, the animals may not be able to adjust to a change of diet. If feeding is to be done then, it must begin before the animals' condition is so poor that they do not respond. A decision to feed must also recognize the following adverse impact on the environment and the animals:
 - 1.) Making healthy animals dependent on artificial feed when they would be better off foraging;
 - 2.) Stopping or interrupting natural migration habits;
 - 3.) Tending to deplete emergency food reserves in the vicinity of feed grounds; (research has shown that elk will severely browse conifers and shrubs in the immediate vicinity of the feed ground regardless of the amount of hay put out) ;
 - 4.) Concentrating animals when their resistance is down, increasing the risk of the spread of any disease or virus present;
 - 5.) Decreasing water quality by concentrating animals near open water;
 - 6.) Allowing genetically inferior animals to survive, thus interfering with the natural selection process;
 - 7.) Changing social behavior patterns may cause problems; for example, if bulls are attracted into cow groups, increased stress may be placed on weaker or smaller animals through fighting and jostling.
- F.) Even though late winter storms can be quite severe, usually after a couple of days the snow melts and food becomes available again. Those animals which are too weak to wait out a few days will not be helped by feeding.
 - 1.) As a general rule, artificial feeding will not be started after April 1. To avoid losses from a late spring storm, such as occurred in April, 1975, managers will need to make a thorough analysis of the available feed and animal condition prior to April 1.
- G.) Criteria for evaluating winter conditions for the Upper Gallatin elk herd. The FWP will set up monitoring stations at Taylor Fork and Porcupine to monitor snow depth, icing, and crusting. The following criteria will indicate that feeding may be necessary:
 - 1.) Snow depth 20 inches or more with crusts and/or ice forming;
 - 2.) Weak adult cows forced to bottom lands along streams and Highway 191;
 - 3.) Adult cows foraging during middle of daylight hours;
 - 4.) Adult cows not seeking cover after feeding;
 - 5.) Emergency food sources not available;
 - 6.) Groups of adult cows (not isolated animals) generally in poor condition;
 - 7.) Signs of malnutrition in road-kills of adult cows (bone marrow pink, jelly-like, lack of body fat, especially around kidneys) ;

- 8.) Adult cows weak and moving with difficulty through snow cover;
- 9.) Weather outlook for cooler than normal with above normal precipitation forecast.
- Note: Since some calf losses are not preventable but are expected most years and since this plan is designed to prevent catastrophic reductions in the elk herd, the criteria for feeding is based on factors affecting the reproductive base (adult cows) only.
- H.) Procedure: In the event hay feeding becomes necessary, the following procedure will be followed:
 - 1.) Every effort will be made to avoid concentrating animals; hay will be fed where the elk are found, scattered over a wide area and in small amounts;
 - 2.) Approximately 3 to 7 pounds of hay per animal is sufficient per feeding;
 - 3.) Hay will be fed from sleigh or snow machine;
 - 4.) Distribute feed away from streams and highway and emergency food sources, such as willow and dogwood;
 - 5.) Scatter feed at the break (or toe) of the slope;
 - 6.) Only "certified weed-free" grass hay will be used;
 - 7.) Hay will be furnished or approved by the FWP;
 - 8.) All feeding will be monitored and supervised by the FWP with assistance of the forest service; the results of any feeding program should be carefully documented for future reference;
 - 9.) Feeding will stop when natural feed becomes available or when elk stop using hay, whichever comes first;
 - 10.) The FWP will obtain a forest service permit for feeding on national forest land.
- I.) Responsibility and coordination. The FWP will be responsible for making the final decision on whether or not to feed hay to elk, and will supervise the procurement and distribution of hay.
 - 1.) The forest service will make the final decision on whether to allow the placing of hay on national forest land for feeding of elk. The location of feeding areas on national forest land must receive prior approval from the forest service. Feeding will not take place inside Yellowstone National Park.
 - 2.) The forest service and FWP will jointly monitor snow, weather, and animal conditions, with the FWP having the primary responsibility for monitoring.
 - 3.) If conditions indicate that feeding may be necessary, a thorough analysis of snow and animal conditions will be made by FWP and forest service personnel. Porcupine and Taylor Fork Creek above the narrows will be checked as a minimum. A joint meeting will be held and the FWP will decide whether or not to feed and where feeding will be most effective.
 - 4.) Proposed national forest feeding sites will be approved at that time.
 - 5.) The FWP then may invite private ranchers and organizations to participate and establish a schedule for monitoring the feeding and recording results. Forest service personnel may participate in monitoring the feeding operation.
- J.) The elk herds in the Gallatin drainage provide a peculiar problem for management in this state as they move over their normal winter range.
- FWP sporadically utilized emergency feeding as a tool to reduce overwinter mortality in the upper Gallatin River Valley until 1975. Changes in hunting season structure and herd objectives were implemented in an effort to reduce overall elk numbers as well as reduce the chance for

catastrophic starvation events during hard winters. Supplemental winter elk feeding has not occurred in Montana since.

Colorado

Elk Management:

- Big game populations in Colorado are managed Colorado Parks and Wildlife (CPW) on the basis of Herd Management Plans (HMPs) for specific herds in defined areas called Data Analysis Units (DAUs) that represent the annual ranges of relatively discrete populations. These DAUs are divided into Game Management Units (GMUs) to better manage harvest and hunter numbers within each herd.
- Herd Management Plans establish objectives for post-hunt population size and sex ratios, and are locally developed with public input. Draft plans are presented to the Parks and Wildlife Commission, with opportunities for public comment, revised if necessary, and then approved by the Commission the following meeting. License quotas approved by the Commission each year are used to move populations toward herd management plan objectives using hunter harvest. Population objectives for each herd are expressed as a range of values to provide greater management flexibility and more realistically reflect confidence in the population estimates. Target population objectives are used to indicate the desired population size within the objective range for a given year.

Damage Prevention/Mitigation:

- Colorado's game damage program is authorized in Title 33, Article 3 of Colorado Revised Statutes. Since its original inception over 90 years ago, the program's goal of mitigating and compensating agricultural producers for damage suffered by big game wildlife has changed very little. Over the years, the program has been refined most notably through the integration of the prevention materials program. The game damage program is funded entirely by license revenues through an annual appropriation from the Game Cash fund. This appropriation funds the two key program components; damage compensation and damage prevention materials. Resources are utilized among each program component based on annual needs.
- The compensation component of the game damage program provides reimbursement for qualifying agricultural claimants suffering eligible losses caused by big game wildlife.
- The damage prevention materials program became an integrated component of the game damage program over 20 years ago. The prevention materials component provides both permanent and temporary materials to landowners to eliminate or minimize damage caused by big game wildlife. Apiary fencing, orchard fencing and stackyard fencing comprise the majority of the requests for materials.
- CPW also issues permits to kill specified numbers of wildlife causing excessive damage to property by request of the property owner.

Winter Wildlife Feeding Policy and Operations:

- Emergency feeding of big game ungulates may be used as a last resort to reduce unusually severe winter-related mortality in cases where the anticipated winter-related mortality exceeds thirty percent (30%) of the adult female segment of a major big game population. Where available, managers should make use of existing on-the-ground ungulate monitoring activities and data to guide decisions on emergency feeding. Compared to small game, big game populations recover more slowly from significant winter mortality. Therefore, consideration

should also be given to the effects of mortality on population recovery and associated impacts to local economies, license numbers, etc.

- The decision to feed in a severe winter is complex and will be made considering both biological and social factors. Based on the experience from previous feeding actions, significant mortality of deer, particularly fawns, should be expected regardless of effort. In addition, at least one year of suppressed recruitment likely will occur. The decision of where and when to feed will be made by the Director after considering site-specific information (quantified to the extent possible) about the anticipated costs of feeding versus the consequences of not feeding. If feeding occurs, it is recommended to use weed-free hay (for elk) or commercial pellet products formulated for use in wild ungulates.
- The Colorado Parks and Wildlife Commission recognizes the additional and unique threat created by congregating animals into feeding areas where chronic wasting disease (CWD) exposed animals may be present. Therefore, notwithstanding any other provision in this policy, emergency winter feeding shall not occur in any GMU where CWD has been found in wild ungulate populations without prior approval of the Commission. In addition, managers should carefully consider whether winter feeding in a particular area might increase the risk of establishing CWD in an area where it is not known to occur. Baiting is defined as the use of feed to move or redistribute animals with no intent to support or maintain animal condition.
- Baiting of big game ungulates may be used to prevent or reduce damage to private property when other preventative measures have been ruled impracticable, inappropriate or ineffective. Furthermore, when considering whether or not to bait, the cost of baiting relative to the estimated cost of damage to private property should be evaluated. Baiting may also be used to address the loss of animals unusually congregating near highways and railroad tracks (often as a result of severe winter weather). These situations create a public hazard and can cause significant localized big game mortality. If baiting occurs, it is recommended to use weed-free hay or commercial pellet products specifically formulated for use in wild ungulates. The decision of where and when to bait will be made by the Director (or the Director's designee).

Utah

Elk Management:

- Utah Division of Wildlife Resources (UDWR) Elk Population Objectives
 - A.) Set population objectives and manage elk populations at appropriate spatial scales that account for migration patterns.
 - B.) Establish local advisory committees to review individual herd unit management plans when considering a change (increase or decrease) in the herd size objective.
 - 1.) Committees will be established following approval of the statewide elk plan.
 - 2.) Committees will consist of the UDWR unit biologist and regional wildlife manager as facilitators, two local sportsman's representatives, and one representative from each of the following (if applicable): Farm Bureau, Cattlemen's Association, Wool Growers Association, Bureau of Land Management, USDA Forest Service, local elected official, Regional Advisory Council (RAC) member, Cooperative Wildlife Management Unit (CWMU) Association, Sportsmen for Fish and Wildlife, Mule Deer Foundation, Rocky Mountain Elk Foundation, tribal representative, local landowner or land owner association representative and other affected stakeholders. Recommendations from these committees will be reviewed by UDWR and presented to the Regional Advisory Councils and Wildlife Board for public input and approval.
 - 3.) Committees shall be provided with the results of habitat projects completed in the previous five years, planned projects for the next three years, UDWR range trend data, and any other applicable information.
 - C.) On units where population decreases are necessary, UDWR will recommend short term population objectives in unit management plans or increases in antlerless elk permits.
- Population Management
 - A.) Utilize antlerless harvest as the primary tool to manage elk populations within herd size objectives and to target specific areas where range concerns or depredation problems exist.
 - B.) Properly manage elk populations to minimize competition with mule deer on crucial mule deer range.
 - C.) If drought related conditions and high elk densities are negatively impacting habitat, recommend additional antlerless elk permits at the August Wildlife Board meeting.
 - D.) During severe winters, aggressively use antlerless elk harvest (public hunters and DWR removal) to minimize conflicts.
 - E.) Consider using over-the-counter cow elk permits to provide additional harvest and hunting pressure in areas of conflict.
 - F.) On units over objective where cow harvest is difficult to obtain, allow for cow harvest using a general season muzzleloader bull elk permit (similar to general season archery elk hunt).
 - G.) Encourage innovative ideas from regional biologists to manage towards population objectives.
- Disease Control
 - A.) Investigate and manage disease outbreaks that threaten elk populations including CWD and brucellosis.

- B.) Promote management practices that minimize disease risks such as discouraging baiting/feeding, conducting CWD surveillance, and assisting Department of Agricultural in monitoring elk farms/ranches for compliance.
- C.) Follow the emergency big game winter feeding policy, and avoid unnecessary feeding of elk.

Damage Prevention/Mitigation:

- Depredation of private croplands continues to exist in some areas despite careful management of elk populations. In some localized areas depredation can be a significant problem. UDWR has committed substantial resources to address depredation concerns, and there are numerous programs designed to assist landowners with depredation situations. Harvesting elk on private lands can ease frustrations of private landowners and better distribute elk into more favorable portions of a unit. Depredation problems need to be addressed within the sideboards of state code, rule, and policy, and in a timely and efficient manner so that landowners will better tolerate migratory populations of elk
- If big game animals are damaging cultivated crops on cleared and planted land, or fences or irrigation equipment on private land, the landowner or lessee shall immediately, upon discovery of big game damage, request that the division take action by notifying a division representative in the appropriate regional office.
 - A.) Division action shall include:
 - 1.) Removing the big game animals causing depredation; or
 - 2.) Implementing a depredation mitigation plan approved in writing by the landowner or lessee.
 - B.) The division mitigation plan may incorporate any of the following measures:
 - 1.) Sending a division representative onto the premises to control or remove the big game animals, including:
 - i.) Herding;
 - ii.) Capture and relocation;
 - iii.) Temporary or permanent fencing; or
 - iv.) Removal, as authorized by the division director or the division director's designee;
 - 2.) Issuing big game mitigation permit vouchers for use on the landowner's or lessee's private land during a general or special hunt authorized by the Wildlife Board
 - 3.) The mitigation plan may describe how the division will assess and compensate for damage
 - 4.) The landowner or lessee and the division may agree upon a combination of mitigation measures to be used, including a damage payment or a description of how the division will assess and compensate the landowner or lessee for damage to cultivated crops, fences, or irrigation equipment.
 - C.) The division may provide compensation to landowners or lessees for damage to cultivated crops on cleared and planted land, or fences or irrigation equipment on private land caused by big game

Winter Wildlife Feeding Policy and Operations:

- Supplemental feeding is often viewed by the public as a viable solution to a lack of suitable winter range. However, there is evidence that the potential harm created by feeding elk may outweigh the limited benefits. Winter feeding programs are generally costly and can cause problems for elk including behavioral changes, range destruction, and expansion of disease problems. Recent research conducted in Utah has shown that elk feeding programs in Utah can be reduced or eliminated without creating new problems.
- Although there are negative consequences of winter feeding, it is also recognized that feeding may be necessary to sustain elk populations in emergency situations. It may also be necessary to temporarily feed elk to reduce depredation problems or to keep elk from impacting deer populations in extreme conditions. For instance, elk are fed at Hardware Ranch each winter to keep elk from moving on the urban interface. These elk are also physically examined, disease tested, and an outreach opportunity for the public to view and enjoy elk.
- In Utah, winter feeding of big game is currently guided by the winter feeding policy. Under this policy, feeding is discouraged except under extreme circumstances. With the discovery of CWD in Utah, the feeding policy was updated to state that "the Division will not participate in any emergency big game feeding program that occurs within the known range or use area of any big game population where CWD, brucellosis or tuberculosis has been detected."
- Emergency Big Game Winter Feeding
 - A.) PURPOSE - The purpose of this policy is to establish the procedure for emergency supplemental winter feeding of big game. The intent of this policy is to provide emergency feed for big game animals only during periods of critical stress and not as a sustaining program that would carry larger game populations than the range can normally support.
 - B.) POLICY - Continual supplemental winter feeding of big game is not a part of the Division's routine management program, because it is recognized that in most cases big game populations should be maintained under natural conditions and by natural available forage. However, the Division also realizes that there are times when unusual weather conditions can create critical times of stress when winter forage becomes extremely limited, unavailable, or animals are forced into areas threatening public safety. Furthermore, it is recognized that by providing the proper feed, only during these times of critical stress, the Division may improve the survival of those animals that may have otherwise succumbed to starvation. The implementation of widespread feeding, which supports higher population levels than healthy habitat can sustain, is not only prohibitively expensive, but involves serious risks in terms of disease and habitat degradation. Under certain circumstances, however, supplemental winter feeding can be used as a tool to help accomplish the following, especially in the short-term:
 - 1. Control big game (primarily elk and deer) damage in agricultural areas (e.g. dairies, feed lots, orchards, etc.) until a better long-term solution can be found;
 - 2. Promote public safety by drawing animals away from highways and urban areas;
 - 3. Maintain parent stocks of big game populations; and
 - 4. Relieve stress on populations in short-term severe emergencies.
 - Authorization for feeding will occur on a site-by-site basis only. Biological triggers will help guide the decision to initiate a Division feeding program. The Division will not participate in any emergency big game feeding program that occurs within the known

range or use area of any big game population where chronic wasting disease, brucellosis, or tuberculosis has been detected.

- C.) PROCEDURES
 - 1.) Approval Procedure Emergency - Division feeding programs will be allowed only in accordance with a feeding proposal prepared by the region, reviewed by the Wildlife Section Chief, and approved by the Director. Generally, the feeding program will be confined to those situations described in the previous section.
 - 2.) Feeding Proposal - A feeding proposal must address the following issues:
 - i.) Why feeding is necessary (emergency /unusual circumstances).
 - ii.) Number of animals and length of time.
 - iii.) Estimated cost.
 - iv.) Type of feed to be used (weed-free material is required).
 - v.) Whether the proposed emergency feeding areas are within the known range or use area of any deer or elk population where chronic wasting disease, brucellosis, or tuberculosis has been detected.
 - vi.) Desired benefits.
 - vii.) Extent of monitoring.
 - viii.) Description of outreach actions to be taken to explain to public what is being done, why it is being done, and planned future actions.
 - ix.) Future actions to prevent the feeding need from recurring (e.g. hunts, fencing, habitat improvement projects, etc.).
 - 3.) Division Discourages Private Feeding Programs - The Division strongly discourages private individuals and/or organizations from implementing feeding programs. In emergencies, the public may be asked to assist the Division in emergency feeding.
 - 4.) Funding - The availability of funding will be a determining factor in approving emergency feeding programs. In the event of any extensive feeding initiative, funding for big game emergency winter feeding programs will be sought outside the standard Division budget.
- UDWR feeds approximately 600 elk per winter on the Hardware Ranch Wildlife Management Area in an effort to reduce damage to neighboring private lands and neighborhoods.

Oregon:

Elk Management:

- Oregon Department of Fish and Wildlife (ODFW) manages elk based on management objectives (MOs) for winter population size and post-season bull ratios in each Wildlife Management Unit (WMU) in the state. The Oregon Fish and Wildlife Commission first adopted MOs for most of Eastern Oregon in 1981. MOs were updated and adopted for all WMUs, except Alsea and Snake River, in 1994 after an extensive public input process.
- Management objectives for winter population size are targets that guide elk herd management. It is recognized that due to migration between summer and winter ranges in many areas, elk numbers can be different in summer than winter in many WMUs. Measurement of total numbers in any wildlife population is difficult. Any improvements in census and modeling methods that result in more accurate population estimates will be used by ODFW to update MOs.
- Management objectives will be reviewed every five years as required by statute.
- Post-season bull escapement MOs are management targets for the number of bulls/100 cows after the hunting season for each WMU.

Damage Prevention/Mitigation:

- Appropriate measures must be taken to assist farmers, ranchers and others in resolving wildlife damage problems.
 - A.) ODFW Wildlife Damage Policy;
 - 1.) Advice/Repellents
 - 2.) Hazing
 - 3.) Barriers/Fencing
 - 4.) Habitat Programs
 - 5.) Harvest Management
 - i.) Hunting Seasons
 - ii.) Landowner Preference Tags
 - iii.) Oregon Landowner Damage Program
 - iv.) Emergency Hunts
 - v.) Kill Permits

Winter Wildlife Feeding Policy and Operations:

- Harsh winter weather (i.e., deep snow and low temperatures) occurs periodically, primarily in Southeastern and Northeastern Oregon and for elk wintering at high elevations in the Cascades. Under severe weather conditions elk calves may suffer relatively high levels of mortality. Supplemental feeding to reduce mortality due to severe winter conditions is not desirable on a long-term basis and has a number of associated problems that include:
 - A.) Supplemental feeding may develop concentrations of animals that could increase the possibility of disease outbreaks and transmission and may cause damage to habitat resulting in long-term damage to the site.

- B.) Dependency on feed grounds may delay or diminish migration to traditional winter or summer ranges. Elk are then encouraged to return in large numbers each year to areas that do not have adequate winter habitat.
- C.) Supplemental feeding may maintain an artificially high elk population that will ultimately need to be reduced if the feeding program is interrupted.
- D.) Feeding may habituate elk to hay, causing them to seek out haystacks rather than natural winter forage. Some elk learn to remain near the feeding area during summer, causing damage to crops during the growing season.
- E.) Supplemental feeding is expensive. Funding is generally not available and may be better spent maintaining or enhancing natural habitat for long-term benefits to elk and other wildlife.
- F.) Supplemental feeding, to be effective, must be initiated prior to elk undergoing nutritional stress in order to allow rumen digestive organisms to adapt to a new diet. Once started, the program must be continued through the winter.
- G.) Funding mechanisms are not in place to buy feed and begin feeding in a short time frame when needed.
- Supplemental feeding may be effective in preventing winter elk damage to private property or in maintaining elk in areas where there is abundant summer range, but adequate natural winter range no longer exists. This may be the only means to maintain elk in such areas. Costly programs to save elk from starvation during severe weather generally are not effective in producing desirable results. Such programs are inefficient, divert public attention and funding from real problems, and can quickly cripple an agency's budget.
- ODFW operates wildlife feeding sites on several of its Wildlife Areas. These include Elkhorn Wildlife Area (1,400 elk and 800 deer), Wenaha Wildlife Area (1,400 elk and 750 deer), White River Wildlife Area (1,000 elk and 4,000 blacktail deer), and Jewell Meadows Wildlife Area (500 Roosevelt elk). Actual numbers of animals attending feeding operations annually depends on winter severity and population levels and damage mitigation efforts.

Washington:

Elk Management:

- The primary goal of the Washington Department of Fish and Wildlife (WDFW) is to manage for viable and productive elk populations with desirable population characteristics using the best available science. The WDFW measures elk populations using a variety of techniques. Techniques that work well in the more open habitats of eastern Washington may be of little value in areas that are densely forested. Population objectives defined in this plan are consistent with objectives defined in the respective elk herd plans. A realistic approach to the management of wild animal populations does not assume that the true number of animals in the population is known. Therefore, the preferred target for each elk herd is defined as the population objective plus or minus a range of 10%.
- Population objectives are determined by agency staff using a combination of factors that include:
 - A.) Current population estimates
 - B.) Harvest history
 - C.) Current harvest levels
 - D.) Currently occupied summer and winter range
 - E.) Current condition of available forage
 - F.) Nutritional status of elk, if known
 - G.) Current land use practices
 - H.) Number and location of elk damage complaints
 - I.) Landowner tolerance
 - J.) Hunter satisfaction
 - K.) Disease considerations
- Consistent with the primary goal, the secondary goal is to provide recreational opportunity and sustainable annual harvests that fluctuate somewhat due to weather conditions, hunter participation, the number and density of available legal animals, the number of special permits issued for a particular GMU, etc. Hunting seasons are designed to limit extreme fluctuations in sustainable harvests from year to year, although some aspects are out of the control of the WDFW.

Damage Prevention/Mitigation:

- Farming is a vital part of Washington's economy. The lands that support this industry also provide wildlife habitat and forage opportunities for deer and elk, which may result in crop damage. Landowner tolerance for deer and elk damage depends on how quickly and effectively the WDFW responds to mitigate damage. The WDFW is committed to providing technical assistance for minimizing and mitigating damage. Damage resolution may be achieved through use of non-lethal or lethal measures. Whereas the WDFW generally promotes the use of non-lethal measures prior to lethal action, there are occasions where lethal removal may be necessary. Washington residents historically have supported the use of hunting as a tool for damage prevention and mitigation.
- Respond to wildlife damage complaints to private agricultural crop lands within 72 hours, and increase the number of WDFW agreements used to mitigate deer and elk damage issues by 10% during the period 2015-2021. Strategies to achieve this include;

- A.) Provide agriculture producers with information materials to proactively address deer and elk damage issues and to improve the WDFW's ability to respond to agriculture crop damage from deer and elk.
- B.) Promote the use of WDFW agreements to commercial landowners and lessees, and encourage non-commercial agriculture landowners to use non-lethal conflict prevention measures identified on a prevention measures checklist.
- C.) Promote participation in conflict prevention/resolution by Treaty Tribes.
- D.) Use hazing and other non-lethal measures to resolve damage; with emphasis placed in areas where the feasibility of lethal action is limited or ungulate populations are below management goals.
- E.) Encourage recreational harvest in areas with chronic crop damage.
- F.) Implement actions to encourage private landowners to consider, purchase, and use deer/elk fencing as part of their new and long-term business practices.
- G.) Expand the use of cooperative fencing projects in chronic damage areas with an emphasis on high-value crops.
- H.) Facilitate the deer/elk depredation program (including agreements, permits, and claims process) to improve WDFW's response to landowners experiencing agriculture damage.
- I.) Assess the feasibility of using partnerships and cooperators to assist with crop damage issues.
- J.) Increase the number and accessibility of crop assessors on contract statewide.
- K.) Utilize agency kill authority and depredation permits for problem crop damage areas.

Winter Wildlife Feeding Policy and Operations:

- It is the intent of the WDFW that wildlife should exist under natural conditions supported by suitable habitat. Although artificial feeding may assist in wildlife winter survival, it should not generally be considered a substitute for lost habitat and feeding shall be done only in limited situations as prescribed by WDFW Policy 5302.
- Despite this intent, the WDFW maintains some historic supplemental feeding operations for wildlife. Supplemental feeding is defined by the WDFW as regular winter feeding operations to provide feed to wildlife where adequate winter habitat is not available and feeding is necessary to support the population level as identified in a management plan, or for specific control of deer or elk damage. The best example is the Yakima elk herd where winter habitat has been eliminated. Some historic winter habitat is currently growing high-value agricultural crops. These crops are at risk of damage by elk unless supplemental feeding is provided each winter. A large percentage of what is considered historic elk winter range before European settlement has been lost or altered due to agriculture and housing development. To prevent elk in the Yakima herd from causing agricultural damage, elk fencing was constructed and a winter feeding program was established decades ago. Elk winter-feeding programs can be problematic. They are expensive and cause elk to congregate at high densities, where they have a higher potential for spreading diseases and/or parasites. Elk that are fed in the winter can also have extreme impacts on shrubs, trees, and riparian zones near feeding sites.
- FEEDING WILDLIFE DURING THE WINTER: This policy applies to all WDFW employees except if policies and procedures are in conflict with or are modified by a bargaining unit agreement, the agreement language shall prevail.
 - A.) Definitions:

- 1.) Artificial feeding: The distribution of harvested feed for wildlife through either supplemental feeding or emergency feeding.
- 2.) Emergency feeding: The occasional feeding of wildlife, which the WDFW implements due to extreme winter conditions or a disaster such as fire or drought.
- 3.) Supplemental feeding: The WDFW's regular winter-feeding operations to provide feed to wildlife where adequate winter habitat is not available and feeding is necessary to support the population level as identified in a management plan, or for specific control of deer or elk damage.
- B.) WDFW May Provide Supplemental or Emergency Feeding for Wildlife Under the following conditions
 - 1.) To prevent and/or reduce deer or elk damage to private property (agricultural or horticultural crops).
 - 2.) To support a WDFW management plan.
 - 3.) To respond to an emergency as determined by the Director or the Director's designee.
 - 4.) To allow for the regeneration of winter habitat that has been severely damaged or destroyed by disaster, such as fire or drought.
 - 5.) For WDFW approved wildlife research or wildlife capture.
 - 6.) In areas or times where hunting seasons have closed.
- C.) The Director or Director's Designee Declares an Emergency Implementation of emergency feeding operations will begin after an emergency has been declared in a specific location of the state. The Director's Emergency Feeding Advisory Team will include the Assistant Directors of the Enforcement Program, Wildlife Program, and affected Regional Director(s).
- D.) WDFW Will Use the Following Factors to Determine Whether an Emergency Exists in a Specific Location of the State
 - 1.) Weather conditions and forecast: Includes conditions such as abnormally cold temperatures, extreme wind chill, snow depth, icing, or crusting over a prolonged period of time. Evaluation may also include the forecasted weather to reflect early arrival and projected duration of severe winter weather.
 - 2.) Concentration and distribution of wildlife: Includes assessment of wildlife patterns such as animals concentrated in unusually high numbers in a specific area or located in areas where they are generally not found.
 - 3.) Access to natural forage: Assessment of availability of natural forage, including factors that may limit access (such as snow depth, icing, or crusting)
 - 4.) Disaster: Includes description of disaster (such as fire or drought) and its impact on wildlife, such as winter range that has been severely damaged or destroyed. Feeding may be an option to provide adequate time for the recovery of wildlife habitat and subsequently reduce wildlife mortality.
 - 5.) Physical condition of wildlife: Evaluation to determine the physiological condition of animals, including experienced judgment by WDFW personnel based on knowledge of local wildlife. Evaluation may include bone marrow and kidney fat analysis to evaluate body fat reserves necessary for winter survival.
- E.) WDFW May Discourage Private Feeding of Wildlife
 - 1.) The WDFW discourages private feeding of wildlife where animals may become a problem or a nuisance, cause damage to property, or present a health risk.

- 2.) WDFW will provide the public with information on the appropriate way for winter-feeding of wildlife (i.e., deer, elk, upland birds, songbirds).
 - 3.) WDFW may provide feed in those situations where private actions will complement agency staff supplemental or emergency feeding.
- F.) WDFW Will Accept Donations to Help Pay for Emergency Winter Feeding
- WDFW feeds approximately 1,200 elk yearly (but up to 8,000 elk in severe winters) at seven locations on the Oak Creek and Wenaha Wildlife Areas in an effort to offset loss of native winter ranges in the Yakima Valley.

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Attachment 3

Court Case Rulings

IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF WYOMING

WESTERN WATERSHEDS PROJECT, et
al.,

Petitioners,

vs.

VICKI CHRISTIANSEN (Chief, U.S.
Forest Service), et al.,

Respondents.

Case No: 17-CV-202-NDF

MEMORANDUM DECISION AND ORDER

Petitioners Western Watersheds Project, Sierra Club, Wyoming Wildlife Advocates and Gallatin Wildlife Association (collectively, "Petitioners") challenge the United States Forest Service's ("Service") approval of the request by the Wyoming Game and Fish Department ("WGFD") Commission to amend a special use permit to include Alkali Creek Feedground, located in the Bridger-Teton National Forest ("BTNF"), as an elk winter feeding location for use through 2028. In general, Petitioners allege the Service's 2015 Final Supplemental Environmental Impact Statement ("2015 FSEIS"), Record of Decision ("ROD"), and special use permit for Alkali Creek Feedground are contrary to the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321-4370m, and the Administrative Procedure Act (APA), 5 U.S.C. § 706. Petitioners complain that the Service's analysis of the impact of the Alkali Creek Feedground on Chronic Wasting Disease ("CWD") was faulty. Petitioners request the Court vacate and remand the

Service's decision to grant the special use permit. After considering the filings in this matter, the Court concludes the Service failed to comply with the procedural requirements of NEPA. Because of this, the Court VACATES and REMANDS the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of National Forest Service lands for winter elk feedground activities at Alkali Creek Feedground.¹

BACKGROUND

I. Statutory and Regulatory Background

A. *NEPA Procedural Requirements*

NEPA requires federal agencies to consider the environmental impacts of their actions, disclose those impacts to the public, and then explain how their actions will address those impacts. *Baltimore Gas & Elec. Co. v. Natural Res. Defense Council*, 462 U.S. 87, 103 S.Ct. 2246, 76 L.Ed.2d 437 (1983). To accomplish these goals, NEPA requires federal agencies to prepare an Environmental Impact Statement ("EIS") for all "major federal actions" that may "significantly affect[] the quality of the human environment." 42 U.S.C. § 4332(C). Among other considerations, the EIS must describe (1) "the environmental impact of the proposed action," (2) "any adverse environmental effects which cannot be avoided," and (3) "alternatives to the proposed action." 42 U.S.C. § 4332(C)(i)-(iii). An agency need not include every possible alternative, nor analyze consequences of alternatives it has in good faith rejected "as too remote, speculative, or .

¹ Nothing in this decision or order adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) special use permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim past practice. *See, e.g.*, AR17733-71.

. . impractical or ineffective.” *WildEarth Guardians v. National Park Service* 703 F.3d 1178, 1183 (10th Cir. 2013) (citation omitted). Further, an EIS must also assess the direct, indirect, and cumulative impacts of the proposed action, including unavoidable adverse environmental effects. 30 CFR § 1508.25. Cumulative impacts result from the “incremental impact[s]” of the proposed action when added to the impacts of other past, present, and reasonably foreseeable future actions, whether undertaken by other federal agencies or third parties. *Id.* at § 1508.7.

NEPA prescribes the process, not the end result, of agency action. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989). In this regard, NEPA only requires an agency to take a “hard look” at environmental consequences of its actions and to adequately disclose those impacts to the public. *Baltimore Gas*, 462 U.S. at 97-98; *Middle Rio Grande Conservancy Dist.*, 294 F.3d 1220, 1225 (10th Cir. 2002).

B. *Substantive Management Requirements for National Forest System Lands*

In the Organic Administration Act of 1897, Congress established “a limited multiple-use mandate for management of the National Forests”, authorizing use of the forests for the purposes of “improv[ing] and protect[ing] the forest[s],” “securing favorable conditions of water flows,” and “furnish[ing] a continuous supply of timber for the use and necessities of citizens of the United States.” *Wyoming v. U.S. Dep’t of Agriculture*, 661 F.3d 1209, 1221 (10th Cir. 2011) (quoting 16 U.S.C. § 475). In the Multiple-Use Sustained-Yield Act of 1960, Congress expanded that limited multiple-use mandate to include use of the national forests for the additional purposes of outdoor recreation, range, timber, watershed, and wildlife and fish purposes. *See* 16 U.S.C. § 528.

Congress delegated the forest management authority to the U.S. Department of Agriculture (“USDA”), and in turn, the Service, to manage National Forest System (“NFS”) lands consistent with Congress’s multiple-use mandate.

The National Forest Management Act, passed in 1976, instructs the Service to manage each forest unit at two different levels (programmatic level and project or site-specific level) pursuant to multiple-use and sustained yield principles. 16 U.S.C. § 1604. Specific to this case, Congress instructed the Service “[a]t the project or site-specific level, [to] implement[] the forest plan² by approving or disapproving particular projects using an environmental impact statement, an environmental assessment, or a categorical exclusion,” *Utah Environmental Congress v. Bosworth*, 443 F.3d 732, 737 (10th Cir. 2006), and to ensure that each project complies with the applicable forest plan, *see id.* (citations omitted); 16 U.S.C. § 1604(i).

By these laws, Congress intended the Service’s discretion and authority to regulate NFS lands to be “broad”. *Wyoming*, 661 F.3d at 1235. The regulatory scheme Congress enacted provides for the Service to cooperate with state and local governments in making land management decisions. *See, e.g., id.* § 1604(a) (requiring the Forest Service to develop its Forest Plans in coordination “with the land and resource management planning processes of State and local governments”); 40 C.F.R. § 1506.2(b) (providing that “[a]gencies shall cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements”); *accord id.* § 1506.2(c) (same). However, in the end, the statutory framework makes clear that

² The BTNF Land and Resource Management Plan can be found in the record at AR1-388.

Congress contemplated that all final decision-making authority rests with the Service and not in a state or local governmental body.

II. Factual Background

A. *The Jackson Elk Herd and Elk Feedgrounds in General*

The Jackson elk herd comprises one of the largest concentrations of elk in North America. AR17778. The elk migrate across several boundaries, including the BTNF, Grand Teton National Park (“GTNP”), and the National Elk Refuge³ (“Refuge”). In 2013, the Jackson elk herd had an estimated population of 11,600, with less than a ten percent interchange with adjacent herd units. AR28852; AR28974. Since 1998, wolf activity has influenced the movement of the elk herd in the Gros Ventre drainage,⁴ resulting in one large group (as much as 3,221 animals) congregating on one feedground and then moving to another feedground in the drainage. AR22037, 28774.

Wyoming first started to provide supplemental feed to elk in the early 1900’s to prevent large-scale die-offs during hard winters. AR28970. Since those early years, feedgrounds have also become an important tool for the State to reduce damage to haystack yards and winter pastures on private lands⁵ and to reduce the potential or transmission of brucellosis to livestock.⁶ AR10208. On NFS lands, elk feedgrounds are strategically placed near the boundaries to gather elk as they transition from summer

³ The National Fish and Wildlife Service (NFWS) manages the Refuge, which is part of the National Wildlife Refuge System. NFWS has an agreement with the WGFD which calls for a maximum of 7,500 elk on feed at the Refuge during any given winter. AR28971.

⁴ East of Jackson Hole lies the Gros Ventre drainage, a semiarid valley running east to west in the middle of approximately one million acres of the BTNF and Shoshone National Forest with no paved roads. AR18879.

⁵ Wyoming state law imposes liability on the WGFD Commission to pay for damages to crops caused by big game animals.

⁶ Brucellosis is a highly contagious bacterial disease that typically causes an infected female to abort her first calf following infection, and even subsequent calves. AR28977.

ranges down to lower elevations, mostly preventing elk from migrating through private lands in route to lower elevations. *Id.* Service regulations require authorization for feedground use and occupancy on NFS lands.

State-operated feedgrounds are located on BLM, Forest Service, State, and private lands.⁷ In terms of the Gros Ventre drainage and in addition to the Refuge, three state-operated feedgrounds provide supplemental winter feed to the Jackson elk herd: Alkali Creek, Patrol Cabin (on state land), and Fish Creek. AR21977. The practice of supplemental feeding is quite controversial and has been the subject of litigation. *See, e.g., Defs. of Wildlife v. Salazar*, 651 F.3d 112 (D.C. Cir. 2011); *Greater Yellowstone Coal. v. Tidwell*, 572 F.3d 1115 (10th Cir. 2009).

B. *Alkali Creek Feedground*

Alkali Creek Feedground encompasses 91 acres of NFS lands, including an elk tagging corral, a horse corral, a tack shed, a haystack yard containing two hay sheds, a water facility, and a feeding ground. AR27483. It is located about 12 miles from the Refuge, at the bottom of a topographic bottleneck that naturally limits down-river westerly elk movement. AR19144; 28853; 28877–78. This location effectively limits elk movement further down onto the Refuge, as well as onto nearby private lands. AR28878. The WGFD explained to the Service that the objectives of Alkali Creek Feedground were to prevent elk from co-mingling with livestock on private lands and prevent damage on

⁷ Currently, the WGFD manages 22 state-operated feedgrounds. AR17885. In addition, the Refuge, managed by the NFWS, engages in winter feeding.

private property.⁸ *Id.* Elk population density estimates at this feedground are quite high compared to those at the Refuge or at other WGFD feedgrounds.⁹ Wolf activity influences elk distribution in the Gros Ventre drainage, resulting in elk aggregating into one large group of up to 2,845 animals. These elk typically congregate on one feedground and move to another feedground in the drainage in response to wolf pressure. AR10208.

C. *Chronic Wasting Disease (CWD)*

CWD, the equivalent of “mad cow disease,” is a fatal prion disease of cervids, which include elk, white-tailed deer, mule deer, and moose.¹⁰ AR29034; AR10283. The disease is easily transmitted,¹¹ the prion (TSE) agent can contaminate the environment for long periods,¹² and management strategies have failed to stop its spread. *Id.*; AR28854; AR28876. As additional challenges, clinical signs of CWD are not diagnostic, there is a long incubation period, there is no treatment, there is no prevention in the sense of vaccination, and CWD is invariably fatal once clinical signs develop. AR18430. These challenges make surveillance difficult and expensive; hence the emphasis on preventing its introduction into the region. AR18431. Once this chronic disease is introduced into a

⁸ The WGFD contends that without Alkali Creek Feedground, elk-to-cattle brucellosis exposure would be much higher because of Alkali Creek’s key location in preventing elk movement downstream and onto private lands. AR28879; Doc. 63, p. 18.

⁹ A “high-density” elk population, as defined by a Rocky Mountain National Park study, is one that ranges from 10-100 elk per square kilometer. AR27771. The density for the Refuge is an estimated average of 59.3 elk per square kilometer. AR26284. Average population densities at Wyoming state feedgrounds are much higher, at nearly 2,000 elk per square kilometer. *Id.* Higher still is the estimated population density at Alkali Creek Feedground, which has been estimated between 2,470 to 8,600 elk per square kilometer. *Id.*

¹⁰ There is no evidence that the disease can be transmitted to humans or domestic livestock, AR28978.

¹¹ “Evidence suggests the disease can pass directly from infected animal to uninfected animal; by contact with soil, plants, or feed contaminated with the prion; or by direct or indirect contact with the carcass of an animal that has died from CWD.” AR19635.

¹² “The agent is extremely resistant to chemical disinfectants as well as to physical methods of inactivation. It is still not known whether environments contaminated with TSE agents can ever be completely disinfected.” AR18711.

population, “CWD can exceed natural rates of mortality, reduce survival of adult females, and decrease population growth of elk herds.” AR19277.

While CWD is well-established in south-central Wyoming and northern Colorado, it has yet to reach the Jackson elk herd. AR28876; AR28853. However, research indicates that the disease will continue to slowly spread west on a protracted time-scale.¹³ AR28876. Current models projecting the arrival of CWD in the Jackson elk herd are uncertain and predict a broad range of outcomes. AR28854.

As noted above, there is controversy about feedgrounds and their contribution to the introduction and spread of CWD.¹⁴ Petitioners refer to the joint 2007 Bison and Elk Management Plan (“2007 BEMP”), prepared by the NPS and the NFWS for the Refuge, which reported feedgrounds are a significant risk factor for the introduction and rapid spread of CWD. CM/ECF Document (“Doc.”) 43, p. 16; AR17781 (seasonal concentrations of elk create “an unnatural situation that has contributed to . . . an increased risk of potentially major outbreaks of exotic diseases,” and “damage to and loss of habitat”). Further, at least one expert with the USDA Animal and Plant Health Inspection Service (“APHIS”) thinks “long-term feedgrounds are detrimental to the health of the wildlife.” AR26800. The Service itself recognizes “that the WGFC action of feeding elk results in the artificial concentration of elk during winter and early spring that increases risk of disease transmission” (AR11108), and that prevalence of CWD is

¹³ However, a 2014 briefing paper notes “[s]cientists predict that CWD may arrive at NFS feedgrounds in the near future, as soon as within one year, subsequently affecting the ecosystem food web.” AR19635. CWD has been detected (in deer) within 60 miles of Alkali Creek Feedground. AR28853.

¹⁴ “CWD is not the only disease that could spread as a result of artificial feeding practices; there are a host of other debilitating or infectious diseases as well,” (e.g., foot rot, bovine tuberculosis, scabies, paratuberculosis, brucellosis). *Defrs of Wildlife v. Salazar*, 698 F.Supp.2d 141, 144 (D.C.D.C. 2010); AR28853.

likely “functionally related to ungulate density” (AR28876). Indeed, in its brief the Service states, “the practice [of supplemental feeding] concentrates elk during the winter months and contributes to the spread of diseases such as brucellosis and CWD.” Doc. 62, p.11. Also, the Brief of Amici Curiae Scientists discusses the very high population density estimates of elk at Alkali Creek Feedground, the behavior changes that occur as elk population densities grow (higher frequency and duration of contact), and the corresponding significant risk of disease transmission, both directly between animals and indirectly through the environment. Doc. 55, p. 15; AR26284; 24695. Further, both the NPS and NFWS agree that “elk concentrated on feedgrounds is likely to facilitate the spread of [CWD] when it reaches [the GTNP and Refuge]. As such, an overarching strategy to achieve the goals of the 2007 BEMP is to reduce reliance on winter supplemental feeding of bison and elk, and to transition to complete reliance on natural standing forage at an undetermined time in the future.” AR28174. Finally, one court found that the 2007 BEMP for the Refuge “might well have been unreasonable had the agencies categorically refused to phase out the winter feeding program in spite of all the evidence in the record about the dangers of supplemental feeding.” *Def’s. Of Wildlife v. Salazar*, 698 F.Supp.2d 141, 148 (D.C.D.C. 2010), *aff’d* 651 F.3d 112, 118 (D.C.Cir. 2011) (“There is no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System”).

Intervenor-Respondent State of Wyoming (“the State”) is a bit more circumspect in its briefing¹⁵ on the risk of CWD and feedgrounds. The State puts forward two theories – one which postulates that a feedground might attract elk from a large catchment area and congregate them, thereby increasing the introduction of CWD to a new herd area. Doc. 63, p. 20; AR29039. Another theory suggests, based on known low-prevalence rates for the disease in wild elk, there may be little to no impact on elk populations because the purpose of most feedgrounds is to intercept elk migration corridors and prevent further migration. *Id.*; AR29039; 28979. Thus, according to this second theory, feedgrounds could isolate herds from each other and limit inter-herd transmission of CWD. *Id.*

III. Procedural Background

The process resulting in the reissuance of the amendment to the special use permit at issue began prior to 2008 when the WGFD Commission asked to continue to operate (or to expand) six feedgrounds on NFS lands. AR10212. Three of these feedgrounds (Alkali Creek, Fish Creek, and Patrol Cabin, including its proposed expansion) provide supplemental feed to the Jackson elk herd in conjunction with the Refuge. AR21977. In response, the Service prepared a Final Environmental Impact Statement (“2008 FEIS”). The 2008 FEIS analyzed three alternatives: a no action alternative denying the special use request; a mid-range action authorizing only the requested feedgrounds but not the

¹⁵ The State’s brief discusses these two theories but WGFD separately acknowledges “[m]ost wildlife disease professionals consider artificial feeding a potential health threat to the fed animals due to the belief that prolonged congregation of animals around a feeding site increases the probability of disease transmission. This increased probability is generally irrespective of how the disease is transmitted, i.e., direct contact, aerosol, environmental contamination, or infected feces and urine.” AR17889.

expansion of Patrol Cabin; and an action fully granting the permit as requested. AR10217–20. As a result, in 2008 the Service granted the permit for several locations but did not authorize the Patrol Cabin expansion and postponed a decision on Alkali Creek Feedground to conduct additional analyses. AR11104-07.

Prior to the 2015 decision on Alkali Creek Feedground, the Service prepared the 2015 Final Supplemental EIS (2015 FSIES), which tiered to the 2008 FEIS. The Service limited the objective and purpose of its 2015 FSEIS to whether the Alkali Creek Feedground permit should be reissued, and if so, under what terms and conditions. AR28776. In light of this objective, the Service analyzed two alternatives in detail and eliminated alternatives from detailed consideration. AR28783–88. Important to the issues raised in this case, the Service eliminated an alternative to improve winter range on the BTNF and eliminate all elk feeding in an effort to restore historical migration routes. AR28787. As to these eliminated alternatives, the Service concluded it was already working to improve winter range through habitat projects (AR28787), and it lacked the authority to direct the WGFD to stop elk feeding because, even without the permit, the WGFD would continue to feed elk on private, State, and other federal lands. AR28787. The Service also eliminated an alternative to construct elk-proof fencing around private lands in the Gros Ventre drainage, concluding this was implausible, would fence in private property to the detriment of landowners, and would negatively affect migration routes. AR28787; 21895. As part of its analysis and specific to the spread and prevalence of CWD, the Service generated a Literature Review Technical Report. AR29160; 29034–45.

On December 1, 2015, the Forest Service amended the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk feedground activities at Alkali Creek Feedground. AR30635. The final decision added additional mitigation and monitoring requirements to address potential impacts of CWD.¹⁶ AR30636.

DISCUSSION

I. Threshold Questions

A. *Standing*

As an initial matter, the Service argues that Petitioners lack Article III standing to pursue their claims for relief because they have failed to demonstrate “redressability.” Article III standing is a “threshold jurisdictional question” that a court must decide before it may consider the merits. *Steel Co. v. Citizens for a Better Env’t*, 523 U.S. 83, 93-101 (1998).

Here, Petitioners are suing on behalf of their members. “An association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right, the interests at stake are germane to the organization’s purpose, and neither the claim asserted, nor the relief requested requires the participation

¹⁶ Use of hay obtained from CWD endemic areas is prohibited from being used anywhere on the BTNF. In addition, the following requirements were imposed on the WGFD:

- Annually test the soil on BTNF feedgrounds to monitor for incidence of CWD prions and annually submit reports of findings if a feasible and economical soil test for prions is developed in the future. Sampling methodology would be jointly determined by WGFD and the FS, in consultation with APHIS. (Note-as of 2017, this test was not economically feasible. [AR31044]).
- Annually report CWD mitigation actions that have been taken with regards to feedground management on NFS lands in western Wyoming. AR 30636; 30852.

of individual members in the lawsuit.” *Friends of the Earth, Inc. v. Laidlaw Envtl. Sevs.*, 528 U.S. 167, 181 (2000).

The only issue presented is whether Petitioners’ members would otherwise have standing to sue in their own right. To establish Article III standing, Petitioners bear the burden of demonstrating, through their members, that: (1) they have suffered an “injury in fact” that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the defendant’s challenged action; and (3) that it is likely, as opposed to merely speculative, that a favorable judicial decision will prevent or redress the injury. *Summers v. Earth Island Inst.*, 555 U.S. 488, 129 S.Ct. 1142, 1149 (2009). This requirement assures that “there is a real need to exercise the power of judicial review in order to protect the interests of the complaining party.” *Schlesinger v. Reservists Comm. to Stop the War*, 418 U.S. 208, 221, 94 S.Ct. 2925, 41 L.Ed.2d 706 (1974). Where such a “real need” does not exist, allowing courts to oversee legislative or executive action “would significantly alter the allocation of power . . . away from a democratic form of government,” *Summers, supra*, 555 US at 1149, citing *United States v. Richardson*, 418 U.S. 166, 179, 94 S.Ct. 2940 (1974) (Powell, J., concurring).

By the Amended Complaint and further supported by affidavits, Petitioners allege their members have interests in improving public land management, promoting species and habitat protection on public lands, protecting Wyoming wildlife, viewing and enjoying wildlife within the Greater Yellowstone Ecosystem, and supporting the sustainable management of fish and wildlife populations. Petitioners allege the legal violations by the Service in renewing the permit cause concrete injury to these interests,

including adversely affecting the behavior of elk and creating an enormous risk of disease transmission in the elk and other wildlife populations of interest to Petitioners' members. Petitioners further allege a vacatur of the challenged permit pending full compliance with NEPA and other legal requirements will remedy Petitioners' injuries.

The Service and the State (collectively, "Respondents") argue the Jackson elk herd will continue to use the two other state feedgrounds and the Refuge in the Gros Ventre, regardless of whether the Service issues a permit for the use of NFS land at Alkali Creek Feedground. Further, nothing in the record supports the notion that the spread of CWD can be halted. Thus, according to Respondents, a favorable decision will not afford Petitioners the kind of tangible, meaningful results in the real world necessary for Article III standing.

As to standing, the Court agrees with Petitioners. The issue isn't whether the spread of CWD can be halted, or whether WGFD will continue to use feedgrounds to manage elk in the Gros Ventre. The issues concern the long-term use of NFS lands at Alkali Creek as a feedground, and whether that use was reasonably approved as consistent with law, following the required procedures, and after a consideration of all relevant factors. Whether Petitioners' arguments are persuasive is a merits-based matter separate from standing. Petitioners need only allege the long-term use of Alkali Creek Feedground will have *some* impact on and pose *some* risk to their interests. *Consumer Data Indus. Ass'n v. King*, 678 F.3d 898, 902 (10th Cir. 2012).

Not only have Petitioners made this showing but the Service admits the alternative of not issuing the long-term use permit "would remove the small contribution of the

Alkali Creek Feedground ‘toward increased prevalence, incidence, and persistence of CWD in the Jackson elk herd unit and elk herds in Western Wyoming, should the disease become established during the period allowed by the permit.’” Doc. 62, p. 61-62 (citing AR28881). Whether Alkali Creek Feedground poses a small or somewhat larger risk is immaterial, as the risk is not speculative. *Friends of the Earth, Inc.*, 528 U.S. at 181 (the redressability prong is met when “it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision”). Therefore, Petitioners have adequately demonstrated Article III standing.

B. *Exhaustion*

The Service argues Petitioners now apparently seek a phase-out alternative at Alkali Creek Feedground (as opposed to all NFS lands), and no one raised this alternative during the administrative process. Petitioners reply by arguing the objections raised during the administrative process were sufficient to alert the agency of the need to consider the phase-out alternative.

To seek judicial relief, Petitioners were required to first raise their concerns with the agency to allow “the agency to give the issue meaningful consideration.” *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 553-54 (1978); *Department of Transp. v. Public Citizen*, 541 U.S. 752, 764 (2004); *Forest Guardians v. FS*, 495 F.3d 1162, 1170 (10th Cir. 2007). The purpose of this rule is to ensure that reviewing courts do not substitute their “judgment for that of the agency on matters where the agency has not had an opportunity to make a factual record or apply its expertise.” *New Mexico Environmental Imp. Div. v. Thomas*, 789 F.2d 825, 835 (10th

Cir. 1986). Further, claims cannot be “only vaguely and cryptically referred to.” *Ark Initiative v. U.S. Forest Service*, 660 F.3d 1256, 1261 (10th Cir. 2011) (citation omitted). However, the waiver concept behind the principle of exhaustion does not apply to problems underlying claims that are “obvious, or otherwise brought to the agency’s attention.” *Id.* at 1262 (citing *Forest Guardians v. U.S. Forest Service*, 495 F.3d 1162, 1170 (10th Cir. 2007)).

The Court again agrees with Petitioners. The issue before the public was the long-term use of NFS lands at Alkali Creek. Many comments urged leadership by the Service in phasing out “artificial feeding” on NFS lands, and then focused on reasons why the Alkali Creek location is significant to the Jackson elk herd (e.g., location and migration patterns). *See, e.g.*, AR19144. Others commented about the need to transition elk to natural forage by “phasing out specific feedlots.” AR26847. The NFWS and NPS specifically recommended the Service consider, *for the Alkali Creek Feedground permit*, the goal of reducing reliance on winter supplemental feeding by transitioning elk to complete reliance on natural forage at an undetermined time in the future. AR28175. Then, prior to the decision on the permit, a project leader at the Refuge forwarded to the Service the district court and circuit court decisions concerning supplemental feeding on the Refuge, and recommended the Service “pay close attention to” portions of the circuit court opinion and how the decisions might have been otherwise “[i]f we were refusing to eventually end supplemental feeding.” AR34191-218. The Service responded, “Something to consider when drafting the decision for Alkali.” AR34191. With this record, there is absolutely no merit in suggesting the agency’s attention was not drawn to

a phase-out/transition alternative at Alkali Creek. Exhaustion does not bar any of Petitioners' claims.

II. Standard for Review

Under the APA, courts "shall . . . hold unlawful and set aside agency actions, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," or "in excess of statutory jurisdiction, authority, or limitations." 5 U.S.C. § 706(2)(A), (C). An agency's decision is arbitrary and capricious if the agency (1) "entirely failed to consider an important aspect of the problem," (2) "offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise," (3) "failed to base its decision on consideration of the relevant factors," or (4) made "a clear error of judgment." *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683, 704 (10th Cir. 2009) (quoting *Utah Envtl. Cong. v. Troyer*, 479 F.3d 1269, 1280 (10th Cir. 2007)).

"The APA's arbitrary and capricious standard is a deferential one; administrative determinations may be set aside only for substantial procedural or substantive reasons, and the court cannot substitute its judgment for that of the agency." *Utahns for Better Transp. v. U.S. Dept. of Transp.*, 305 F.3d 1152, 1164 (10th Cir. 2002) (citation omitted). "A presumption of validity attaches to the agency action and the burden of proof rests with the appellants who challenge such action." *Citizens' Comm. to Save Our Canyons v. Krueger*, 513 F.3d 1169, 1176 (10th Cir. 2008) (quoting *Colo. Health Care Ass'n v. Colo. Dep't of Soc. Servs.*, 842 F.2d 1158, 1164 (10th Cir. 1988)). However, this presumption

does not shield the agency from a “thorough, probing, in-depth review.” *Olenhouse v. Commodity Credit Corp.*, 42 F.3d 1560, 1574 (10th Cir. 1994). Further, the “[d]etermination of whether the agency acted within the scope of its authority requires a delineation of the scope of the agency’s authority and discretion, and consideration of whether on the facts, the agency action can reasonably be said to be within that range.” *Id.*

III. Compliance with NEPA

A. *Reasonable Range of Alternatives*

Petitioners argue the Service failed to examine a reasonable range of alternatives in violation of NEPA. In support of this argument, Petitioners contend the Service improperly analyzed only two alternatives in detail – the “no action” alternative and the grant of the permit alternative – and failed to offer a reasoned explanation for its refusal to examine phase-out alternatives.

In response, the Service argues it reasonably eliminated the phase-out alternative from further study because it does not have the authority to direct the WGFD to stop winter feeding and that the State intends to continue to feed elk on private, state and other federal lands. AR28787; 30642. The Service refers to *WildEarth Guardians*, 703 F.3d at 1184, in support of the proposition that, where state agency responsibility for management of wildlife is necessary for an alternative to be feasible, NEPA does not force a federal agency to consider alternatives rendered infeasible by the unwillingness or lack of cooperation of the responsible state agency. In addition, the State argues any action short of authorizing the feedground at Alkali Creek with mitigation and

modifications would have been a denial of the special use permit, which was the second alternative analyzed. Thus, the Service properly considered a reasonable range of alternatives.

In reply, Petitioners argue reliance on *WildEarth Guardians* is misplaced as the record here provides ample support for the practicability of phase-out alternatives, even without the support of the WGFD. Petitioners argue that despite this record, the Service relied solely on WGFD's stated lack of support to reject the phase-out alternative, without any analysis as to whether support could be negotiated or was even necessary.

WildEarth Guardians recognizes the "rule of reason" in the agency's choice of alternatives to include in its analysis. *Id.* at 1183. That case concerned the choice by the NPS to take off the table the option of reintroducing a naturally reproducing wolf population as an alternative in preparing a new elk and vegetation management plan for Rocky Mountain National Park. The "natural wolf option" was not eliminated based on state agency jurisdiction because wolves could be reintroduced in the park without state approval. *Id.* at 1185. The option was eliminated because of feasibility (small size of the park, near certainty that wolves would leave, and the resulting need for state agency management of wolves outside the park).

While instructive, *WildEarth Guardians* is not controlling. Notwithstanding the Service's efforts to argue otherwise, the Court is not dealing with jurisdictional issues surrounding the management of elk. The Court is presented with a straight-forward request by a state agency to continue the long-term use of facilities on NFS lands at Alkali Creek as an elk winter feedground. Commenters asked the Service to improve

winter range on the BTNF, then eliminate all elk feeding and restore historical migration routes. AR27484. Obviously, the commenters focused on function – the artificial feeding of elk – which the Service seized upon and then readily dismissed by saying it “does not have the jurisdiction to stop elk feeding.” AR27485. But the “rule of reason” controls. Was it reasonable, within the agency’s jurisdiction, and feasible for the Service to consider a shorter-term, reduced impact, and/or phase-out alternative for the use of Alkali Creek as a feedground, while taking steps to transition elk to natural winter range and support historical migration routes? The answer to this question was and is yes. The Service’s focus on jurisdiction *when the issue concerns WGFD’s use of NFS land*, was not a reasoned explanation for its refusal to examine phase-out alternatives.

Further, the argument that any action other than wholesale approval would be equivalent to the no-action alternative is unsupported by the record. While the State makes this argument, there is no citation to the record of any affirmative statement by the State that something other than approval of long-term use would result in the State ceasing its winter feeding activities at Alkali Creek. Indeed, since the Service’s action authorizing the existing 2008 long-term special use permit for other feedgrounds, the Alkali Creek Feedground has operated under temporary (one year) special use permits. *See, e.g.*, AR17733-71.

B. “*Hard Look*” at Environmental Consequences

Petitioners argue the Service failed to take a “hard look” at the environmental consequences of artificial feeding and its impacts on the introduction and spread of CWD in the Jackson elk herd, even if the precise extent of the effect is less certain. Petitioners

claim the Service “washed its hands” of the problem by insisting the responsibility for managing the disease ultimately fell to WGFD, and they provide as an example, the Service’s action in issuing the 2015 FEIS and draft ROD prior to the finalization and approval of WGFD’s CWD Management Plan. Doc. 42, p. 43-44. Petitioners claim the literature review and deference to WGFD did not constitute a meaningful analysis of how Alkali Creek Feedground *itself* contributes to the risk of CWD introduction and spread, especially given Alkali Creek’s unique location which forms a natural bottleneck for elk movement in the drainage that is the “most likely point of entry” for CWD into the Jackson elk herd.¹⁷ AR28884; 18851; 18706. In short, Petitioners argue the Service never explained why it could not even attempt to use the well-established methods described in the scientific literature to quantify the impacts expected from the introduction of CWD. *Id.* at p. 54.

In response, the Service argues it took the requisite hard look at the likely impacts of CWD, pointing to the white paper prepared by the Service synthesizing the best available science on CWD in elk. AR29033-45. The Service’s analysis revealed that, while “models projecting the arrival and subsequent transmission of CWD in the Jackson Hole area are highly uncertain[,] ... it is probable that [CWD] will spread throughout Wyoming.” AR28853. The Service continued by focusing on the Jackson elk herd and concluded “[b]ecause other feedgrounds in western Wyoming and the Gros Ventre drainage are likely to remain operational in the absence of elk management at Alkali

¹⁷ The Service takes issue with this statement arguing the references are not peer reviewed and none of the best available science in the record supports the proposition that the Gros Ventre drainage is the most likely entry point for CWD into the Jackson elk herd. Doc. 62, p. 63, n. 18.

Creek Feedground, the timing and arrival for new diseases such as CWD in the drainage and region is not likely to be greatly affected by elk management at Alkali Creek itself.” AR28876. Further, the Service discussed how “Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming,” [AR28884] while also including the opposing discussion that Alkali Creek Feedground “would be less likely to become contaminated with prions” under the no-action alternative. AR28879. The Service also concluded that “feeding operations at Alkali Creek would, to a minor extent, contribute to population-level effects” AR28886. Finally, the Service argues its decisionmaker was aware of the risks posed by CWD. AR 30638 (“I clearly understand and acknowledge that the Commission’s action of feeding . . . increases risk of disease transmission”). The Service argues this satisfies NEPA’s procedural requirement that the agency take a hard look at the environmental consequences of the proposed action, disclose those consequences, and apply the best available scientific information. Finally, the Service disagrees with the argument that it should have waited until WGFD finalized its new CWD management plan as no state management plan has been able to stop the spread of CWD and conditions were imposed allowing revocation if the plan was insufficient. AR29026-27.

The State advances many of the same arguments as the Service, in support of the claim that the agency took the requisite hard look at the effects common to both alternatives. The State argues Petitioners disagree with the Service over the impact of a single feedground on disease transmission and the conclusion of the technical report. However, disagreement is not the same as not taking a hard look. The State argues the

Service adequately obtained expert opinions in the form of reports and studies, and reviewed and synthesized the reports and studies into a single report, which was then peer reviewed. AR29160; AR29034-45. Further, the Service gave careful scientific scrutiny to the material, responded to all legitimate concerns that were raised, and fairly found the science regarding the influence of a single feedground to be overall – inconclusive. According to the State, this complies with NEPA’s requirement that the agency take a hard look at the environmental consequences before taking a major action.

NEPA requires an agency look at the environmental impact of the proposed action, any unavoidable adverse environmental effects, the alternatives to the proposed action, the relationship between local short-term uses of man’s environment, and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources. 42 U.S.C. § 4332(C). A court determines whether the agency “took a ‘hard look’ at information relevant to the decision,” *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 704 (10th Cir. 2009), by asking whether the agency “entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.” *Biodiversity Conservation Alliance v. Forest Service*, 765 F.3d 1264, (10th Cir. 2014) (citation omitted). NEPA does not impose substantive limits on agency conduct. *Robertson v. Methow Valley Citizens’ Council*, 490 U.S. at 350. “Rather, once environmental concerns are ‘adequately identified and evaluated’ by the agency, NEPA places no further constraint on agency actions.” *Friends of the Bow v. Thompson*, 124

F.3d 1210, 1213 (10th Cir. 1997) (citation omitted). Nonetheless, NEPA's "action-forcing" purpose "gives the public the assurance that the agency 'has indeed considered environmental concerns in its decisionmaking process.'" *Robertson v. Methow Valley Citizens' Council*, 490 U.S. at 349 (citation omitted).

The record reflects the Service took a hard look at certain environmental impacts of the proposed action and no-action alternative. However, the Service's failure to consider a reasonable range of alternatives results in the conclusion that the Service failed to take a hard look at the alternatives to the proposed action, some of which might mitigate impacts.

Further, while not a specific focus of the arguments by the parties, there is little to indicate the Service took much of a look at the relationship between a stepped, phase out approach compared to longer-term use of the site as a feedground, and the maintenance and enhancement of long-term productivity. There is also little to suggest the Service took a hard look at the irreversible and irretrievable commitment of resources. Both considerations are required by 42 U.S.C. § 4332(C). There is no question that Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat. However, the Service's only analysis and evaluation was of the longer-term use of the site as a feedground and the no-action

alternative, without any evaluation of reduced impact or phase-out alternatives, or how these various alternatives affect *all* the considerations required to be evaluated under 42 U.S.C. § 4332(C).

Finally, there is no question that the Commission overseeing the WGFD decides whether or not to feed elk in the winter. However, this does not excuse the Service from taking a hard look at the consequences of *its* action to allow the long-term use of NFS lands at Alkali Creek as a feedground. Relevant to the Service (and not simply within WGFD jurisdiction) are the problems that artificial feeding increases the risk of disease transmission, increases the risk that the site will be contaminated with prions for a very long time, and also appears to blindly support WGFD's goal of managing elk movements to prevent commingling with livestock and danger to agricultural land, notwithstanding the BTNF Land and Resource Management Plan that includes a stated goal to "[h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients." AR119. Based on the record, feedgrounds seem to undermine this goal. For all these reasons, the 2015 FSEIS is inadequate in that it fails NEPA's hard look requirement.

C. *Cumulative Impacts*

Petitioners argue the Service failed to meaningfully analyze the cumulative impacts of the region's feedgrounds on wildlife resources, in violation of NEPA. Specifically, Petitioners complain that the Service refused to examine the impacts of Alkali Creek Feedground in conjunction with the other feedgrounds located in the BTNF, or the artificial feeding program conducted by the NFWS on the Refuge. Rather, the

Service restricted its evaluation of cumulative impacts to include effects only from Alkali Creek and the other feedgrounds in the Gros Ventre drainage (Fish Creek and Patrol Creek), thereby severing analysis of this action's impacts from the effects of other nearby feedground operations impacting the same elk herd, as well as the effect of the 2007 BEMP on the Refuge which anticipates a step-down approach to phase out artificial feeding. Petitioners argue these feedgrounds are all part of an integrated program which cumulatively impacts the Jackson elk herd, and the restricted analysis by the Service violates NEPA.

In response, the Service argues that it considered the threat of CWD to the Jackson elk herd and considered the additive contribution of the Alkali Creek Feedground to that threat. The Service also notes that its analysis supplements the 2008 FEIS, which analyzed the impacts of the other feedgrounds in one document and cannot now be challenged. According to the Service, it was not required to redo that analysis. As to the 2007 BEMP, the Service argues it incorporated that plan by reference, and discussed how use of the Alkali Creek Feedground will lower the numbers of overwintering elk at the Refuge. Further, no framework has yet emerged for transitioning from winter feeding on the Refuge to greater reliance on natural forage. Absent a framework, the Service argues it cannot consider specific impacts to Alkali Creek.

As to cumulative impacts, the Court again agrees with Petitioners. The finality of the 2008 FEIS does not eliminate the need for the Service to consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission and mitigation

since the 2008 analysis. Also, the Service need not await a specific framework for the implementation of the 2007 BEMP, but may reasonably rely on the good faith representation that the agencies aim to implement the transition sometime during the life of the Alkali Creek Feedground permit.¹⁸ This requires the Service to examine how granting the permit through 2028 or some shorter term would interrelate with, potentially support, or potentially undermine, the objectives of the combined agency work under the 2007 BEMP.

IV. APA

Petitioners argue the permit and record of decision violate the APA because they fail to analyze the factors set forth in federal laws governing national forests and instead impermissibly defer to WGFD's objectives. Given the conclusion that the Service failed to comply with NEPA procedural requirements, the Court concludes the agency action violated the Administrative Procedure Act.

CONCLUSION

The Service approved WGFC's special use permit for the Alkali Creek Feedground without complying with the procedural requirements of NEPA. Accordingly, the Court VACATES the Service's decision to amend the existing 2008 long-term special use permit to reauthorize the continued use of NFS lands for winter elk

¹⁸ The goal in the 2007 BEMP is for a progressively managed phase-out of artificial feeding and transition to natural forage on the Refuge over a fifteen-year period (ending 2022), compared to the term of the amended 2008 special use permit which is twenty years (ending 2028). AR10393-4; 11104.

feedground activities at Alkali Creek Feedground, and REMANDS to the agency for further proceedings consistent with this decision.¹⁹

Dated this 14th day of September, 2018.



NANCY D. FREUDENTHAL
UNITED STATES DISTRICT JUDGE

¹⁹ Nothing in this decision adjudicates, directs, or prohibits the issuance by the Service of temporary (one year) Special Use Permits to the WGFD Commission for Alkali Creek Feedground, as has been its interim practice. *See, e.g.*, AR17733-71.

Attachment 4



What Happens When Elk Feeding Ends

Prepared for Wyoming Wildlife Advocates

*by Lloyd Dorsey
Policy Director*

January 2015

According to public comments to Environmental Impact Statements ^{1 2}, many wildlife enthusiasts see the wisdom of carefully phasing out winter elk feeding to help ensure healthier herds in the future. Some stakeholders, however, both individuals and groups, are uneasy or opposed to ending a century-long practice of artificially feeding thousands of elk hay or alfalfa pellets on 23 feedgrounds in three Western Wyoming counties (Sublette, Lincoln and Teton) during the winter months.

This report lists some of the oft-repeated concerns over the ramifications of ending feeding followed by responses to those concerns. End notes contain the sources of supporting information to the responses, or additional explanation, as needed.

###

1. Eliminating elk feedgrounds is "foolishly impractical"³.

There are several examples where ending or significantly reducing winter elk feedgrounds has already been successfully accomplished. Those successes were in Yellowstone National Park in 1937⁴; eastern Idaho, beginning in 1998⁵, North Piney in Western Wyoming⁶, and the Deseret Ranch in Utah⁷. In fact, *it is out of the ordinary* for Rocky Mountain elk to be artificially provisioned during winter months (or any months) throughout its range in North America. From New Mexico north through all the Rocky Mountain States and Canadian provinces to the Yukon Territory, elk range free year round. Indeed, only 3 percent of Rocky Mountain elk are artificially fed⁸. Therefore, the most common and "practical" method of managing wild elk is to allow them to range freely, not to concentrate them on small plots of ground and feed them hay or alfalfa pellets. *Practically speaking, Rocky Mountain elk do well without artificial feeding during Rocky Mountain winters and all other seasons.*

2. Most of the elk winter range in Jackson Hole and throughout Western Wyoming has been developed, no longer exists, and therefore could not sustain many elk.

The three counties where elk are fed during winter in Wyoming, (Sublette, Lincoln and Teton) are comprised of 83 percent federal land. Their combined acreage is almost 8.6 million acres with more than 7 million acres managed by the National Park Service, the US Forest Service, the US Fish and Wildlife Service or the Bureau of Land Management ⁹. There exists today approximately 1.74 million acres of big game winter range designated by the Wyoming Game and Fish Department and the federal agencies in these three counties alone^{10 11 12 13}. In adjacent counties there is even more winter range^{14 15}. Despite some development on these public lands for energy (oil and natural gas) and other uses, the majority of these winter ranges are undeveloped and available for winter elk, deer, moose and pronghorn. Indeed, these critical habitats have some better protections for wildlife than they did during settlement times in the late 19th and early 20th centuries. Federal agencies and the WGFD restrict or prohibit human activities on winter ranges to protect wildlife.

Teton County alone is comprised of 97 percent federal land. Of the remaining 3 percent, about 79,000 acres of private lands, 20,000 acres are under conservation easement for protection of wildlife habitats^{16 17}. Essentially, Teton County is about 98 percent protected wildlife habitat. There is ample room for wildlife to roam free.

The Gros Ventre Valley east of Jackson Hole contains 100,000 acres of designated winter range on US Forest Service lands ¹⁸. Hundreds of thousands of acres of wind-swept public, private and tribal land in the Upper Wind River Valley around Dubois, Crowheart, Pavillion and Riverton, provide winter range for all big game. In Eastern Idaho, around Montpelier, Idaho Falls, Ashton, and Island Park, the Idaho Fish and Game Department manages designated winter ranges for thousands of elk and other big game ¹⁹.

The 20 million-acre Greater Yellowstone Ecosystem is comprised of 80 percent federal lands with vast areas of winter ranges where big game and their habitats thrive far better than on feedgrounds.

Wyoming has the fewest residents of any state in the U.S. and its three feedground counties are no exception. Wyoming is approximately the same size as Colorado ²⁰, but Colorado contains a human population nine times that of Wyoming ²¹. Colorado also has nearly 3 times the amount of elk as Wyoming ²². Despite the large human population, three times the number of elk, and twice as many cattle in Colorado as Wyoming, Colorado doesn't feed any of their 280,000 elk during winter. Nor does Montana or almost any other jurisdiction in the Rocky Mountains.

Because of exceptionally successful conservation efforts during the past decades, bountiful herds of elk and other big game throughout the Greater Yellowstone Ecosystem use protected winter ranges including those in western Wyoming.

3. Balancing elk numbers with available habitat will require reductions of 60 percent of the elk numbers.

Believing that virtually all elk must be on feedgrounds or perish has been proven incorrect for generations. We know that during the past 100 years elk have recolonized or have been

reintroduced to their historic ranges by the hundreds of thousands. There are now more than 850,000 elk roaming private and public lands from New Mexico to the Yukon Territory, and nearly everywhere in between²³.

The purpose of ending artificial feeding is to spread elk out, and allow them to roam naturally and be healthy. Therefore wintering elk numbers in Jackson Hole and immediately around feedground locations in the three Western Wyoming counties will certainly decrease. Areas like the Gros Ventre Valley, however, are underutilized and can winter more elk than at present ²⁴. Wyoming's elk population is at 112,000, and the objective is only 81,275, so Wyoming is already 37 percent over objective²⁵. Most of the Montana and Idaho hunt areas within the Greater Yellowstone Ecosystem are also at or over their objectives for elk^{26 27}. It is generally accepted that there are more elk in the region than managers want.

The Jackson Hole area, consisting of the Buffalo Valley, Gros Ventre Valley and the Jackson Hole valley itself, can winter approximately 8,850 elk (median between low estimates of 7,600 to upper end estimates of 10,100), plus other big game, without artificial feeding ^{28 29 30 31 32}. Without artificial feeding, there will be abundant populations of healthier free-ranging elk in all seasons for the public to enjoy.

4. Biologists say that half of the elk will starve to death in a harsh winter if feedgrounds are phased out.

What killed off most of the elk herds a century ago were bullets, not starvation. Some winter loss of elk and deer is natural in the Rocky Mountains, and it always has been. If feedgrounds were necessary to maintain thousands of elk, every state would need them. They don't. If feedgrounds were phased out, particularly if elk numbers were reduced first through hunting and predation below the carrying capacity of regional winter ranges, the elk would spread out and thrive. Other regions of the Rocky Mountains have similar climates to Teton, Lincoln and Sublette counties, and their elk range freely and remain healthy during winter. Moose, bighorn sheep, pronghorn antelope and deer also range freely without supplemental feed and do well.

Some small percentage of winter loss is normal and helps the herds remain healthy. Once the herds are reduced close to the carrying capacity of the surrounding or migration-distance winter habitats, feeding can end. Elk, deer and other wildlife have proven that they can find protected winter ranges as long as we protect the migration corridors to get there. The elk will do well without feedgrounds, just as they do everywhere else in North America.

5. If elk aren't fed during winter, they will be in neighborhoods and destroy flowers, shrubbery, trees and lawns.

As with other wildlife in the Rocky Mountain states and Canadian provinces, some elk will roam into settled areas. Fortunately, by far the greatest amount of their habitat is peripheral or some distance away from towns and neighborhoods. Wildlife prefer to avoid people and neighborhoods, and will use habitat farther away for the most part. Additionally, the Rockies are sparsely settled; there's significantly more open, undeveloped land than developed land. But the occurrence of some wildlife is not uncommon in settled areas in the Rocky Mountains and all neighborhoods coexist well with wildlife. In fact most people value the wildlife in their areas. If people don't want their shrubs disturbed by moose, deer, or elk, they can fence around them. Many people and towns do

this already. If palatable plants are off limits, or aren't planted, in neighborhoods, the elk, moose and deer will move through onto large expanses of habitat that characterize the Rocky Mountain states and Canadian provinces. There are many resources, such as the 2011 Teton County Rural Living handbook, that counsel homeowners about coexisting with wildlife and how to protect their landscaping³³.

6. If elk aren't confined to feedgrounds, they will get in rancher's haystacks and mingle with cattle and other livestock.

Virtually all haystacks in the feedground counties, and surrounding counties in various states, are already fenced to prevent deer, elk and moose from getting the hay. That's the normal way to store hay outside in the Rocky Mountains and has been for generations. State wildlife agencies and conservation districts typically offer materials free to ranchers to fence their haystacks. Fencing around cattle and horse winter feedlines is also common throughout the Rocky Mountain states and Canadian provinces. Teton, Sublette and Lincoln county livestock owners can easily follow suit. Money is available from the above sources as well as the Wyoming Wildlife and Natural Resource Trust (WWNRT) account and other non-profits to help the livestock owners pay for the fences. One of the purposes of the WWNRT is to mitigate conflicts and reduce the potential for disease transmission between wildlife and livestock, so this is a perfect execution of this state fund that pays out hundreds of thousands of dollars annually³⁴.

Idaho legally requires livestock owners in the brucellosis endemic area of eastern Idaho to fence in their haystacks, as well as cattle and horse winter feedlines to prevent comingling with elk³⁵. This is a widely practiced and practical way to coexist with free ranging elk and other wildlife especially where disease transmission is of concern.

7. If elk aren't maintained on feedgrounds by the tens of thousands, predators may go hungry. If predators are hungry, they will threaten people.

There are hundreds of thousands of elk, deer, moose, bighorn sheep, antelope and buffalo in the Greater Yellowstone Ecosystem. Most of them are not on feedgrounds. As long as this is the case, apex predators will never suffer from lack of prey. The American people have done an exemplary job of protecting or restoring prey and predator wildlife species in this region, and this is undeniably the pattern for the future. Bears, wolves and mountain lions have never posed a significant threat to people, and people know how to behave if ever confronted by these wildlife species that they value (e.g., bear spray). Each year in the U.S., horses kill 20 people; cows kill 22; pet dogs kill 30 to 35 people every year in the U.S.³⁶. Yet, no one thinks that horses, cows, or dogs-as species- pose a threat to humans.

8. If elk aren't sustained by feedgrounds, and take sanctuary within neighborhoods, predators will follow.

This is quite true. Even when elk are mostly kept for the winter months on feedgrounds in Jackson Hole, some elk (and deer and moose) find sanctuary in neighborhoods, and a very few predators follow and scare some people. Unfortunately, the WGFD then either relocates or kills the "offending" cougar, wolf or bear. All that's needed are for neighborhoods not to plant palatable plants, or high-fence those shrubs in proximity to their houses. Elk and deer will then pass through

and not stay near homes and attract predators. It works. In April 2003 Teton County passed an ordinance prohibiting feeding of deer and elk precisely because of this concern ³⁷.

9. Reducing the Jackson (or any feedground) elk herd, or not having thousands of elk on feedgrounds consistently in view of tourists, will harm the local economy.

Wildlife populations naturally wax and wane in numbers according to natural influences. Over the span of decades, some elk herds and other wildlife species have decreased in Yellowstone National Park, some herds and species have increased. Tourism hasn't been harmed. Jackson's economic indicators are increasing and there are no indications that fewer elk in one location (e.g., on the Elk Refuge during winter), or more elk in other locations (e.g., on native winter ranges) will cause our local economy any harm. The Jackson Elk Herd exceeded 18,000 in the mid 1990's ³⁸, and has decreased to approximately 12,000 in 2013 ³⁹, and the local economy nevertheless has improved ⁴⁰.

What *may* someday affect the wildlife viewing and hunting segments of the tri-county area of Western Wyoming would be the loss of elk (and deer and moose) to the long-term persistence and high prevalence of chronic wasting disease engendered by the dense concentrations of elk on feedgrounds. The experts tell us to phase out feedgrounds, spread elk out, conserve abundant predators to help keep the herds spread out and healthy, so disease doesn't cause the loss- and prevent the recovery- of our wildlife ^{41 42 43}. To protect the wildlife-dependent sectors of our economy, phasing out feedgrounds will pay long-term dividends.

10. If thousands of excess elk aren't kept on feedgrounds, providing abundant hunting licenses, the Wyoming Game and Fish Department funding will suffer.

The WGFD is already experiencing a fiscal crisis despite managing 22 feedgrounds and providing support to the National Elk Refuge. ⁴⁴ The department could save more than \$2.13 million dollars each year by closing the feedgrounds, which are the most expensive elk management system in North America. The WGFD is desperately seeking alternative sources of funding, and would do well to invite the non-hunting wildlife enthusiasts into their tent.

Fewer elk do not mean fewer licenses or less revenue. Since Wyoming's elk hunter success rate is more than double that of surrounding states, more than 40 percent success vs. approximately 20 percent and less ^{45 46 47}; the WGFD could still sell the licenses and allow the success rate per license sold to decline a bit towards the success standards of other Rocky Mountain states. There will still be abundant hunter opportunity and success.

11. If elk aren't kept on feedgrounds, they will cause havoc on our roads.

Since most surrounding states have more elk than Wyoming does, and since the number of elk on feedgrounds during winter is a small segment of the region's elk numbers, the risk of elk on roads if feedgrounds are phased out isn't going to be affected one way or another. All Rocky Mountain communities deal with deer, elk and other wildlife crossing their roads and in their neighborhoods. That's the norm throughout the Rockies. We have long perfected the tools to mitigate risks to wildlife and people alike.

12. Elk can't learn to migrate, so they must be kept on feedgrounds.

Nonsense. Most of the elk in the Rocky Mountains are descendants from elk transplanted into areas they'd never seen in the early 20th century. The elk in Colorado and New Mexico, Utah, Idaho, etc., are descendant from elk transplanted from Wyoming. And yet most of them migrate twice a year, sometimes only a few miles, sometimes many miles. The behavior is innate to elk and they readily make these choices to move from harsh climes to less harsh, if we manage their habitats well. Throughout the Rocky Mountains, we obviously have managed herds, their habitats and migration routes well since elk populations grew from about 50,000 at the beginning of the 20th century to nearly one million today. Protected lands are not only vast, but also connected. That means elk and other migratory wildlife can disperse across seasonal ranges, if we allow it. In Western Wyoming, mule deer, pronghorn, and some elk migrate significant distances between summer and winter ranges ⁴⁸. Such healthy behaviors are readily learned by new generations of deer, elk and pronghorn if the choices are available to them. That is why the conservation of these species has been so successful over the past century in the Rocky Mountains and beyond.

13. What happens in the future if elk aren't fed?

Elk will be healthier and more spread out. The Jackson Elk Herd, and each currently fed elk herd, will likely have a larger migratory component than today. Some elk that summer in and around Jackson Hole, including elk in the Gros Ventre Mountains, the Tetons, and southern Yellowstone Park, will spend some winters outside the Buffalo Valley, the Gros Ventre Valley and Jackson Hole, and then migrate back into lush summer ranges each May. That's what many elk did for thousands of years. Some elk will also choose to spend winters roaming on the approximately 150,000 acres of winter range in the Buffalo, Gros Ventre and Jackson Hole valleys. ^{49 50} Since winter ranges and migration routes are functional and mostly protected, the elk will have choices that are healthy and sustainable.

We don't have far to go to restore the natural historic, healthy patterns that elk and other wildlife evolved with. The basic necessities are in place in the form of large protected landscapes. We developed the appropriate sciences in the past century. Science informs us about the best ways to manage for healthy wildlife, which includes having predators on the landscape. Predators help keep the herds dispersed and healthy.

14. Conclusion:

Given the impending arrival of CWD into the three Western Wyoming counties with elk feedgrounds, given the fact that most other jurisdictions manage elk as free ranging herds ⁵¹, given that elk do well in Rocky Mountain winters without being artificially fed, given that we have perfected the tools such as fences and over or under passes to mitigate consequences of free-ranging elk, and given the modern science and the experts supporting ending feedgrounds, it would be "foolishly impractical" not to carefully but quickly phase out elk feedgrounds, before it's too late.

Endnotes

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- ¹⁵ Bureau of Land Management, 2011. Draft Resource Management Plan and Environmental Impact for the Lander Field Office Planning Office, September 2011. Map 53 Biological Resources Mule Deer Crucial Winter Range All Alternatives. Lander, WY.
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- ¹⁷ Jackson Hole Land Trust, 2014. Properties Map available at <http://jhlandtrust.org/> Last viewed December 16, 2014. Jackson, WY.
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- ²⁰ National Geographic Road Atlas, 2012. Colorado: 104,091 sq. miles, p.135; Wyoming: 97,809 sq. miles, p. 142.
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Attachment 5
Chronic Wasting Disease Literature Review Technical Report

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Abstract

Chronic wasting disease is an invariably fatal prion disease of cervids. There has been a recent increase in studies regarding the transmission and impacts of CWD in free-ranging and artificially contained elk and deer. Research indicates that CWD is easily transmitted between and among cervid species, can contaminate the environment and subsequently infect new individuals, and can impact cervid populations. Population level impacts have been noted in free-ranging elk and deer after a time lag. Such population level impacts arise from alterations in reproduction rates, increases in individual mortality from CWD, and increased susceptibility to other agents of mortality. CWD is lethal across all age groups. Management options for controlling CWD arrival and spread are very limited, and a review of relevant literature indicates that congregating elk at very high densities at feedgrounds is likely to increase the spread of the disease because of an increased number and rate of potentially infectious contacts with infected individuals and an infected environment.

Introduction

Chronic wasting disease (hereafter CWD) is an incurable, invariably fatal neurological disease of cervids (deer, elk, and their relatives) caused by a misfolded version (PrP^{CWD}) of the normal prion protein (PrP). PrP^{CWD} are believed to propagate by inducing the formation of more PrP^{CWD} from PrP. The abnormal or misfolded form of the prion protein converts the normal prion protein into the infectious form. During the 19-40 month course of CWD the prions cause lesions in central nervous system (CNS) tissues thereby producing visible behavioral and physiological alterations in the last months before death from CWD.

CWD is highly transmissible via multiple direct and indirect pathways between and among cervid species. Infected animals can directly infect nearby animals by contaminated nasal or oral secretions. Additionally, prions that are shed into the environment from infected animals in bodily fluids and soft tissues before and after death can infect other animals well after the infected animal has moved or died. It is likely that an animal infected with CWD would have been exposed to the infectious agent through more than one pathway. CWD can persist in the environment well after the infected animal has died. In this way, CWD differs from most other wildlife diseases in that environmental transmission plays an important role in the dynamics of the disease, something that isn't common for bacterial or viral diseases, which tend not to persist in the environment.

The typical course of CWD from infection to death in elk involves 2 stages, incubation and clinical (Argue *et al.* 2007, Figure 1 below). During the incubation stage the animal appears to be behaviorally and physiologically normal, once the animal becomes visibly affected the clinical stage begins. The change in behavior is associated with physiological changes in the CNS of the animal, most notably the

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brain. The length of the incubation stage can vary from 20-36 months based on the genetics of the infected elk (Hamir *et al.* 2006) and the exposure dose. Published and unpublished data indicates that depending on the genetics of an infected elk the incubation period can last for years or be very short (Williams *et al.* 2014 and reference therein). The incubation period is broken into two parts. During the latent period the animal is acting normally and is not shedding prions. At some point, typically around 6 months prior to clinical onset, the animal begins to shed prions in saliva, nasal mucous, urine, feces, and milk (Argue *et al.* 2007, Saunders *et al.* 2012). Prions shed in this manner are able to infect both nearby animals and the environment. Some animals perish as soon as the clinical stage begins, while others last for 12 or more months before death (Miller *et al.* 1998). It is possible for an infected animal to die from CWD infection alone. However, CWD infections that have become clinical have been shown to increase an animal's susceptibility to other agents of mortality including those from predators (Miller *et al.* 2008, Krumm *et al.* 2009), vehicle collisions (Krumm *et al.* 2005), stochastic events (extreme weather and inability to find food) (Williams 2005), and other diseases. Animals that are in the clinical phase are still shedding prions. During the clinical phase prions also accumulate in muscle, CNS, and other soft tissues (including skin and antler velvet) (Saunders *et al.* 2012). After a clinical or preclinical CWD infected animal dies the carcass can be a significant source of prion infection to other animals and can contaminate the environment for many years (Miller *et al.* 2004) (see discussion of environmental transmission below).

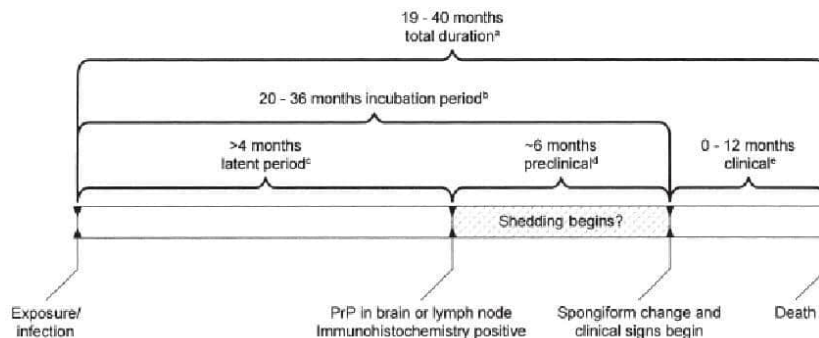


Figure 1 from Argue *et al.* 2007. Proposed progress of CWD in farmed elk

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CWD has been discovered in wild cervids in 19 U.S. States and 2 Canadian provinces, and exists in captive cervids in the US, Canada and South Korea (CWD-info.org). CWD is thought to have arisen in northern Colorado and spread to Wyoming, South Dakota, Nebraska, Kansas, and Utah. The movement of game farmed and hunter killed animals is thought to have introduced the disease to areas that are now satellite infection areas in New Mexico and Texas, Wisconsin and Illinois, Alberta and Saskatchewan, and the Northeast (Figure 2). The number of states and provinces where CWD is known has increased over time, even though funding for surveillance has decreased in recent years, indicating that the disease is spreading, albeit relatively slowly.



Figure 2 From CWD-info.org

Horizontal Transmission

Horizontal transmission of CWD is a highly efficient means of disease transmission between and among elk and deer (Miller and Williams 2003, Sigurdson and Aguzzi 2007). Maternal transmission (from mother to offspring via a reproductive interchange (being in the womb, birthing fluid, milk etc.)) is possible, but appears to be much less important than horizontal transmission from mother to offspring (Miller *et al.* 2004). Studies indicate that elk of both sexes spend a considerable amount of time within one body length of each other in the wild and in artificial environments. Such proximity likely exposes animals to horizontal transmission of disease from oral and nasal secretions (Mathiason *et al.* 2006), particularly where animals are artificially congregated and their contact rates increase significantly (Cross *et al.* 2013, Creech *et al.* 2012).

Environmental Transmission

CWD can be transmitted solely by environmental contamination (Miller *et al.* 2004, Mathiason *et al.* 2009, Williams *et al.* 2014) and this likely helps explain the spread and maintenance of disease (Gough and Maddison 2010). Several studies have demonstrated actual environmental transmission from decomposed carcasses and fecal material (Miller *et al.* 2004), as well as saliva, blood, and inanimate objects like feed buckets, bedding, and water (Mathiason *et al.* 2006, 2009). Suspected sources of environmental contamination with subsequent transmission include bodily fluids at elk wallow sites and mineral licks (VerCauteren *et al.* 2007), and the presence of CWD in soft tissues, blood, skin, antler velvet (though not the antlers themselves), urine, milk, nasal secretions, saliva, and placenta (Gough and Maddison 2010, Saunders *et al.* 2012). Annual antler velvet shedding represents an instance where potentially infected soft tissue is shed while the animal is still alive. Most other instances of potentially infected soft tissue contaminating the environment arise from the death of the animal. It has been estimated that the amount of CWD prion shed during the progression of the disease and the amount contained in a carcass of an animal killed by CWD is roughly the same because CWD prions become systemic and are concentrated in the CNS and muscle tissues as the disease progresses (Saunders *et al.* 2012). As a result, carcasses represent a large source of prions to the surrounding environment. Decomposing carcasses often induce a flush of vegetative growth, which may attract susceptible cervids. Because CWD remains infectious for at least 2 years in the environment (Miller *et al.* 2004) and possibly quite a bit longer (Georgsson *et al.* 2006) the presence of carcasses and their attractiveness may result in environmental transmission of CWD.

Carcasses in the environment also attract scavengers (Jenelle *et al.* 2009a). Research has demonstrated that scrapie, a prion disease of sheep and goats similar to CWD, can remain infectious after

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passage through avian digestive systems (VerCauteren *et al.* 2012) and that CWD is likely infectious after avian passage and the dispersal of CWD prions in avian feces may in some way facilitate the spread of the disease (Fischer *et al.* 2013). Prions are likely to be denatured to a large degree in the digestive tract of mammalian scavengers (Jeffrey *et al.* 2006 - scrapie study) and CWD prions consumed by mammalian scavengers do not result in infection of the scavenger (Jenelle *et al.* 2009b). Plants may uptake the prions into their plant structure, but evidence for this is only circumstantial at this point (mid-2014) and has not yet been published, this is different than prions simply existing *on* plants (Gough and Maddison 2010) and may represent yet another source of environmental contamination.

The importance of environmental transmission in the spread, persistence, and impact of CWD infection in deer and elk has been suggested in numerous modelling studies (Miller *et al.* 2006, Almburg *et al.* 2011, O'Hara Ruiz *et al.* 2013, Storm *et al.* 2013, Jenelle *et al.* 2014). Specifically, work by Almburg *et al.* 2011 showed that the longer that CWD is infectious in the environment the more influential it becomes on disease prevalence and transmission, owing to an increased pool of environmental sources of infection over time. The fact that the infectious agents of CWD likely outlive their hosts in the environment indicates that the distribution, concentration, and infectivity of CWD in the environment will play an important role in the ultimate course that CWD takes in quasi-free ranging elk in western Wyoming.

Elk congregate naturally on winter range and wallows, and artificially at feedgrounds in Wyoming. Should CWD arrive, the areas where elk naturally and artificially congregate could become continuous sources of disease transmission from animal to environment and back to animal. The environmental pool of infectious prions would thus likely increase with time with repeated use at such locations because prions persist in the environment and are essentially impossible to remove from areas where infected animals have lived.

Disease Transmission

In the early stages of a disease outbreak, the density of infectious and susceptible individuals drives the course of the disease. Owing to highly efficient direct transmission of CWD among cervids the number, duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD. Several studies have examined how coarse and fine scale elk behaviors change with increasing population density. These studies have shown that in general, elk in higher density populations contact other elk more frequently and for longer durations, although there are some differences in how males and females respond to higher densities.

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As elk population density increases the average group size increases but the mechanism of those increases differs between females and males, where females aggregate into larger groups that are more dispersed from other groups, while males cease to be solitary and form small groups (VanderWal *et al.* 2013a). Additional research has shown that as population density increases the frequency and duration of contacts between individuals and gender groups increases, but does so differently for females vs. males. VanderWal *et al.* 2012 showed that as population density increases the interaction rate of males increases, but the duration of those interactions decreases. The same study found that both the rate and duration of female interactions increases with increasing density, but both saturate at moderate population density. This is because female elk tend to form small familiar groups of at least 5 individuals *within* the larger group and that most contacts occurred within that small group, a finding supported by VanderWal *et al.* 2013a, 2013b, 2014. At higher population density the overlap of individual female elk home range is greater than for lower population density. As the overlap of home ranges increase so does the rate of interactions, such that there are more interactions at higher density, this relationship does however, saturate at high range overlap. The frequency and duration of within- and among-sex interactions not only changes with population density but also with season. Female-female dyads interact 4 times more frequently than male-male dyads do, but male-male dyads interact for 1.5 times longer than female-female dyads (VanderWal 2013b). The frequency and duration of interactions was higher for all groups in winter and lowest in summer. Cross *et al.* 2013 demonstrated that in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed. The same study showed that supplemental feeding can increase contact rates beyond that which a larger group size will incur on its own.

The role that artificially congregating elk at feedgrounds will play in the arrival of CWD is unclear. On one hand, elk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area. On the other hand, most elk feedgrounds are strategically placed on the landscape to interrupt migration corridors (the purpose of feedgrounds is to spatially confine the elk so that private hay and cattle do not contact elk). And as such, serve to isolate herds from each other, thereby possibly limiting inter-herd transmission of CWD. There has been no research that has addressed this issue. As a result, it is unknown if the presence of one or many feedgrounds will alter the arrival of CWD.

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Prevalence and population level impacts

Studies on naturally occurring populations of elk have shown that mortality from chronic wasting disease *by itself* can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello *et al.* 2014). Raithel *et al.* 2007 showed that cow elk survival less than 85% induced herd declines in most elk populations in North America. In addition, CWD mortality has been associated with a reduction in survival rates, alteration of reproductive success (Dulberger *et al.* 2010), and a stagnation in population growth (Sargent *et al.* 2011, Monello *et al.* 2014). CWD can also compound other agents of mortality by increasing the susceptibility of infected elk and deer to vehicle collisions (Krumm *et al.* 2005), predation (Miller *et al.* 2008, Krumm *et al.* 2009, Sargeant *et al.* 2011), and stochastic mortality (severe weather and other random events Williams 2005). Studies conducted on free-ranging elk populations indicate a time-lag between introduction of CWD and population level impact of between 10 (Sargeant *et al.* 2011) and 25 years (Monello *et al.* 2014) is possible. This time lag is likely due to the extended incubation period where diseased elk are still able to reproduce, while the disease prevalence builds in the population. Modelling studies indicate that genetics may influence the length of the incubation period and play a role in the progress and ultimate outcome of the disease, but field based studies have yet to show such influence (discussed in Williams *et al.* 2014). Field based studies have indicated that population level impacts can happen at prevalence levels from 5-13% ((Miller *et al.* 2000 (deer), (Monello *et al.* 2014 (elk)), depending on reproductive success and the importance of other agents of mortality in the population.

Taken together, studies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National Forest and nearby areas. What is less clear is the role that artificial grouping of elk at feedgrounds, the influence of predators, and the difference in sex-specificity and genotypes (in terms of prevalence and mortality) will play in the spread and impact of the disease in elk in western Wyoming. Indeed a modelling study by Williams *et al.* 2014 showed that mortality from CWD and hunting could act in concert to impact elk populations in western Wyoming, but that the genetic makeup of that herd could moderate those effects.

The impact of wolves on CWD dynamics has only been explored in modelling exercises based on data from a National Park that is absent of wolves (Wild *et al.* 2011, Hobbs 2006), and as such the role that wolves will play is largely unexplored. What is known is that presence of wolves influences elk behavior, and some generalizations can be made about the impact that those changes in behavior might have on disease transmission. At the landscape scale, the presence of wolves can simultaneously decrease

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population densities (by removing individuals) and increase herd densities and group sizes (Hebblewhite and Pletscher 2002, White *et al.* 2012), since the presence of wolves tends to turn small groups of elk into large herds or move elk from one habitat to another (White *et al.* 2012). Other studies have shown that there is no change in group size (Creel and Winnie 2005) or that changes in elk behavior are habitat-specific (Proffitt *et al.* 2009). Research on free ranging elk without wolf pressure has shown that elk in larger groups tend to have higher rates of contact and that contact lasts longer.

It has been shown that deer killed by mountain lions have a higher CWD prevalence than non-killed deer, suggesting that lions select for CWD affected deer. It stands to reason that mountain lions would similarly select for affected elk and that an elk clinically affected by CWD would be targeted by wolves. Typically, wolves target young and old elk from herds. It remains to be seen if this pattern holds for CWD affected elk or if wolves will take prime aged elk that have CWD. This is important for population level impacts because CWD kills across age groups and prevalence tends to be highest in prime breeding age (3-8 year old) and the age selection of wolves could amplify this.

When a new agent of mortality is introduced into an ecosystem the resulting mortality for a wildlife population can be additive to other sources of death, or can compensate for them. Additive mortality occurs when the new agent increases the total number or rate of mortality. Compensatory mortality does not increase the total number or rate of mortality because it replaces an existing cause of mortality. New sources of mortality may be completely compensatory, or may also be partially compensatory to existing sources of death.

Herd densities

Because so much of the literature and discussion about the arrival, spread, and impact of wildlife disease focuses on the density of the herds in question it is worth noting how congregating elk at feedgrounds alters the herd density. As previously discussed, research has shown that in general as herd densities increase, the frequency and duration of potentially infectious contacts (with infected individuals and infected environment) also increases. Free-ranging elk herds in Wyoming (Cross *et al.* 2013, Williams *et al.* 2014) and Canada (Vander Wal *et al.* 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km² (Table 1). Elk at Wind Cave National Park have densities between 2.1 and 7.1 elk/km² and elk at Rocky Mountain National Park have densities between 15 and 100 elk/km². Elk at the National Elk Refuge in Jackson average 59.3 elk/km² (6000 elk on 25000 acres). Elk density at the average state feedground in Wyoming is 1976.6 elk/km², based on the reported average of 600 elk on 75 acres.

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These elk herds can of course have much higher densities when they are congregated on winter range, feeding lines, or at natural bottle-necks. For instance, elk in the western part of Wyoming average densities of .26 to .31 elk/km² when considered at the herd unit scale, which includes 3 feedgrounds (Williams *et al.* 2014). However, that same herd can reach densities of 25,300 to 238,000 elk/km² when the elk are feeding on the feedlines (derived from proximity logging collars in a herd of 550-650 elk at one feedground) (Creech *et al.* 2012). Population level impacts have been documented in both the Wind Cave and Rocky Mountain National Park elk herds which have lower densities than are present at the feedgrounds in Wyoming.

Summary

The role that CWD has played in population level impacts to free ranging elk populations has been demonstrated in the literature and it stands to reason that similar impacts will be expected when CWD arrives in the proximity of the Bridger-Teton National Forest. There are many unknowns with regard to how disease progress will translate to population impact in western Wyoming, especially with an active predator guild, the presence of feedgrounds, rate of human harvest, the genetic makeup of the herds, and reproductive rates of elk. The onset and potential rate of spread of CWD in western Wyoming is similarly unknown. What is certain is that political, economic, and ecological conditions will change continuously once the disease is detected.

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Table 1 Reported or derived density of study or feedground elk herds

Author / Year	Density (elk / km ²)	Study Type
Cross et al. 2013	.21 - .28	Wyoming Free Range
Vander Wal et al. 2014	.22 - .42	Canada Free Range
Williams et al. 2014	.26 - .31	Wyoming Free Range
Vander Wal et al. 2013	.67 - 1.2	Canada Free Range
Sargeant et al. 2011	2.1 - 7.1	Quasi-natural population Wind Cave NP (fenced)
Monello et al. 2014	15 - 100	Natural Population Rocky Mtn NP
National Elk Refuge	59.3	Very Large Feedground (6000 elk on 25000 ac)
Vander Wal et al. 2012	71 - 149	Experimental in Large Cages
WY State Feed Grounds	1976.8	Based on reported average of 600 elk on 75 acres
Creech et al. 2012	25,300 - 238,000	Wyoming at Soda Lake Feed Ground

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Fish and Wildlife Management on Federal Lands: Debunking State Supremacy

Sandra B. Zellmer

Alexander Blewett III School of Law at the University of Montana, sandi.zellmer@mso.umt.edu

Martin Nie

Christopher Barnes

Jonathan Haber

Julie Joly

See next page for additional authors

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Authors

Sandra B. Zellmer, Martin Nie, Christopher Barnes, Jonathan Haber, Julie Joly, and Kenneth Pitt

ARTICLES

FISH AND WILDLIFE MANAGEMENT ON FEDERAL LANDS: DEBUNKING STATE SUPREMACY

BY

MARTIN NIE,* CHRISTOPHER BARNS,** JONATHAN HABER,*** JULIE JOLY,****
KENNETH PITT***** & SANDRA ZELLMER*****

This Article reviews the authority of federal and state governments to manage wildlife on federal lands. It first describes the most common assertions made by state governments regarding state powers over wildlife and then analyzes the relevant powers and limitations of the United States Constitution and federal land laws, regulations, and policies. Wildlife-specific provisions applicable within the National Park System, National Wildlife Refuge System, National Forest System, Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered, as is the Endangered Species Act. We reviewed an extensive collection of cases of conflict between federal and state agencies in wildlife management on federal lands. These cases show how federal land laws, regulations,

* Martin Nie is Director of the Bolle Center for People and Forests and Professor of Natural Resources Policy, W.A. Franke College of Forestry and Conservation, University of Montana.

** Christopher Barns is a wilderness consultant and former Wilderness Specialist, Bureau of Land Management National Landscape Conservation System, and BLM Representative at the Arthur Carhart National Wilderness Training Center.

*** Jonathan Haber is a wildlife planning and policy consultant and a former planning specialist for the United States Forest Service.

**** Julie Lurman Joly is former Associate Professor of Resources Law and Policy at Alaska-Fairbanks.

***** Kenneth Pitt is Adjunct Instructor in the Natural Resource Department at Salish Kootenai College and formerly a General Attorney for the USDA-Office of the General Counsel.

***** Sandra B. Zellmer is Robert B. Daugherty Professor of Law, University of Nebraska-Lincoln.

and policies are frequently applied by federal agencies in an inconsistent and sometimes even unlawful fashion. They also demonstrate how commonalities found in state wildlife governance, such as sources of funding and adherence to the North American Model of Wildlife Conservation, often exacerbate conflict over wildlife management on federal lands.

Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. We debunk the myth that "the states manage wildlife and federal land agencies only manage wildlife habitat." The myth is not only wrong from a legal standpoint, but it leads to fragmented approaches to wildlife conservation, unproductive battles over agency turf, and an abdication of federal responsibility over wildlife. Another problem exposed is how the states assert wildlife ownership to challenge the constitutional powers, federal land laws, and supremacy of the United States. While the states do have a responsibility to manage wildlife as a sovereign trust for the benefit of their citizens, most states have not addressed the conservation obligations inherent in trust management; rather, states wish to use the notion of sovereign ownership as a one-way ratchet—a source of unilateral power but not of public responsibility. Furthermore, the states' trust responsibilities for wildlife are subordinate to the federal government's statutory and trust obligations over federal lands and their integral resources.

The Article finishes by reviewing the ample opportunities that already exist in federal land laws for constructive intergovernmental cooperation in wildlife management. Unfortunately, many of these processes are not used to their full potential, and states sometimes use them solely as a means of challenging federal authority rather than a means of solving common problems. Intergovernmental cooperation must be a mutual and reciprocal process, meaning that state agencies need to constructively participate in existing federal processes, and federal agencies should be provided meaningful opportunities to participate in, and influence, state decision making affecting federal lands and wildlife.

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I. INTRODUCTION

Some of the most significant cases in the development of federal lands and resources law revolve around questions pertaining to federalism and wildlife management. At stake are weighty issues related to constitutional law, sovereignty, and ownership. Complicating matters is the enduring tension between federal and state governments that is built into American politics, the opaque language sometimes found in federal lands law, and the interjurisdictional nature of wildlife conservation. And, of course, there is the politics of it all, as these cases force federal and state agencies to consider their sources of power and authority, their organizational values and biases, and other deeply polarizing and confrontational issues.

To begin, consider some of the following questions that were decided long ago by the courts: Does the United States Forest Service (USFS) have the authority to kill over-browsing deer deemed to be causing harm to the Kaibab National Forest and to do so in violation of state game laws? Similarly, does the National Park Service (NPS) have the authority to kill deer within Carlsbad Caverns National Park for research purposes without obtaining a state permit? Does Congress have the power to protect wild horses and burros on federal lands when those species compete with ranchers and their cattle for forage? And can the United States Fish and Wildlife Service (FWS) refuse to permit the State of Wyoming to vaccinate elk on the National Elk Refuge?

The courts answered these questions, all in the affirmative,¹ but standoffs between federal and state governments have nonetheless intensified in recent years. We examined several of these conflicts to help guide our research so that we could address the key arguments made by state and federal governments, and focus our analysis on the most relevant provisions related to wildlife as found in federal law, regulation, and policy. Included in our review were cases receiving national attention, such as the recent decision by NPS and FWS to preempt those hunting regulations of the State of Alaska that are in conflict with National Park and Refuge laws. These are rare cases where federal agencies pushed back against state interests. In other high profile cases, federal agencies acquiesced to the states, such as Grand Teton National Park's refusal to apply federal regulations to private inholdings within the boundaries of the Park, thus effectively ceding wildlife management authority to the State of Wyoming on roughly 2,300 acres of land within the Park. Other problematic cases include the management of wolves in federally designated wilderness areas, such as the decision made by USFS to permit the State of Idaho to land helicopters in the Frank Church River of No Return Wilderness in order to track and collar wolves, and to not take action to regulate the State of Idaho's plan to hire a professional trapper to kill two packs of wolves living within the Wilderness for the purpose of increasing the area's elk population. We also investigated cases receiving far less national attention, such as an annual predator killing contest on federal lands in Idaho managed by USFS and the Bureau of Land Management (BLM), and the State of Utah's introduction of non-native mountain goats to establish a population on national forest lands.

In cases like these, the states frequently claim that federal land agencies have limited authority over wildlife management, especially on multiple-use lands managed by USFS and BLM. In making this argument, states commonly assert that they own wildlife and manage it as a trust resource. As they see it, their power and authority over wildlife on federal lands reign supreme, and as the argument goes, neither federal land laws nor the courts have done much to change this historical arrangement. The states often justify their positions and actions by reference to the "North American Model of Wildlife Conservation" (the Model), which is a set of principles to guide state management of wildlife.

In comparison to the states, the federal government responds in a more varied and often inconsistent fashion. Rare is the situation where a federal agency challenges state interests, such as the case with NPS and FWS in Alaska. More common is a federal agency sending mixed messages about its authority over wildlife on federal lands, sometimes flexing its muscle, sometimes acquiescing to the states, and sometimes doing everything it can to watch from the sideline. This inconsistency may be why questions about wildlife management on federal lands have resurfaced with such force in recent years.

¹ See *infra* notes 136-153, 382 and accompanying text.

This Article sets the record straight by providing a comprehensive examination of the authority of federal agencies to manage wildlife on federal lands, with the goal of providing a more common understanding amongst federal and state agencies. To help ground the research and make it usable to decision makers and federal land and wildlife managers, the research team consists of three academics (Zellmer, Joly, and Nie) and three consultants (all retired federal employees) having decades of experience working for the United States Department of Agriculture's Office of the General Counsel (Pitt), USFS (Haber, a former planning specialist for the agency), and BLM (Barns, a former wilderness specialist at the Arthur Carhart National Wilderness Training Center).

The Article comes in three parts. Part II begins by providing the context of state wildlife governance. It highlights the core claims and arguments most often made by the states and their representative institutions in conflicts like those described above. It reviews the common assertion that states own wildlife and manage it as a trust resource. From there, the Part reviews common themes in state wildlife laws, decision-making processes, and sources of funding. The North American Model of Wildlife Conservation is then described insofar as it relates to federal lands and conflict over wildlife management. The Model was invoked frequently in the cases we examined, and we explain its relevance in Part II and what we view as its shortcomings in Part IV. Part II closes by summarizing some of the most common complaints and recommendations made by the states, through the Association of Fish and Wildlife Agencies (AFWA), regarding the management of wildlife on federal lands. We do so because of the role played by AFWA in negotiating agreements with federal land agencies.

Part III begins by providing the legal context of wildlife management on federal lands. The constitutional setting comes first, with a review of the United States Constitution's Property Clause, Treaty Clause, Commerce Clause, and the Tenth Amendment. The first Subpart closes by reviewing the doctrine of federal preemption and the use of savings clauses in federal land law. It shows that while states have well-established historical authority over wildlife within their borders, this authority is neither exclusive nor necessarily dominant. As found repeatedly by the courts, the Constitution grants the federal government the authority to manage its lands and resources, fulfill its treaty obligations, and control interstate commerce, even when the states object.

Part III then reviews the federal land laws, regulations, and policies of most significance to the management of wildlife on federal lands. Provisions governing the management of endangered and threatened species, the National Park System, National Wildlife Refuge System, National Forest System, public lands administered by BLM, the special case of Alaska, and the National Wilderness Preservation System are covered in this Subpart. Extra attention is provided to the latter because of the disproportionate amount of conflict and controversy generated by wildlife management in federally designated wilderness. The Subpart shows that federal land agencies have considerable powers and statutory duties to manage wildlife

on federal lands, even if they have chosen not to exercise those powers consistently in the past. Also reviewed in each are agency-specific savings clauses and provisions related to intergovernmental cooperation. Though each statute differs in important ways, all provide the states with meaningful and privileged opportunities to participate in decisions regarding the management of wildlife on federal lands. The savings clauses demonstrate Congress's desire to acknowledge some level of state responsibility over wildlife management, but in no way should these clauses be interpreted to diminish the federal government's vast constitutional and statutory authority to manage its own lands and resources, even when objected to by a state.

Our conclusions, analysis, and recommendations come in Part IV. We begin by explaining that federal land management agencies have an *obligation*, and not just the discretion, to manage and conserve fish and wildlife on federal lands, contrary to the myth that "the states manage wildlife, federal land agencies only manage wildlife habitat." We found this mantra repeated throughout our study, and it was commonly made by state and federal agencies in multiple cases and contexts. We explain the origins of this myth and explain why it is wrong from a legal standpoint and limited from a biological one. The myth must be debunked, not only because it is legally deficient, but also because federal lands are significant reservoirs of biodiversity and will become even more significant in the future due to the rapid pace of development on nonfederal lands.

We next address the common claim that states own wildlife and that such ownership necessarily limits the authority of federal land agencies to manage and make decisions concerning wildlife. We conclude that the states' assertion that they own wildlife—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. It is especially problematic when states assert ownership as a basis to challenge or undermine federal authority over wildlife on federal lands. The states are on solid footing when declaring a "sovereign ownership" of wildlife that must be managed as a public trust resource. But, invoking the public trust as a source of authority is simply not credible without its mirror-image, which is the conservation responsibility for trust resources.

We also explain in Part IV why it is important for the federal government to respond to state assertions of trust ownership by emphasizing that it too has statutory and trust obligations over federal lands, which often encompass the conservation of wildlife. This Subpart concludes by discussing how the all too often adversarial relationship between federal and state governments might be addressed in the future by embracing a more cooperative form of "co-trusteeship" between federal, state, and tribal governments. In moving forward, we also recommend a reexamination of how wildlife is managed and funded at the state level, such as finding a more secure and predictable source of funding for nongame management. We also suggest that advocates of the Model consider the significant role played by federal lands in the conservation of wildlife.

Addressed next are two issues of a more technical nature, both of which figured prominently in the cases reviewed for this research. The first is the United States Department of the Interior's policy statement on federal-state relations in wildlife policy. Some of the provisions found in the policy sow confusion amongst federal and state agencies. Most problematic is how the policy proclaims that states have "primary authority" for management of fish and wildlife on federal lands. We take issue with this misinterpretation of the law, the process used to write it, and explain how it can lead to unnecessary confusion and conflict between federal and state governments.

We then discuss the issue of what happens when federal agencies refuse to take action to protect wildlife on federal lands. This scenario played out in several of the cases reviewed as part of this project, with the distinction being between when the agency has a duty to act and when the agency has the authority to act but the action is discretionary. When a federal agency has a duty to act under a statute, regulation, or other legal requirement, the failure to do so through permit issuance or otherwise warrants an injunction of the non-permitted and non-federal activity.

The issue of wildlife management in the National Wilderness Preservation System is also addressed again in Part IV. We review the Wilderness Act² and its unambiguous affirmative obligation to preserve wilderness character, which includes fish and wildlife species within wilderness areas, and discuss problematic trends where federal agencies have skirted legal obligations in order to accommodate more political demands, often from state interests advancing a view of management that is antithetical to the Wilderness Act.

Part IV concludes by discussing the importance of intergovernmental cooperation in the management of wildlife on federal lands. Multiple opportunities for cooperation already exist in federal decision-making and planning processes, but they are not used to their full potential. We found that states too often view such opportunities not as a way to meaningfully inform federal decision making, but as a political platform to challenge federal authority. As we see it, intergovernmental cooperation is a two-way street, and while federal agencies must provide opportunities for state participation in federal planning processes, the states should reciprocate by providing opportunities for federal entities to participate meaningfully in state wildlife management decision making and, in appropriate cases, to influence the resolution of issues related to wildlife conservation.

To make the research accessible to those who need it most, the Article is accompanied by a set of frequently asked questions that will be available online.³ This resource enables users to find succinct answers to their questions with linkages to the most relevant parts of the Article for additional information.

² 16 U.S.C. §§ 1131–1136 (2012).

³ *Federal Lands & Wildlife*, U. MONT., <http://www.cfc.umt.edu/bolle/federal-lands-wildlife> (last visited Nov. 11, 2017) (FAQs currently under construction).

II. STATE MANAGEMENT CONTEXT AND STATE PERSPECTIVES ON MANAGING WILDLIFE ON FEDERAL LANDS

This Part provides some initial background on state wildlife law and governance. Common state perspectives on wildlife ownership, the wildlife trust, state wildlife commissions, funding, and the North American Model of Wildlife Conservation are reviewed insofar as they pertain to intergovernmental conflict. These issues emerged frequently in several of the disputes we examined. The Part reviews some of the most common claims and arguments made by state wildlife agencies and their representative institutions. Of course, there is no singular state wildlife agency perspective, and readers should appreciate the diversity found amongst the states. To simplify, we emphasize the views and position of AFWA. AFWA represents North America's state fish and wildlife agencies and is a principle actor in the debate over wildlife management on federal lands.⁴ Particular emphasis is placed on AFWA because of its role in negotiating agreements with federal land agencies. We take issue with some of the positions and arguments, as explained below in this Part, and we return to some of the more substantive issues in subsequent Parts of the Article.

A. State Ownership and the Wildlife Trust

Forty-eight states claim sovereign ownership of wildlife.⁵ Sovereign ownership differs from proprietary ownership in that it is constrained by the public interest with the requirement that wildlife be managed for the greater good and the benefit of the public.⁶ Most often referenced by the states in this context is *Geer v. Connecticut*,⁷ in which the Supreme Court of the United States recognized the common state ownership of wildlife and that this power is to be exercised "as a trust for the benefit of the people, and not as a prerogative for the advantage of the government, as distinct from the people, or for the benefit or private individuals as distinguished from the public good."⁸ As we discuss in Part III.A, the Supreme Court subsequently overruled *Geer* in *Hughes v. Oklahoma*, but did so in the context of federal laws preempting state laws (based on claims of state ownership).⁹ States, in

⁴ See *About: Overview*, ASS'N FISH & WILDLIFE AGENCIES, <https://perma.cc/A2ZW-GQSP> (last visited Nov. 11, 2017).

⁵ Michael C. Blum & Aurora Paulsen, *The Public Trust in Wildlife*, 6 UTAH L. REV. 1437, 1462, 1488–1504 (2013).

⁶ *Id.* at 1466–67.

⁷ 161 U.S. 519 (1896), *overruled by* *Hughes v. Oklahoma*, 441 U.S. 322 (1979).

⁸ *Id.* at 529. AFWA considers *Geer* as "provid[ing] the single strongest statement of state public trust ownership of fish and wildlife in the Court's jurisprudence." Brief for Ass'n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners at 11, *Wisconsin v. Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wis.*, 135 S. Ct. 1842 (2015) (No. 14-792), 2015 WL 527525, at *11. *Geer* traces the idea to *Martin v. Waddell's Lessee*, 41 U.S. (16 Pet.) 367 (1842). *Geer*, 161 U.S. at 529.

⁹ *Hughes*, 441 U.S. 325–26. The erosion of *Geer* began with *Missouri v. Holland*, 252 U.S. 416 (1920). There, the Court upheld the constitutionality of the Migratory Bird Treaty Act and

other words, cannot discriminate against interstate commerce based on claims of state ownership of wildlife.¹⁰ The general rule adopted in *Hughes* “makes ample allowance for preserving, in ways not inconsistent with the Commerce Clause, the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership.”¹¹

Assertions of sovereign ownership provide the basis for states claiming a “public trust” in wildlife. In their analysis, Blumm and Paulsen find that “courts and legislatures in at least twenty-two states have expressly employed the words ‘trust’ or ‘trustee’ when discussing state management of wildlife” and that “courts and legislatures of at least twenty-two other states use trust-like language . . . in proclaiming state ownership of wildlife.”¹² The public trust in wildlife is most often invoked by states when declaring broad power and authority to regulate fish and wildlife resources.¹³ Less clear is what affirmative conservation duties go along with this trust responsibility. In other words, what must states do, and not do, in order to meet the responsibilities of the wildlife trust?¹⁴ There is relatively little case law on this matter, and states have generally done little to fill in the details.¹⁵ As is the case with the public trust doctrine more broadly, there are many unanswered questions about the exact parameters and possible applications of a “wildlife trust,” if the term is to be taken literally.¹⁶ But for purposes

rejected state claims of “exclusive authority” to manage wildlife under the state ownership doctrine. *Id.* at 434. As eloquently stated by the Court: “the state may regulate the killing and sale of such birds, but it does not follow that its authority is exclusive of paramount powers. To put the claim of the State upon title is to lean upon a slender reed.” *Id.*; see *infra* notes 187–190 and accompanying text.

¹⁰ *Hughes*, 441 U.S. at 335.

¹¹ *Id.* at 335–36.

¹² Blumm & Paulsen, *supra* note 5, at 1471, 1473. “Of the fifty states, only Nevada and Utah have yet to make some acknowledgement of the public trust in wildlife.” *Id.* at 1477. Similarly, AFWA emphasizes that “[s]tates, as public trustees, hold wildlife in trust for their citizens.” Brief for Ass’n of Fish & Wildlife Agencies as Amici Curiae in Support of Petitioners, *supra* note 8, at 10.

¹³ Blumm & Paulsen, *supra* note 5, at 1466, 1471–73.

¹⁴ See generally Susan Morath Horner, *Embryo, Not Fossil: Breathing Life Into the Public Trust in Wildlife*, 35 LAND & WATER L. REV. 23, 24 (2000) (“[P]ractitioners have not been left with any clear authority either as to the resources to which the doctrine should apply, or its necessary features.”); Gary D. Meyers, *Variation on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife*, 19 ENVTL. L. 723, 733 (1989) (“Professor Stone’s proposal focuses on the practical aspects of such a change, namely that natural objects would be recognized at law, could institute—through a guardian—legal action to prevent or redress harm to the natural objects, and receive direct injunctive or monetary relief.”); Patrick Redmond, *The Public Trust in Wildlife: Two Steps Forward, Two Steps Back*, 49 NAT. RESOURCES J. 249, 253 (2009) (“This distinction between proscriptive authority and affirmative duties has evoked numerous subtle philosophical and ethical discussions of the difference between a purely regulatory relationship between the state and its natural resources and a more trust-oriented relationship based on a stewardship ethic or ‘duty-based environmentalism.’”).

¹⁵ See Blumm & Paulsen, *supra* note 5, at 1471; Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past and Charting Its Future*, 45 U.C. DAVIS L. REV. 665, 678 (2012); see also discussion *infra* Part IV.B.1.

¹⁶ Horner, *supra* note 14, at 25.

here, it is enough to note how the open-ended nature and ambiguity of the wildlife trust doctrine is used by the states to assert jurisdictional powers and control over wildlife. We return to the important issues of wildlife ownership and trust management in Part IV.A.2.

B. State Wildlife Laws, Decision Making, and Funding

State wildlife agencies implement their wildlife trust duties through an array of state wildlife laws and regulations. Some of the most common categories found in state codes pertain to protected species, hunting, fishing and trapping, animal damage control, habitat protection, tribal provisions, law enforcement, and hunter-harassment interference.¹⁷ Twenty-one states also have "right to hunt" constitutional provisions.¹⁸ These vary in terms of substance and effect.¹⁹

Some simply recognize a hunting heritage in a state²⁰ and the opportunity to harvest wild fish and game subject to state law and regulation,²¹ while others create more explicit rights that are nonetheless subject to state management.²² All but one of these amendments (Vermont's) passed since the mid-1990s, and collectively, they reflect some fear that state hunting traditions are under threat.²³ As we discuss below, they also signify the importance of hunting to state wildlife management.

While state fish and wildlife agencies are structured in numerous ways, a commonality that most share is that the director or head of the agency is responsible to some sort of politically appointed fish and wildlife commission, board, or advisory council.²⁴ The powers granted to state wildlife commissions vary, from setting fish and game seasons and bag limits

¹⁷ See RUTH S. MUSGRAVE & MARY ANNE STEIN, CTR. FOR WILDLIFE LAW, *STATE WILDLIFE LAWS HANDBOOK* 14, 18 (1993); see also *Animal Legal and Historical Center Web Site*, MICH. ST. U., <https://perma.cc/4EUU-D9VX> (last visited Nov. 11, 2017) (providing searchable database of hunter harassment and interference laws).

¹⁸ See *State Constitutional Right to Hunt and Fish*, NAT'L CONF. ST. LEGISLATURES (Apr. 20, 2017), <https://perma.cc/W53P-J3QQ>.

¹⁹ See generally Stacey L. Gordon, *A Solution in Search of a Problem: The Difficulty with State Constitutional "Right to Hunt" Amendments*, 35 PUB. LAND & RESOURCES L. REV. 3 (2014) (discussing the different state constitutions that guarantee a right to hunt.).

²⁰ See, e.g., MONT. CONST. art. IX, § 7 ("The opportunity to harvest wild fish and wild game animals is a heritage that shall forever be preserved to the individual citizens of the state and does not create a right to trespass on private property or diminution of other private rights.").

²¹ See, e.g., WYO. CONST. art. I, § 39 ("The opportunity to fish, hunt and trap wildlife is a heritage that shall forever be preserved to the individual citizens of the state, subject to regulation as prescribed by law, and does not create a right to trespass on private property, diminish other private rights or alter the duty of the state to manage wildlife.").

²² See, e.g., VA. CONST. art. XI, § 4 ("The people have a right to hunt, fish, and harvest game, subject to such regulations and restrictions as the General Assembly may prescribe by general law").

²³ *State Constitutional Right to Hunt and Fish*, *supra* note 18.

²⁴ See Martin Nie, *State Wildlife Policy and Management: The Scope and Bias of Political Conflict*, 64 PUB. ADMIN. REV. 221, 222 (2004).

to charting broader management goals and objectives for the states.²⁵ Members are typically appointed by the governor and subject to state legislative approval.²⁶ Most states also have requirements for commission membership, such as a general knowledge of wildlife issues, political and geographic balance, or requiring that they hold a sporting license.²⁷ The commission framework stems from sport hunters and conservationists wanting to secure their hard-fought protections for fish and game; thus, commissions were created so that sport hunters had a voice in preventing a return of widespread market hunting.²⁸ More recently, however, state wildlife commissions have been criticized, mostly because some interests believe that their memberships do not adequately represent the diverse values and interests of those people who do not hunt, fish, or trap.²⁹

Funding for state wildlife management generally comes from the sale of hunting, fishing, and trapping licenses at the state level and from federal funds generated through targeted excise taxes.³⁰ The result is that hunting, fishing, and trapping-derived revenue “comprise between 60 and 90 percent of the typical state fish and wildlife agency budget.”³¹ This arrangement is often referred to as a “user-pay, user-benefit” funding model because states apply most of these funds to the management of sport fish and game species.³² This funding mechanism serves to reinforce the complaint of non-hunters that their values and interests are not adequately considered in management decisions.³³ As we discuss below, this funding model helps us better understand the position of states in some intergovernmental disputes, as decisions made by federal land agencies can have implications for state wildlife agency budgets that are so dependent on fish and game-generated revenue.³⁴

Another initial observation is that the “user-pay, user-benefit” moniker is more complicated than generally stated. A case can be made, for example, that taxpayers, including the non-hunting and non-fishing public, do indeed pay for wildlife *conservation* through the acquisition and management of wildlife *habitat*, both public and private.³⁵ This takes the form of funding for federal lands, state lands, and contributions to private land conservation.³⁶

²⁵ See, e.g., ERIN SEILER, OR. LEGISLATIVE COMM. SERVS., EXECUTIVE APPOINTMENTS LEGISLATIVE REVIEW (2016), <https://perma.cc/FKC9-VUJJ>.

²⁶ See, e.g., *id.*

²⁷ See, e.g., *id.*

²⁸ See JOHN F. REIGER, AMERICAN SPORTSMEN AND THE ORIGINS OF CONSERVATION 80 (3d ed. 2001).

²⁹ Nie, *supra* note 24, at 223.

³⁰ *Id.*

³¹ J.F. ORGAN ET AL., THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION: TECHNICAL REVIEW 12-04, at 9 (Theodore A. Bookhout ed., 2012), <https://perma.cc/68VB-FJ7F>.

³² See *id.*

³³ See Nie, *supra* note 24, at 223–24.

³⁴ See ORGAN ET AL., *supra* note 31, at 10 (providing examples of federal agency influence on funding).

³⁵ See *id.* at 27 (explaining contributions of public and private land management to habitat conservation).

³⁶ See *id.*

But in more precise terms of funding wildlife *management* and state wildlife agencies, the user-pay, user-benefit model is less disputed.

The history of the user-pay, user-benefit funding model illustrates the cooperative relationship between federal and state governments in the management of wildlife. Prior to 1937, many states regularly diverted game license revenue to general governmental purposes, other than fish and wildlife management.³⁷ The Pittman-Robertson Wildlife Restoration Act,³⁸ more commonly known as the Federal Aid in Wildlife Restoration Act, put an end to this practice.³⁹ The program put in place by the Act provides federal assistance to states for wildlife restoration projects and plans and hunter education.⁴⁰ In order to secure a more certain and predictable stream of funding for wildlife, the Act (and subsequent amendments to it) created a fund from taxes imposed on firearms, ammunition, and archery equipment.⁴¹ However, in order to receive federal funding, the law requires states to prohibit "the diversion of license fees paid by hunters for any other purpose than the administration of [the] State fish and game department."⁴² In other words, the law conditions federal funding on states using state game license revenue for wildlife management and conservation.

A similar program focused on fisheries emerged from Congress in 1950. The Dingell-Johnson Sport Fish Restoration Act,⁴³ also referred to as the Federal Aid in Fish Restoration Act, funds sport fish restoration through excise taxes on fishing equipment, motorboat/small engine fuel, and baits.⁴⁴ It similarly includes a predicate for federal funding: states receiving Dingell-Johnson money must apply it to the administration of state fish and game departments.⁴⁵ Funding is used for fish restoration and management projects, defined in the law as "the restoration and management of all species of fish which have material value in connection with sport or recreation in the marine and/or fresh waters of the United States."⁴⁶

The Pittman-Robertson and Dingell-Johnson Acts primarily focus on sport fish and game species. State funding for nongame species has not fared as well. Congress addressed this issue in passing the Fish and Wildlife Conservation Act of 1980.⁴⁷ Frequently referred to as the "Non-Game Act," this law recognizes that the traditional focus on "recreationally and

³⁷ See Hal Herring, *In Current Rush to Buy Guns and Ammo, Pittman-Robertson Funds Break All Records*, FIELD & STREAM (May 9, 2013), <https://perma.cc/DV5X-889Y>.

³⁸ 16 U.S.C. §§ 669–669i (2012).

³⁹ See *id.* § 669.

⁴⁰ *Id.* §§ 669b, 669c, 669h–1.

⁴¹ See M. LYNNE CORN & JANE G. GRAVELLE, CONG. RESEARCH SERV., R42992, GUNS, EXCISE TAXES, AND WILDLIFE RESTORATION 2 fig.1 (2013) (providing yearly data of Pittman-Robertson receipts and distributions).

⁴² 16 U.S.C. § 669.

⁴³ *Id.* §§ 777–777m.

⁴⁴ *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service: Federal Aid in Sport Fish Restoration Act*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/UG7W-QUMS> (last visited Nov. 11, 2017).

⁴⁵ 16 U.S.C. § 777(a).

⁴⁶ *Id.* § 777a(1).

⁴⁷ *Id.* §§ 2901–2912.

commercially important species” and “traditional financing mechanisms are neither adequate nor fully appropriate to meet the conservation needs of nongame fish and wildlife.”⁴⁸ The purpose of the Act is to fix this problem by providing “financial and technical assistance to the States for the development, revision, and implementation of conservation plans and programs for nongame fish and wildlife.”⁴⁹ Promise notwithstanding, this law never achieved its stated purpose because unlike the Pittman-Robertson and Dingell-Johnson Acts, it does not include an independent and more secure funding mechanism.⁵⁰ Instead, the law relied on funding from general congressional appropriations, which to date, Congress never provided to the program.⁵¹

Several initiatives have been waged in the past, at both national⁵² and state⁵³ levels, to deal with the lack of funding for nongame species management, and a related campaign is currently underway.⁵⁴ AFWA is part of a broad coalition seeking a solution to the problem of nongame funding.⁵⁵ We return to this issue in Part IV, as we believe it is imperative that states have the capacity and incentives to manage nongame species. Providing these resources will build trust and capacity at the state level, and help harmonize federal-state responsibilities over wildlife on federal lands.

C. The North American Model of Wildlife Conservation

The North American Model of Wildlife Conservation figures prominently in state claims and positions regarding wildlife management on federal lands. The Model was formally adopted by AFWA in 2002, and it views the Model (along with the public trust doctrine) as “the basis for state wildlife law.”⁵⁶ While the Model has no independent legal authority, it is referenced extensively in AFWA’s legal and educational materials, and is

⁴⁸ *Id.* § 2901(a)(4).

⁴⁹ *Id.* § 2901(b)(1).

⁵⁰ Removing Regulations Implementing the Fish and Wildlife Conservation Act, 75 Fed. Reg. 51,420, 51,420–21 (Aug. 20, 2010) (to be codified at 50 C.F.R. pt. 83).

⁵¹ See *id.* at 51,420 (removing regulations that implement the Fish and Wildlife Conservation Act because “funds never became available to carry out the Act”).

⁵² One of the more memorable campaigns was the unsuccessful effort in passing the Conservation and Reinvestment Act (CARA) of 2000. H.R. 701, 106th Cong. (2000).

⁵³ See Cindy McKinney et al., Investing in Wildlife: State Wildlife Funding Campaigns 20 fig.1 (Apr. 2005) (unpublished M.S. thesis, University of Michigan), <https://perma.cc/NSG4-TPD2>.

⁵⁴ See generally ASS’N OF FISH & WILDLIFE AGENCIES, SUSTAINING AND CONNECTING PEOPLE TO FISH AND WILDLIFE: A LOOMING CRISIS CAN BE AVOIDED, <https://perma.cc/BH9H-Z4NN> (last visited Nov. 11, 2017) (discussing incomplete fish and wildlife funding).

⁵⁵ *Id.*

⁵⁶ ASS’N OF FISH & WILDLIFE AGENCIES, WILDLIFE MANAGEMENT AUTHORITY: THE STATE AGENCIES’ PERSPECTIVE 13 (2014), <https://perma.cc/CR2T-U8A2> [hereinafter AFWA TASK FORCE REPORT]; About: North American Model of Wildlife Conservation, ASS’N FISH & WILDLIFE AGENCIES, <https://perma.cc/NE8Q-38ZM> (last visited Nov. 11, 2017).

also invoked frequently by state wildlife agencies and other institutions.⁵⁷ While it is beyond the scope of this Article to provide a thorough accounting and analysis of the Model, it plays a significant role in how states frequently frame issues and view their political and legal authority over wildlife.⁵⁸ We discuss the Model again in Part IV.B.2 by explaining how it can exacerbate conflict between federal and state governments.

First articulated by University of Calgary biologist Valerius Geist in the mid-1990s, the Model is a set of seven broadly stated principles, which include the following: 1) wildlife resources are a public trust; 2) markets for game are eliminated; 3) allocation of wildlife is by law; 4) wildlife can be killed only for a legitimate purpose; 5) wildlife is considered an international resource; 6) science is the proper tool to discharge wildlife policy; and 7) democracy of hunting is standard.⁵⁹

Embedded within each principle is a descriptive-historical accounting of wildlife conservation and a more normative-prescriptive component. The Model places extraordinary emphasis on the role played by hunters in American wildlife conservation, while paying relatively little regard to the preservation movement or the role played by federal lands and federal environmental law more generally.⁶⁰ Conspicuously missing from the Model, for example, is a principle focused on wildlife habitat, of which federal lands would be of obvious significance.

The normative and prescriptive part of the Model is more difficult to assess because of how differently actors interpret and use it. Some proponents of the Model, for example, claim that it "has often been interpreted to be more than its original articulators' intention to describe key components of the philosophy and approach to wildlife conservation that developed in North America."⁶¹ Critics of the Model, by contrast, see it as more than just a description of the past but rather as a narrow set of guiding principles for future wildlife conservation.⁶² This is because most references

⁵⁷ See, e.g., ARIZ. GAME & FISH DEP'T, NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/Z2XW-X2X3> (last visited Nov. 11, 2017) ("The North American Model of Wildlife Conservation is the world's most successful."); WILDLIFE SOC'Y, STANDING POSITION: THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION, <https://perma.cc/R4U9-6LBV> (last visited Nov. 11, 2017) (explaining that the policy of The Wildlife Society is to "[p]romote and support adherence to the seven core components [of the Model], identified by the Society, as the bedrock of the Model, by state, provincial, and federal governments").

⁵⁸ See generally David Wilms & Anne Alexander, *The North American Model of Wildlife Conservation in Wyoming: Understanding It, Preserving It, and Funding Its Future*, 14 WYO. L. REV. 659 (2014).

⁵⁹ Valerius Geist et al., *Why Hunting Has Defined the North American Model of Wildlife Conservation*, in TRANSACTIONS OF THE 66TH NORTH AMERICAN WILDLIFE AND NATURAL RESOURCES CONFERENCE 175, 176-80 (2001), <https://perma.cc/C53S-CTCS> (citing earlier references and antecedents to the Model).

⁶⁰ See *id.*

⁶¹ John F. Organ et al., *Public Trust Principles and Trust Administration Functions in the North American Model of Wildlife Conservation: Contributions of Human Dimensions Research*, 19 HUM. DIMENSIONS WILDLIFE 407, 408 (2014).

⁶² See Susan G. Clark & Christina Milloy, *The North American Model of Wildlife Conservation: An Analysis of Challenges and Adaptive Options*, in LARGE CARNIVORE CONSERVATION: INTEGRATING SCIENCE AND POLICY IN THE NORTH AMERICAN WEST 289, 301 (Susan

to the Model, as discussed further below, go beyond description and use it to justify various positions or decisions made by state wildlife agencies.⁶³ Clark and Milloy summarize: “Functionally, the model’s doctrine (principles) and formula (rules to implement the doctrine) guide current decision making about wildlife; they dictate how decisions are made, by whom, and for what purposes.”⁶⁴ What is striking to us about the Model is how little academic and professional scrutiny has been applied to it, as it is clearly but one possible accounting of wildlife conservation—past, present, and future.

Whatever might be its strengths and limitations, the Model clearly has political and policy influence, and helps us understand state positions on wildlife management, though often indirectly. Of most relevance here is the Model’s emphasis on the public trust doctrine, state primacy, and the importance of hunting to wildlife conservation. The public trust doctrine, as applied to wildlife, is regarded as the Model’s cornerstone.⁶⁵ Asserting that public trust principles relating to wildlife are most clearly found in state law, AFWA references the Model to “[a]dvocate for the primacy of state management authority for resident wildlife.”⁶⁶ Again, AFWA’s emphasis is that states have authority to manage fish and wildlife resources through a public trust and that it “assigns trustee ownership of fish and wildlife to the states.”⁶⁷ Access to public resources is commonly asserted in public trust cases (e.g., to oysters, tidelands, or streams), and state wildlife agencies and AFWA make similar linkages between states owning wildlife in trust, which necessitates providing public access to fish and wildlife.⁶⁸ We return to the public trust in wildlife issue in Part IV.A.2.

Also of relevance is the Model’s emphasis on hunting. As explained by the Model’s originators, though other interest groups such as bird enthusiasts played roles in the conservation movement, “[i]t is hunters, however, or, more accurately, *hunting*, that led to development of the [Model’s principles and] form[s] the foundation for North American wildlife

G. Clark & Murray B. Rutherford eds., 2014) (questioning “whether the model is capable of conserving wildlife and ecosystems into the future without major adaptations”); see also Michael P. Nelson et al., *An Inadequate Construct? North American Model: What’s Flawed, What’s Missing, What’s Needed*, WILDLIFE PROF., Summer 2011, at 58, 58 (arguing that “the rise in the Model’s popularity is worrisome in both its descriptive and prescriptive modes: One rests upon an inadequate account of history and the other on an inadequate ethic”).

⁶³ See, e.g., *infra* note 66 and accompanying text; see also discussion *infra* Part II.D.

⁶⁴ Clark & Milloy, *supra* note 62, at 312.

⁶⁵ See Organ et al., *supra* note 61, at 408; see also WILDLIFE SOC’Y, THE PUBLIC TRUST DOCTRINE: IMPLICATIONS FOR WILDLIFE MANAGEMENT AND CONSERVATION IN THE UNITED STATES AND CANADA 9 (2010), <https://perma.cc/5N5W-KG2S>.

⁶⁶ M. CAROL BAMBERY & MARTIN BUSHMAN, ASS’N OF FISH & WILDLIFE AGENCIES, THE STATES: TRUSTEES OF AMERICA’S WILDLIFE 13 (on file with authors).

⁶⁷ *Federal Interactions with State Management of Fish and Wildlife: Hearing Before the Subcomm. on Fisheries, Water, and Wildlife of the S. Comm. on Environment and Public Works*, 114th Cong. 9 (2016) [hereinafter *Hearing*] (statement of Ronald J. Regan, Executive Director, Association of Fish and Wildlife Agencies).

⁶⁸ See WILDLIFE SOC’Y, *supra* note 65, at 9 (emphasizing the importance of access to the public trust doctrine, including fishing, hunting, trapping, and travel routes).

conservation.⁶⁹ AFWA similarly states that “[h]unting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation.”⁷⁰ In this vein, proponents of the Model often speak to the importance of sportsmen and women-derived funds to state fish and wildlife agency budgets.⁷¹ This is not to suggest, however, that all proponents of the Model are necessarily endorsing an exclusive “user-pay, user-benefit” model of funding for the future. In fact, some proponents are actively searching for ways to increase funding for nongame species and want the Model applied to the conservation of biodiversity more broadly.⁷² However malleable the Model may prove itself to be in the future, at this point, it is very much hunting-centric, and this helps explain a common position of the states in various disputes, such as when federal agencies make decisions to restrict types of hunter access or when states advocate for more “active management” of wildlife on federal lands.⁷³

D. The 2014 AFWA Task Force Report

In 2014, AFWA commissioned a task force to investigate how state wildlife agency directors “perceive the relationship between state and federal agencies, by determining the relationship’s implications on states’ authority to manage wildlife, and by making recommendations to strengthen the relationship between state and federal conservation agencies.”⁷⁴ The Task Force Report illuminates how several state directors view the relationship between federal and state governments and the perceived legal sources of tension. Furthermore, many of the recommendations made by the Task Force are made by AFWA in other contexts, and the document was approved by state membership.⁷⁵

The report begins by invoking the North American Model of Wildlife Conservation, the wildlife trust doctrine, and the Tenth Amendment of the

⁶⁹ Geist et al., *supra* note 59, at 179; see also James R. Heffelfinger et al., *The Role of Hunting in North American Wildlife Conservation*, 70 INT’L J. ENVTL. STUD. 399, 399 (2013) (“Regulated hunting is the foundation of the North American Model of Wildlife Conservation.”).

⁷⁰ *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷¹ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 30; *About: North American Model of Wildlife Conservation*, *supra* note 56.

⁷² See, e.g., Organ et al., *supra* note 61, at 408 (recommending that all wildlife be managed under the principles of the Model and that it is not synonymous with the user-pay, user-benefit funding model); Willms & Alexander, *supra* note 58, at 659–61 (recommending alternative funding sources for wildlife management).

⁷³ For example, AFWA states that the Model “is the world’s most successful system of policies and laws to restore and safeguard fish and wildlife and their habitats through sound science and active management.” *About: North American Model of Wildlife Conservation*, *supra* note 56 (emphasis added); see also Joanna Prukop & Ronald J. Regan, *In My Opinion: The Value of the North American Model of Wildlife Conservation—An International Association of Fish and Wildlife Agencies Position*, 33 WILDLIFE SOC’Y BULL. 374, 376 (2005) (linking the Model to the importance of state primacy and the issue of access to wildlife resources).

⁷⁴ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁷⁵ See *Hearing*, *supra* note 67, at 60–61 (statement of Executive Director Regan).

U.S. Constitution, which it asserts, “relegates to the states the responsibility of managing wildlife.”⁷⁶ To make the Model work, says the report, “[a] productive relationship between federal and state agencies” is necessary.⁷⁷ Unfortunately, the report finds that “[s]tate wildlife agency leadership harbors growing concern about the increasingly strained relationship between state wildlife agencies and their federal partners” and that there is “considerable and widespread frustration with the interface between federal and state efforts to conserve wildlife.”⁷⁸

Survey respondents were asked to identify specific laws, regulations, or policies that they believed were successful or challenging.⁷⁹ Most frequently identified as a challenge to the states was the Endangered Species Act⁸⁰ (ESA), which is perceived by some state agency directors “as a vehicle for federal overreach, or of inappropriate reallocation of states’ wildlife management duties into federal hands.”⁸¹ Also standing out in the survey were respondents citing the National Environmental Policy Act⁸² (NEPA) as a “hindrance to states’ efforts to manage wildlife”⁸³ due to threats of NEPA-based litigation and the “continued exclusion of states from meaningful partnerships in planning, decision-making, and management, except in the most cursory of consultative efforts.”⁸⁴

Of relevance to Part III.B of this Article are some state views on federal land laws in general. Emphasized in the report are the perceived problems associated with the open-ended nature of federal land laws that are believed to be interpreted in a preservationist “hands-off” fashion that makes active management of wildlife more difficult.⁸⁵ The task force report summarizes:

These laws leave room for loose interpretations of land management agency authority. The ambiguity allows local land managers latitude in their decision-making, and they often implement preservationist interpretations that encroach on state authorities. These interpretations, often based on unwritten values, drive agency decisions that are typically contrary to principles of wildlife, fisheries, and habitat management critical for state management.⁸⁶

The Federal Land Policy Management Act⁸⁷ (FLPMA) and the National Forest Management Act⁸⁸ (NFMA) are discussed in this context, with both

⁷⁶ AFWA TASK FORCE REPORT, *supra* note 56, at 5.

⁷⁷ *Id.* at 2, 4.

⁷⁸ *Id.* at 2.

⁷⁹ *Id.* at 6.

⁸⁰ Endangered Species Act of 1973, 16 U.S.C. §§ 1531–1544 (2012).

⁸¹ AFWA TASK FORCE REPORT, *supra* note 56, at 2, 8.

⁸² National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321–4370h (2012).

⁸³ AFWA TASK FORCE REPORT, *supra* note 56, at 2.

⁸⁴ *Id.* at 11.

⁸⁵ *Id.* at 9.

⁸⁶ *Id.*

⁸⁷ Federal Land Policy and Management Act of 1976, 43 U.S.C. §§ 1701–1787 (2012).

⁸⁸ National Forest Management Act of 1976, 16 U.S.C. §§ 472a, 521b, 1600, 1611–1614 (2012) (amending Forest and Rangeland Renewable Resources Planning Act of 1974, Pub. L. No. 93-378, 88 Stat. 476).

laws often viewed as presenting obstacles to the management of "state trust species."⁸⁹ These laws were not identified as inherently problematic, rather respondents focused on the "subjective and inconsistent application of their precepts."⁹⁰

The AFWA Task Force makes a number of recommendations for improving relations between federal and state governments, most of which revolve around strengthening the position of state agencies in managing wildlife on federal lands.⁹¹ It also initiated a "legal strategy" in 2013 to enable state agencies "to act in concert to address challenges to their statutory authority to manage wildlife."⁹² In short, AFWA aims to clarify—in law, regulation, policy, and public perception—what it sees as the rightful role of the states in managing wildlife on federal lands. Some of these recommendations are offered by AFWA and the Western Association of Fish and Wildlife Agencies (WAFWA) in other contexts,⁹³ such as recent congressional testimony.⁹⁴ For now, we simply summarize the core recommendations of the Task Force and provide the requisite background in other parts of the Article. We return and respond to AFWA's recommendations in Part IV.

The AFWA Task Force begins by recommending training state and federal line managers "on the historic, principled underpinnings of state-federal authority and jurisdiction for managing fish and wildlife in the United States."⁹⁵ The proposed training initiative is to be implemented through a Memorandum of Understanding (MOU).⁹⁶ A public affairs strategy "to market and defend state wildlife authority interests" is also envisioned as part of this educational effort.⁹⁷ Establishing a mediation team to more constructively resolve conflict between federal and state agencies is also recommended.⁹⁸

Driving some of the Task Force's recommendations is a concern that federal land agencies are evolving in a way that is inconsistent with their organic legislation.⁹⁹ According to the Task Force, "[a]s conservation becomes more focused on landscape scale efforts, it is important that federal agencies integrate their conservation programs with the state agency

⁸⁹ AFWA TASK REPORT, *supra* note 56, at 9, 12.

⁹⁰ *Id.* at 2.

⁹¹ See *infra* notes 96–107 and accompanying text.

⁹² ASS'N OF FISH & WILDLIFE AGENCIES, PROTECTING STATE AUTHORITY FOR FISH AND WILDLIFE MANAGEMENT, <https://perma.cc/M3RG-8QEM> (last visited Nov. 11, 2017).

⁹³ See, e.g., W. ASS'N OF FISH & WILDLIFE AGENCIES COMM'RS' STATE AUTH. SUBCOMM., WHITE PAPER: WILDLIFE MANAGEMENT SUBSIDIARITY 4 (2011) ("WAFWA recommends that Congress adopt new provisions that clearly establish state fish and wildlife management authority and direct that all federal regulations and policies be consistent with congressional intent.").

⁹⁴ See *Hearing*, *supra* note 67, at 5–7 (statement of Executive Director Regan).

⁹⁵ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

⁹⁶ *Id.*

⁹⁷ *Id.* at 29.

⁹⁸ *Id.* at 28–29.

⁹⁹ See, e.g., *id.* at 21 ("The [FWS's] shift in focus has changed from direct fish and wildlife management with the protection and restoration of either single species or population to the maintenance of ecosystems and biodiversity.").

programs and not get out ahead of the states and the public we serve."¹⁰⁰ The Task Force elaborates:

[W]e must remember that the foundation for our fish and wildlife programs continues to be the people who enjoy our sports and continue to pay the lion's share of the costs that provide these services. Many state fish and wildlife programs across our nation do not receive either state or federal general appropriations and as such must answer to a narrow constituency of supporters.¹⁰¹

This concern leads to the Task Force recommending more substantive legislative changes. The first is to modify the Sikes Act¹⁰² so that management by the Departments of the Interior and Agriculture comport with the law's section pertaining to fish and wildlife management on lands administered by the Department of Defense.¹⁰³ This law, often referred to as the "Sikes Act Extension," requires the Secretaries of Interior and Agriculture to "plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game."¹⁰⁴ The military section of the Sikes Act requires the cooperative preparation of natural resource management plans and that these plans "shall reflect the mutual agreement of the [federal and state] parties concerning conservation, protection, and management of fish and wildlife resources."¹⁰⁵ There is no such language in the law pertaining to "mutual agreement" in the sections pertaining to the Departments of the Interior and Agriculture.¹⁰⁶ The Task Force would like the statute changed to include the following language: "The conservation plans and resulting programs shall reflect the mutual

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² 16 U.S.C. §§ 670–670m (2012).

¹⁰³ *Id.* §§ 670f–670h; AFWA TASK FORCE REPORT, *supra* note 56, at 22.

¹⁰⁴ 16 U.S.C. § 670g(a).

¹⁰⁵ *Id.* § 670a(a)(2).

¹⁰⁶ Instead, the Sikes Act makes clear:

Conservation and rehabilitation programs developed and implemented pursuant to this subchapter shall be deemed as *supplemental* to wildlife, fish, and game-related programs conducted by the Secretary of the Interior and the Secretary of Agriculture pursuant to other provisions of law. Nothing in this subchapter shall be construed as limiting the authority of the Secretary of the Interior or the Secretary of Agriculture, as the case may be, to manage the national forests or other public lands for wildlife and fish and other purposes in accordance with the Multiple-Use Sustained-Yield Act of 1960 or other applicable authority.

Id. § 670h(c)(1)(C) (emphasis added) (citation omitted). Furthermore, any wildlife conservation and rehabilitation plans prepared pursuant to the Sikes Act must be consistent with applicable USFS or BLM land management plans. *See id.* § 670h(b); *see also* Michael J. Bean, *The Developing Law of Wildlife Conservation on the National Forest and National Resource Lands*, 4 J. CONTEMP. L. 58, 65 (1977) (finding the Sikes Act Extension to offer "no resolution, indeed no guidance for the resolution, of conflicts involving wildlife conservation and other uses of the public lands" and that "it does nothing to narrow the broad discretion which the federal land management agencies have traditionally exercised in fulfilling their multiple use mandates").

agreement of the parties concerning conservation, protection, and management of fish and wildlife resources.¹⁰⁷

As we explain later, federal land laws often include a "savings" clause addressing the relationship between federal and state powers.¹⁰⁸ AFWA emphasizes the importance of these provisions and makes a recommendation to "[s]trengthen existing Savings Clauses, expand new Savings Clauses to new congressional legislation as opportunities arise, and vigorously defend savings clauses to establish legal precedent."¹⁰⁹

The Task Force expresses frustration in how the courts have viewed wildlife savings clauses in the past, most notably in the case of managing wildlife in the National Elk Refuge in Wyoming.¹¹⁰ As AFWA sees it, these savings clauses should be viewed as unambiguous and represent the clear intention of Congress to "reserve" state power and authority over wildlife on federal lands as "a necessary incident of state sovereignty."¹¹¹ To fix this problem, the Task Force recommends replacing existing savings provisions with the following language:

Nothing in the Act shall be construed as affecting or intending to interfere with the laws of the several states to regulate hunting and fishing or to supersede, abrogate or otherwise impair the state's primary jurisdiction to manage or control fish and resident wildlife in a manner not inconsistent with the purpose of this Act. The Secretary, in carrying out this Act, shall proceed in conformity with such applicable state laws, policies and management plans and shall cooperate with the states and develop jointly agreed upon wildlife management plans.¹¹²

This proposal is a fundamental reinterpretation of existing wildlife law, and we explain why it should be rejected in Part IV. We discuss savings clauses again in the context of federal preemption and in each section reviewing federal land laws.

¹⁰⁷ AFWA TASK FORCE REPORT, *supra* note 56, at 23.

¹⁰⁸ See Robert L. Fischman & Angela M. King, *Savings Clauses and Trends in Natural Resources Federalism*, 32 WM. & MARY ENVTL. L. & POL'Y REV. 129, 145 (2007) (describing how these provisions "delimit the degree to which a federal agency should pursue national objectives at the expense of a state's different view" and can provide "a statement, and sometimes a mechanism, for incorporating state interests notwithstanding a statute that seeks to implement a uniform federal program").

¹⁰⁹ AFWA TASK FORCE REPORT, *supra* note 56, at 17.

¹¹⁰ *Id.* at 17-18 (citing *Wyoming v. United States*, 279 F.3d 1214 (2002)).

¹¹¹ Brief of Amicus Curiae International Ass'n of Fish & Wildlife Agencies in Support of Plaintiff-Appellants & Reversal of the Decision Below at 8, *Wyoming*, 279 F.3d 1214 (10th Cir. 2002) (No. 99-8089) (citing *Ward v. Race Horse*, 163 U.S. 504, 510 (1896)).

¹¹² AFWA TASK FORCE REPORT, *supra* note 56, at 27.

III. THE LEGAL CONTEXT OF WILDLIFE MANAGEMENT ON FEDERAL LANDS

A. Constitutional Context

The U.S. Constitution provides the framework for federal-state relations and power-sharing arrangements, as well as individual obligations and limitations on authority for each level of government. Key provisions include the Property Clause,¹¹³ Treaty Clause,¹¹⁴ Commerce Clause,¹¹⁵ Supremacy Clause,¹¹⁶ and the Tenth Amendment.¹¹⁷ This Subpart explains the relevant constitutional clauses and legal precedents regarding federal powers and duties for wildlife management, and consequent implications for state authority.

1. The Property Clause

The United States' vast landholdings are concentrated in the American West and Alaska, but federal land can be found in all fifty states.¹¹⁸ As a landowner, the United States has proprietary interests over its lands and resources; as a government, it also has sovereign powers over its lands and resources.¹¹⁹ This Section focuses on the proprietary nature of the federal interest in public lands and wildlife.

a. The Nature and Scope of the Property Clause

The Property Clause gives Congress the "Power to dispose of and make all needful Rules and Regulations respecting the Territory or other Property belonging to the United States."¹²⁰ Although the Supreme Court has found that the "full scope of this paragraph has never been definitely settled," it has held that "[p]rimarily, at least, it is a grant of power to the United States of control over its property."¹²¹ In theory, this plenary power is tempered by special duties regarding the administration of public lands and resources. "Executive branch officials, while having wide latitude to make all needful rules regarding the public lands, may have a countervailing trust-like responsibility to protect those resources on behalf of the public."¹²² While the

¹¹³ U.S. CONST. art. IV, § 3, cl. 2.

¹¹⁴ *Id.* art. II, § 2, cl. 2.

¹¹⁵ *Id.* art. I, § 8, cl. 3.

¹¹⁶ *Id.* art. VI, cl. 2.

¹¹⁷ *Id.* amend. X.

¹¹⁸ CAROL HARDY VINCENT ET AL., CONG. RESEARCH SERV., R42346, FEDERAL LAND OWNERSHIP: OVERVIEW AND DATA 7-9 tbl.1 (2017), <https://perma.cc/FH94-GG8R>.

¹¹⁹ See *Concessions Co. v. Morris*, 186 P. 655, 658, 660 (Wash. 1919) (discussing the holding of *Fort Leavenworth R.R. Co. v. Lowe*, 114 U.S. 525 (1885)).

¹²⁰ U.S. CONST. art. IV, § 3, cl. 2.

¹²¹ *Kansas v. Colorado*, 206 U.S. 46, 89 (1907).

¹²² Sandra B. Zellmer, *The Devil, the Details, and the Dawn of the 21st Century Administrative State: Beyond the New Deal*, 32 ARIZ. ST. L.J. 941, 1032 (2000); accord *In re Steuart Transp. Co.*, 495 F. Supp. 38, 40 (E.D. Va. 1980) ("Under the public trust doctrine, the State of Virginia and

Supreme Court and several other federal courts have alluded to a federal trust responsibility for public lands and resources, the contours of such a responsibility are ill-defined.¹²³ The contours of the Property Clause power, however, are relatively clear.¹²⁴

*United States v. Grimaud*¹²⁵ was one of the first tests of the Property Clause power to protect federal public lands.¹²⁶ The Forest Reserve Act of 1897¹²⁷ authorized the Secretary of the Interior to

the United States have the right and the duty to protect and preserve the public's interest in natural wildlife resources. Such right does not derive from ownership of the resources but from a duty owing to the people." (emphasis added)).

¹²³ See, e.g., *Light v. United States*, 220 U.S. 523, 536 (1911) (identifying a duty "to protect the public domain from trespass and unlawful appropriation" (quoting *United States v. Beebe*, 127 U.S. 338, 342 (1888))); *W. Va. Div. of the Izaak Walton League of Am., Inc. v. Butz*, 522 F.2d 945, 950-55 (4th Cir. 1975) (noting the historic role of USFS as "custodian and protector" of forest reserves); *High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1246 (D. Colo. 2006) (finding a duty to assert federal reserved water rights for the Black Canyon of the Gunnison). In a series of cases involving Redwood National Park, the trust doctrine was invoked to require affirmative action to protect park resources from external threats posed by logging. See *Sierra Club v. Dep't of the Interior (Redwoods II)*, 398 F. Supp. 284, 293-94 (N.D. Cal. 1975), modified, *Sierra Club v. Dep't of the Interior (Redwoods III)*, 424 F. Supp. 172 (N.D. Cal. 1976); *Sierra Club v. Dep't of the Interior (Redwoods I)*, 376 F. Supp. 90, 95-96 (N.D. Cal. 1974).

¹²⁴ It is important to note that federal enclaves are distinct from federal public lands. Under the Enclave Clause, "Congress may acquire derivative legislative power from a State . . . by consensual acquisition of land, or by nonconsensual acquisition followed by the state's cession of authority over the land." *Kleppe v. New Mexico*, 426 U.S. 529, 542 (1976) (citation omitted). Specifically, the Clause gives Congress power "[t]o exercise exclusive Legislation in all Cases whatsoever, over such District (not exceeding ten Miles square) as may, by Cession of particular States, and the Acceptance of Congress, become the Seat of the Government of the United States, and to exercise like Authority over all Places purchased by the Consent of the Legislature of the State in which the Same shall be, for the Erection of Forts, Magazines, Arsenals, dock-Yards, and other needful buildings." U.S. CONST. art. I, § 8, cl. 17. In addition to giving Congress exclusive authority over the seat of federal government (Washington, D.C.), the Enclave Clause provides authority to purchase state land for a variety of federal purposes. See GEORGE CAMERON COGGINS & ROBERT L. GLICKSMAN, PUBLIC NATURAL RESOURCES LAW § 3:7 (2d ed. 2017) (noting that "Needful Buildings" . . . include[s] most federal purposes, including locks and dams, national parks, and national forests" (footnotes omitted)). Congress's power over federal enclaves is highly nuanced. See Spencer Driscoll, *Utah's Enabling Act and Congress's Enclave Clause Authority: Federalism Implications of a Renewed State Sovereignty Movement*, 2012 BYU L. REV. 999, 1000. If the state legislature expressly cedes jurisdiction over an enclave purchased by the United States, the United States exercises all legislative powers over the parcel to the exclusion of state authority. *Kleppe*, 426 U.S. at 542; *Fort Leavenworth R.R. Co.*, 114 U.S. at 532, 537-38. Otherwise, the federal and state governments are free to make whatever jurisdictional arrangements they choose regarding wildlife, transportation, and other civil and criminal laws. See *Fort Leavenworth R.R. Co.*, 114 U.S. at 533-42; see also *Kleppe*, 426 U.S. at 542 ("[T]he legislative jurisdiction acquired may range from exclusive federal jurisdiction with no residual state police power, to concurrent, or partial, federal legislative jurisdiction, which may allow the State to exercise certain authority." (citation omitted)); *United States v. Parker*, 36 F. Supp. 3d 550, 575-76, 584-85 (W.D.N.C. 2014) (holding that, where both the United States and North Carolina had concurrent jurisdiction within a forest enclave, the federal court had authority over a prosecution for the illegal taking of wildlife). Once agreed upon, states cannot unilaterally amend or cancel cession agreements. *United States v. Armstrong*, 186 F.3d 1055, 1061 (8th Cir. 1999).

¹²⁵ 220 U.S. 506 (1911).

make provisions for the protection against destruction by fire and depredations upon the public forests and forest reservations . . . and . . . such rules and regulations . . . as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.¹²⁶

With this authority, the Secretary of Agriculture¹²⁶ issued rules requiring ranchers to secure permits to graze livestock in forest reserves.¹³⁰

The defendants were charged with grazing sheep in a forest reserve without a permit.¹³¹ They argued that the Act was unconstitutional insofar as it delegated power to make regulations to the Secretary.¹³² The Supreme Court was unsympathetic. It held: "Each reservation had its peculiar and special features," and Congress properly wielded the Property Clause to give the Secretary power to consider local conditions and "to fill up the details" of regulating "occupancy and use . . . to preserve the forests from destruction."¹³³

The United States Court of Appeals for the Ninth Circuit reached a similar conclusion in a recent case involving rancher Wayne Hage, who gained a good deal of notoriety for his repeated trespasses on federal public lands in Nevada.¹³⁴ The court rejected Hage's argument that state-sanctioned water rights entitled him to any additional easements or appurtenances to graze livestock on federal lands.¹³⁵

The Property Clause power to protect the public lands may also be used to protect natural resources that are intimately associated with the public lands, such as wildlife, water, and air.¹³⁶ In *Hunt v. United States*,¹³⁷ the Supreme Court held that the Property Clause included the power to thin overpopulated herds of deer on federal lands in order to protect forest

¹²⁶ *Id.* at 521–22; see Peter A. Appel, *The Power of Congress "Without Limitation": The Property Clause and Federal Regulation of Private Property*, 86 MINN. L. REV. 1, 58–62 (2001) (discussing the Supreme Court's broad interpretations of congressional authority under the Property Clause).

¹²⁷ Act of June 4, 1897, ch. 2, 30 Stat. 11 (1899).

¹²⁸ *Id.*, ch. 2, 30 Stat. at 35 (codified as amended at 16 U.S.C. § 551).

¹²⁹ In 1905, the authority changed from the Secretary of the Interior to the Secretary of Agriculture. See Act of Feb. 1, 1905, ch. 288, 33 Stat. 628 (1905).

¹³⁰ See *Grimaud*, 220 U.S. at 509–10 (discussing, for example, Regulation 45).

¹³¹ *Id.* at 509.

¹³² *Id.* at 510, 513–14.

¹³³ *Id.* at 515–17, 522 (citing *Wayman v. Southard*, 23 U.S. (10 Wheat.) 1, 42 (1825)); accord *Light*, 220 U.S. 523, 536 (1911) (enjoining grazing on a national forest without a permit and stating that "[t]he United States can prohibit absolutely or fix the terms on which its property may be used").

¹³⁴ *United States v. Estate of Hage*, 810 F.3d 712, 716–18 (9th Cir. 2016) (citing, *inter alia*, *Light*, 220 U.S. at 536); see Jason Dearen, *Central 'Sagebrush Rebellion' Case Suffers Defeat*, SAN DIEGO UNION-TRIB. (Sept. 1, 2012), <https://perma.cc/PNK5-UX85>.

¹³⁵ See *Hage*, 810 F.3d at 715, 717–18.

¹³⁶ See *Kleppe*, 426 U.S. 529, 530 (1976) ("Congress' complete authority over the public lands includes the power to regulate and protect the wildlife living there.").

¹³⁷ 278 U.S. 96 (1928).

resources, even if the federal action was contrary to state law.¹³⁸ The Court subsequently construed *Hunt* quite broadly in *Kleppe v. New Mexico*, stating that, while *Hunt* found that "damage to the land is a sufficient basis for regulation; it contains no suggestion that it is a necessary one."¹³⁹

Kleppe upheld the Wild Free-Roaming Horses and Burros Act,¹⁴⁰ which prohibited the capture and destruction of unclaimed horses and burros on public lands.¹⁴¹ When BLM invoked the Act to prevent New Mexico from capturing and selling burros, the state asserted that BLM lacked authority because the burros were neither moving in interstate commerce nor damaging public land.¹⁴² The issue was whether, under the Property Clause, BLM's jurisdiction over burros was a "needful" regulation "respecting" public lands.¹⁴³

The district court below had found that the Act was unconstitutional and opined that the Property Clause authorized the regulation of wild animals only if necessary to protect the public lands from damage.¹⁴⁴ The Supreme Court disagreed, stating that the Property Clause power "necessarily" includes protection of wildlife "integral" to the public lands.¹⁴⁵ The Court noted that in passing the Wild Free-Roaming Horses and Burros Act, "Congress deemed [these] animals 'an integral part of the natural system of the public lands,' and found that federal management was necessary 'for achievement of an ecological balance on the public lands.'"¹⁴⁶ According to Congress, these animals, if preserved in their native habitats, "contribute to the diversity of life forms within the Nation and enrich the lives of the American people."¹⁴⁷

In reaching its conclusion, the Court explicitly rejected the district court's rationale that federal power over wild horses and burros "conflicts with . . . the traditional doctrines concerning wild animals."¹⁴⁸ It explained that, while "the States have broad trustee and police powers over wild animals within their jurisdictions . . . , those powers exist only 'in so far as [their] exercise may be not incompatible with, or restrained by, the rights conveyed to the Federal government by the Constitution.'"¹⁴⁹ The Court clarified the balance of power between the federal and state governments:

¹³⁸ *Id.* at 100.

¹³⁹ *Kleppe*, 426 U.S. at 537.

¹⁴⁰ 16 U.S.C. §§ 1331–1340 (2012).

¹⁴¹ *Id.* § 1338(a). See generally Robert L. Fischman & Jeremiah I. Williamson, *The Story of Kleppe v. New Mexico: The Sagebrush Rebellion as Un-Cooperative Federalism*, 83 U. COLO. L. REV. 123 (2011) (providing the legal history and political implications of this decision).

¹⁴² *Kleppe*, 426 U.S. at 533.

¹⁴³ *Id.* at 536.

¹⁴⁴ See *id.* at 534 (citing *New Mexico v. Morton*, 406 F. Supp. 1237, 1239 (D.N.M. 1975)).

¹⁴⁵ *Id.* at 535, 540–41, 546.

¹⁴⁶ *Id.* at 535 (quoting 16 U.S.C. § 1331; H.R. REP. NO. 92-681, at 5 (1971) (Conf. Rep.)).

¹⁴⁷ 16 U.S.C. § 1331.

¹⁴⁸ *Kleppe*, 426 U.S. at 534–35 (omission in original) (quoting *Morton*, 406 F. Supp. at 1238).

¹⁴⁹ *Id.* at 545 (alteration in original) (quoting *Geer*, 161 U.S. 519, 528 (1896), *overruled by* *Hughes*, 441 U.S. 322 (1979)).

"No doubt it is true that as between a State and its inhabitants the State may regulate the killing and sale of [wildlife], but it does not follow that its authority is exclusive of paramount powers." . . . *We hold today that the Property Clause also gives Congress the power to protect wildlife on the public lands, state law notwithstanding.*¹⁵⁰

In *Wyoming v. United States*,¹⁵¹ Wyoming challenged the refusal of FWS to permit the state to vaccinate elk on the National Elk Refuge (NER).¹⁵² The United States Court of Appeals for the Tenth Circuit stated that the Property Clause gives Congress the power to choose: "(1) to assume all management authority over the [National Wildlife Refuge System], including the NER, (2) to share management authority over those federal lands with the States, or (3) to preserve to its fullest extent the States' historical role in the management of wildlife within their respective borders."¹⁵³ The court held that federal law would preempt state management in the event of an actual conflict "or where state management . . . stand[s] as an obstacle to the accomplishment" of federal objectives.¹⁵⁴

States often assert their police powers to regulate the public health and welfare through measures that protect natural resources within the state, such as game species, trees, and water.¹⁵⁵ Although there is no explicit "Property Clause" authority in the U.S. Constitution extending to state interests in wildlife, water, or other natural resources, states occasionally assert an ownership interest as an additional source of their authority.¹⁵⁶ The Supreme Court has repeatedly rejected this theory, at least as it relates to wildlife and migratory birds: "To put the claim of . . . State [authority] upon

¹⁵⁰ *Id.* at 545–46 (alteration in original) (emphasis added) (quoting *Missouri*, 262 U.S. 416, 434 (1920)).

¹⁵¹ 279 F.3d 1214 (10th Cir. 2002).

¹⁵² *Id.* at 1218.

¹⁵³ *Id.* at 1230.

¹⁵⁴ See *id.* at 1234. According to the court, Congress "rejected complete preemption of state wildlife regulation" in the National Wildlife Refuge System, but rather "intended ordinary principles of conflict preemption to apply." *Id.* The United States District Court for the District of California followed *Wyoming* in holding that a state ballot proposition that banned the use of certain kinds of traps and poisons on federal lands was preempted by the Property Clause. *Nat'l Audubon Soc'y, Inc. v. Davis*, 144 F. Supp. 2d 1160, 1180–81 (N.D. Cal. 2000), *aff'd in part and rev'd in part*, 307 F.3d 835, 837 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002). The Ninth Circuit did not reach the Property Clause issue, instead holding that the proposition was preempted by the National Wildlife Refuge System Administration Act. *Nat'l Audubon Soc'y, Inc. v. Davis*, 307 F.3d at 854; accord *Defs. of Wildlife v. Salazar*, 651 F.3d 112, 118 (D.C. Cir. 2011) ("tak[ing] the Secretary at his word that Wyoming has no veto over the Secretary's duty to end a practice that is concededly at odds with the long-term health of the elk and bison in the Refuge," while pointing out Wyoming's brief "agreeing that Wyoming does not have a veto").

¹⁵⁵ See, e.g., *Maine v. Taylor*, 477 U.S. 131, 151 (1986) ("[Each state] retains broad regulatory authority to protect . . . the integrity of its natural resources" such as fisheries.); *Miller v. Schoene*, 276 U.S. 272, 280–81 (1928) (upholding Virginia's decree to cut down infected cedars that were fatal to nearby apple orchards).

¹⁵⁶ See, e.g., *Geer*, 161 U.S. 519, 635 (1896) (claiming that ownership of all wild game taken within the state allowed the state to prohibit its removal from the state), *overruled by Hughes*, 441 U.S. 322 (1979)).

title is to lean upon a slender reed."¹⁵⁷ Even absent title, states have "ample allowance for preserving . . . the legitimate state concerns for conservation and protection of wild animals underlying the 19th-century legal fiction of state ownership,"¹⁵⁸ but as noted in *Kleppe, Wyoming*, and numerous other cases, state law may not contravene federal law.¹⁵⁹

b. Property Clause Power to Protect Federal Lands and Resources from External Threats

Not only does the Property Clause supply authority to regulate activities that occur on federal lands, but in certain cases, it also authorizes federal regulation of activities outside of the federal boundaries where necessary to protect the public lands and resources. In *Camfield v. United States*,¹⁶⁰ the owner of several sections of private land acquired from the Union Pacific Railroad fenced his land in a way that also enclosed about 20,000 acres of public lands.¹⁶¹ When the United States sought to remove the fence under the Unlawful Enclosures Act of 1885,¹⁶² Camfield argued that the United States had no power to control private land use.¹⁶³ The Supreme Court upheld the application of the Act to Camfield's property, explaining that under the Property Clause, the federal government "doubtless has a power over its own property analogous to the police power of the several States, and the extent to which it may go in the exercise of such power is measured by the exigencies of the particular case."¹⁶⁴

The courts have consistently upheld "broad [federal] power to control extraterritorial private activities that might adversely affect federal property."¹⁶⁵ For instance, federal restrictions on businesses situated outside of a national park have been upheld when those business enterprises

¹⁵⁷ *Missouri*, 252 U.S. 416, 434 (1920); see also *Hughes*, 441 U.S. at 332.

¹⁵⁸ *Hughes*, 441 U.S. at 335.

¹⁵⁹ *Kleppe*, 426 U.S. 529, 545 (1976); *Wyoming*, 279 F.3d 1214, 1227; see also, e.g., *Hughes*, 441 U.S. at 338-39.

¹⁶⁰ 167 U.S. 518 (1897).

¹⁶¹ *Id.* at 519.

¹⁶² 43 U.S.C. §§ 1061-1066 (2012).

¹⁶³ *Camfield*, 167 U.S. at 522.

¹⁶⁴ *Id.* at 525; see *Utah Div. of State Lands v. United States*, 482 U.S. 193, 201 (1987) ("The Property Clause grants Congress plenary power to regulate and dispose of land within the Territories . . ."); *United States v. Midwest Oil Co.*, 236 U.S. 459, 483 (1915) (upholding president's decision to withdraw land to preserve oil reserves); *Light*, 220 U.S. 523, 536 (1911) ("The United States can prohibit absolutely or fix the terms on which its property may be used."); see also *Organized Fisherman of Fla. v. Hodel*, 775 F.2d 1544, 1549 (11th Cir. 1985) (finding that Florida law provided no vested property right for commercial fishing in a national park); *Organized Fisherman of Fla. v. Andrus*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (refusing to enjoin enforcement of federal regulations restricting fishing in a national park given Congress's "complete power" over public lands which "necessarily includes the power to regulate and protect the wildlife living there" (citing *Kleppe*, 426 U.S. at 540-41)).

¹⁶⁵ Appel, *supra* note 126, at 77-78.

affected neighboring parklands.¹⁶⁶ Moreover, federal regulation of activities on state-owned waters was upheld as a valid exercise of Property Clause power to manage the Boundary Waters Canoe Area Wilderness.¹⁶⁷

Beyond the land itself, it is fair to ask how far federal authority over wildlife and other migratory resources “integral” to the public lands goes when those resources are found outside of the boundaries of the public lands. In *Kleppe*, the contested issue involved the federal regulation of nonfederal activity on federal land (i.e., the State of New Mexico captured wild burros on a grazing allotment), and while the Act in question reached nonfederal land as well, the Supreme Court was not required to address the regulation of state or private activities on nonfederal land.¹⁶⁸

Other than *Kleppe*, few cases touch upon the Property Clause power to regulate “integral” wildlife outside of the boundaries of the federal lands, perhaps because federal agencies and their employees tend to be reluctant to exercise their power aggressively.¹⁶⁹

2. The Treaty Clause

The Treaty Clause provides that: “[The President] shall have the Power . . . to make Treaties, provided two thirds of the Senators present

¹⁶⁶ See, e.g., *Armstrong*, 186 F.3d 1055, 1061–62 (8th Cir. 1999) (“[R]egulation requiring that commercial tour boat operators obtain a permit before operating . . . within [Voyageurs National Park] is well within the authority of the NPS.”); *United States v. Richard*, 636 F.2d 236, 240 (8th Cir. 1980) (“[F]ederal regulation may exceed federal boundaries when necessary for the protection of human life or wildlife or government forest land or objectives.”).

¹⁶⁷ See, e.g., *Minnesota v. Block*, 660 F.2d 1240, 1249 (8th Cir. 1981) (“Congress’ power must extend to regulation of conduct on or off the public land that would threaten the designated purpose of federal lands.”); *United States v. Brown*, 552 F.2d 817, 822 (8th Cir. 1977) (stating that “congressional power over federal lands . . . include[s] the authority to regulate activities on non-federal public waters in order to protect wildlife and visitors on the lands”); see also *Stupak-Thrall v. United States*, 89 F.3d 1269, 1269, 1272 (6th Cir. 1996) (en banc) (an equally divided court affirmed district court in that the federal government could regulate private activities that occurred on the surface of a lake even if the surface was private property); *Organized Fisherman of Fla.*, 775 F.2d 1544, 1549 (11th Cir. 1985) (upholding federal restrictions on fishing on waters within Everglades National Park, some of which were presumably under state jurisdiction); *United States v. Lindsey*, 595 F.2d 5, 6 (9th Cir. 1979) (stating that the Property Clause “grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters”); *Grand Lake Estates Homeowners Ass’n v. Veneman*, 340 F. Supp. 2d 1162, 1167–69 (D. Colo. 2004) (holding USFS could require special use permits on docks and marinas on Association’s land if reasonably necessary to protect the environment and water quality of Arapaho National Recreation Area).

¹⁶⁸ *Kleppe*, 426 U.S. at 546 (“We need not, and do not, decide whether the Property Clause would sustain the Act in all of its conceivable applications.”).

¹⁶⁹ See generally Joseph L. Sax & Robert B. Keiter, *Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations*, 14 *ECOLOGY L.Q.* 207, 226, 260 (1987) (describing how NPS’s “distaste for confrontation makes it timid,” and how “constrained by bureaucratic prudence and timidity. . . . [NPS] is reluctant to use the law; highly deferential to the traditional turf prerogatives of its neighbors; and hesitant to subject itself to criticism by speaking out forcefully on transboundary issues”).

concur."¹⁷⁰ In recognition of the international nature of wildlife conservation, the United States has entered into several landmark wildlife treaties within the past century, which Congress has implemented through domestic legislation.¹⁷¹ With respect to the management of wildlife on federal lands, the most notable of these include the Migratory Bird Treaty of 1916¹⁷² and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹⁷³ Other international provisions include the Agreement on the Conservation of Polar Bears,¹⁷⁴ the Pacific Salmon Treaty,¹⁷⁵ the Northwest Atlantic Fisheries Treaty,¹⁷⁶ the Migratory Bird and Game Mammal Treaty with Mexico,¹⁷⁷ and the International Convention for the Regulation of Whaling.¹⁷⁸ These treaties are implemented through the Marine Mammal Protection Act,¹⁷⁹ the Magnuson-Stevens Fishery Conservation and Management Act,¹⁸⁰ the Whaling Convention Act,¹⁸¹ and other pieces of domestic legislation.¹⁸² The next Section of the Article focuses on the Migratory Bird Treaty's implementing legislation.

¹⁷⁰ U.S. CONST. art. II, § 2, cl. 2.

¹⁷¹ See, e.g., Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087 ("Recognizing . . . that international cooperation is essential for the protection of . . . wild fauna and flora.").

¹⁷² Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, Gr. Brit.-U.S., Aug. 16, 1916, 39 Stat. 1702 (codified as amended at 16 U.S.C. §§ 703–712 (2012)).

¹⁷³ Convention on International Trade in Endangered Species of Wild Fauna and Flora, *supra* note 171. CITES is implemented in the United States through the ESA, which, like CITES, controls imports and exports of protected species. 16 U.S.C. § 1531(a)(4)(F); *id.* § 1538(a)(1)(A), (a)(2)(A), (c)–(d); see *Safari Club Int'l v. Jewell*, 960 F. Supp. 2d 17, 67–68 (D.D.C. 2013) (noting that conserving species within their ecosystems is one purpose of the ESA, "but other purposes are 'to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a)[,]' including the CITES" (alteration in original)). As such, the ESA finds its constitutional basis in part in the Treaty Clause, though other provisions of the ESA are more firmly founded on the Commerce Clause. See *infra* discussion Part III.A.3.c.

¹⁷⁴ Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T. 3918.

¹⁷⁵ Treaty Between the United States of America and the Canada Concerning Pacific Salmon, Can.-U.S., Jan. 28, 1985, T.I.A.S. No. 11,091.

¹⁷⁶ International Convention for the Northwest Atlantic Fisheries, Jul. 3, 1950, 64 Stat. 1067, 1 U.S.T. 477 (codified at 16 U.S.C. §§ 981–991).

¹⁷⁷ Convention Between the United States of America and the United Mexican States for the Protection of Migratory Birds and Game Mammals, Mex.-U.S., Mar. 10, 1972, 23 U.S.T. 260.

¹⁷⁸ International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, T.I.A.S. No. 1849. For an assessment of wildlife and biodiversity related treaties that have not yet been ratified by the United States, including the Convention on Biological Diversity, see MARY JANE ANGELO ET AL., CTR. FOR PROGRESSIVE REFORM, WHITE PAPER NO. 1201, RECLAIMING GLOBAL ENVIRONMENTAL LEADERSHIP: WHY THE UNITED STATES SHOULD RATIFY TEN PENDING ENVIRONMENTAL TREATIES (2012), <https://perma.cc/5NB3-6ZEE>.

¹⁷⁹ Marine Mammal Protection Act of 1972, 16 U.S.C. §§ 1361–1421h.

¹⁸⁰ *Id.* §§ 1801–1891d.

¹⁸¹ Whaling Convention Act of 1949, *id.* §§ 916–916f.

¹⁸² See ANGELO ET AL., *supra* note 178, at 2; David M. Golove, *Treaty-Making and the Nation: The Historical Foundations of the Nationalist Conception of the Treaty Power*, 98 MICH. L. REV. 1075, 1313–15 (2000) (advocating a federalist approach to implementing domestic treaties).

a. Migratory Bird Treaty of 1916

In 1916, the United States entered into a treaty with Great Britain (on behalf of Canada) to ensure the preservation of “such migratory birds as are either useful to man or harmless.”¹⁸³ The Migratory Bird Treaty Act of 1918¹⁸⁴ (MBTA) ratified the treaty and imposed stringent prohibitions on the taking, capturing, hunting, and killing of protected birds.¹⁸⁵ According to George Cameron Coggins, “[t]he origins of modern federal wildlife law may be traced back to the MBTA.”¹⁸⁶

Almost immediately after ratification and enactment, the states challenged the constitutionality of the treaty and the MBTA.¹⁸⁷ Today, the Supreme Court’s opinion in *Missouri v. Holland* remains a significant benchmark for federal Treaty Clause authority.¹⁸⁸ The case involved a suit brought by the State of Missouri to enjoin a federal game warden from enforcing the MBTA, which implements the 1916 treaty by prohibiting any person from pursuing or killing migratory birds except as authorized by regulations issued by the Secretary of Agriculture.¹⁸⁹ More specifically, the MBTA states that it is:

unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship,

¹⁸³ Convention Between the United States and Great Britain for the Protection of Migratory Birds in the United States and Canada, *supra* note 172, at 1702.

¹⁸⁴ 16 U.S.C. §§ 710–711.

¹⁸⁵ *Id.* § 703(a).

¹⁸⁶ George Cameron Coggins, *Federal Wildlife Law Achieves Adolescence: Developments in the 1970s*, 1978 DUKE L.J. 753, 764; see also Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the Migratory Bird Treaty Act: A Way Forward*, 38 ENVTL. L. 1167, 1179 (2008).

¹⁸⁷ See, e.g., *Missouri*, 252 U.S. 416, 432–35 (1920) (holding that the MBTA is constitutional under Congress’s express and exclusive Constitutional authority to make and ratify treaties). Prior to ratification and passage of the MBTA, an earlier version of a statute to protect migratory birds had been invalidated as beyond constitutional authority. See *United States v. Shauver*, 214 F. 154, 157–60 (E.D. Ark. 1914) (holding that the statute was unconstitutional for, inter alia, its usurpation of the states’ sovereign right to own all animals *ferae naturae*, which are denominated as game, for the benefit of its citizens).

¹⁸⁸ *Missouri*, 252 U.S. at 432.

¹⁸⁹ The MBTA’s prohibitions apply broadly to state actors and others. 16 U.S.C. § 703(a); *Missouri*, 252 U.S. at 430–31. Courts, however, have since reached conflicting results on the MBTA’s ability to restrict federal actors. See *Humane Soc’y of the U.S. v. Glickman*, 217 F.3d 882, 885–87 (D.C. Cir. 2000) (finding that the MBTA applies to federal agencies and federal actors, because the Act enforces a treaty binding upon the United States and, therefore, is binding on the federal agencies); *Audubon Soc’y of Portland v. U.S. Fish & Wildlife Serv.*, No. 04-670-KI, 2005 WL 1713086, at *4 (D. Or. July 21, 2005) (applying the MBTA to federal agencies, but finding that they were not liable for habitat destruction); *Ctr. for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161, 177–78 (D.D.C. 2002) (applying the MBTA to the Department of Defense and holding it in violation), *vacated as moot sub nom.*, *Ctr. for Biological Diversity v. England*, Nos. 02-5163, 02-5180, 2003 WL 179848 (D.C. Cir. Jan. 23, 2003). But see *Sierra Club v. Martin*, 110 F.3d 1551, 1556 (11th Cir. 1997) (finding that because federal agencies must conserve birds under other statutes, the MBTA does not apply to federal agencies).

export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or egg of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof.¹⁹⁰

In *Missouri v. Holland*, the Supreme Court held that the Treaty Clause provided a viable avenue for federal regulation of wildlife, despite the state's claim of a predominant interest in the wildlife in question.¹⁹¹ Under *Missouri v. Holland*, the test to determine a treaty's validity is two-fold: 1) Is the matter involved of national interest? 2) Does the treaty contravene any specific constitutional prohibition?¹⁹² If the first is answered in the affirmative, and the second in the negative, the treaty is valid.¹⁹³

With respect to the Migratory Bird Treaty, the answer to the first question was a resounding "yes," according to the Supreme Court:

Here a national interest of very nearly the first magnitude is involved. It can be protected only by national action in concert with that of another power. The subject matter [i.e., migratory birds] is only transitorily within the State and has no permanent habitat therein. But for the treaty and the statute there soon might be no birds for any powers to deal with. We see nothing in the Constitution that compels the Government to sit by while a food supply is cut off and the protectors of our forests and our crops are destroyed. It is not sufficient to rely upon the States. The reliance is vain.¹⁹⁴

As to the second question, the Court explicitly rejected the state's argument that the Treaty contravened the Tenth Amendment, which reserves power to the states if not delegated to the United States by the Constitution.¹⁹⁵ According to the Court, "[t]he treaty in question does not contravene any prohibitory words to be found in the Constitution," nor is the treaty "forbidden by some invisible radiation from the general terms of the Tenth Amendment."¹⁹⁶ Thus, the state's interest in managing migratory birds covered by the MBTA, whether that interest rested upon some claim of ownership (which the Court disregarded) or on traditional state police

¹⁹⁰ 16 U.S.C. § 703(a).

¹⁹¹ *Missouri*, 252 U.S. at 432-35.

¹⁹² *Id.* at 433.

¹⁹³ See Oona A. Hathaway et al., *The Treaty Power: Its History, Scope, and Limits*, 98 CORNELL L. REV. 239, 266, 279 (2013) (explaining that Treaty Powers are limited by "affirmative guarantees [that] are set forth explicitly in the Bill of Rights' recognition and guarantee of individual rights and in the Constitution's provisions prescribing the structure of the national government . . . [including] the preservation of a continuing role for the states and maintenance of certain areas of state authority and control," but concluding that invalidation is exceedingly rare, so "the real protections against abuse of the treaty power derive from the structural, political, and diplomatic checks on the exercise of the power").

¹⁹⁴ *Missouri*, 252 U.S. at 435.

¹⁹⁵ *Id.* at 433-34.

¹⁹⁶ *Id.*

powers, must give way.¹⁹⁷ It explained, “[v]alid treaties of course ‘are as binding within the territorial limits of the States as they are elsewhere throughout the dominion of the United States.’”¹⁹⁸ In the end, the Court held that the Treaty was lawful, and thus, the MBTA was lawful as well pursuant to the Treaty Clause, the Supremacy Clause, and the Necessary and Proper Clause.

3. *The Tenth Amendment and the Commerce Clause*

The Tenth Amendment often forms the basis of state claims of exclusive jurisdiction over wildlife. The Tenth Amendment states: “The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.”¹⁹⁹ The Tenth Amendment and the Commerce Clause seem to be inextricably entwined in federal wildlife management discussions, so it is necessary to discuss the interplay of both provisions together.

a. *The Evolution of the Anti-Commandeering Doctrine*

The Tenth Amendment was ratified on December 15, 1791,²⁰⁰ and is similar to an earlier provision of the Articles of Confederation which read: “Each State retains its sovereignty, freedom, and independence, and every power, jurisdiction, and right, which is not by this confederation *expressly* delegated to the United States, in Congress assembled.”²⁰¹ Ultimately, the word “expressly” did not appear in the Tenth Amendment as ratified.

Early in American history, the Supreme Court seemed to assume the Tenth Amendment was a strong and limiting power of the Constitution.²⁰² However, by the early 20th century the Court’s view of the Tenth Amendment shifted significantly. In *United States v. Darby*,²⁰³ the Court stated:

¹⁹⁷ *Id.* at 434.

¹⁹⁸ *Id.* (quoting *Baldwin v. Franks*, 120 U.S. 678, 683 (1887)).

¹⁹⁹ U.S. CONST. amend. X.

²⁰⁰ *The Bill of Rights: A Transcription*, NAT’L ARCHIVES, <https://perma.cc/6WWG-KH2L> (last reviewed Nov. 11, 2017).

²⁰¹ ARTICLES OF CONFEDERATION of 1781, art. II (emphasis added); see *Amendment X: House of Representatives, Amendments to the Constitution*, FOUNDERS’ CONST., <https://perma.cc/7U44-AZQ3> (last visited Nov. 11, 2017) (discussing James Madison objecting to a proposed version of the Tenth Amendment).

²⁰² See *Hammer v. Dagenhart*, 247 U.S. 251, 275–76 (1918) (invalidating federal child labor laws, and remarking upon the “inherent” power of the states to regulate “purely internal affairs”), *overruled in part by* *United States v. Darby*, 312 U.S. 100 (1941); see also *Carter v. Carter Coal Co.*, 298 U.S. 238, 294–95 (1936) (invalidating federal regulation of coal production and stating that the Framers “meant to carve from the general mass of legislative powers, then possessed by the states, only such portions as it was thought wise to confer upon the federal government . . . with the result that what was not embraced by the enumeration remained vested in the states without change or impairment”).

²⁰³ 312 U.S. 100 (1941).

The [Tenth A]mendment states but a truism that all is retained which has not been surrendered. There is nothing in the history of its adoption to suggest that it was more than declaratory of the relationship between the national and state governments as it had been established by the Constitution before the amendment or that its purpose was other than to allay fears that the new national government might seek to exercise powers not granted, and that the states might not be able to exercise fully their reserved powers.²⁰⁴

Since *Darby*, it has become exceedingly uncommon for the Supreme Court to invalidate federal laws under the Tenth Amendment.²⁰⁵ The Anti-Commandeering Doctrine arising from *New York v. United States*²⁰⁶ is the exception. There, the Court invalidated a portion of the Low-Level Radioactive Waste Policy Amendments Act of 1985²⁰⁷ (RWPA).²⁰⁸ The RWPA required states to take title to any undisposed low-level radioactive waste within their borders and made each state liable for all damages directly related to that waste.²⁰⁹ The Court ruled that the imposition of taking title violated the Tenth Amendment, as the federal government could not directly compel states to enforce federal regulations.²¹⁰

In *Printz v. United States*,²¹¹ the Court, again utilizing the Anti-Commandeering Doctrine, found that provisions of the Brady Bill²¹² requiring state and local law enforcement officials to conduct background checks on persons attempting to purchase handguns was a violation of the Tenth Amendment, as the Bill forced participation of the state officials in the administration of a federal program.²¹³ Similarly, in *National Federation of Independent Business v. Sebelius*,²¹⁴ the Court held that the Affordable Care Act²¹⁵ (also known as Obamacare) coerced the states to expand Medicaid.²¹⁶ Although other provisions of the Act were upheld, the Court found that the Medicaid provision effectively forced states to participate by conditioning the continued provision of funds on their agreement to materially alter their Medicaid eligibility criteria.²¹⁷

In the modern era, the Tenth Amendment's primary role in regulating the balance of powers between the federal and state governments is

²⁰⁴ *Id.* at 124.

²⁰⁵ U.S. CONST. amend. X.

²⁰⁶ 505 U.S. 144 (1992).

²⁰⁷ 42 U.S.C. §§ 2021b-2021j (2012).

²⁰⁸ *New York*, 505 U.S. at 149.

²⁰⁹ 42 U.S.C. § 2021e(d)(2)(C).

²¹⁰ *New York*, 505 U.S. at 176-77, 184.

²¹¹ 521 U.S. 898 (1997).

²¹² Brady Handgun Violence Prevention Act, 18 U.S.C. § 922 (2012).

²¹³ *Printz*, 521 U.S. at 933-34 (citing *New York*, 505 U.S. at 188).

²¹⁴ 567 U.S. 519 (2012).

²¹⁵ Patient Protection and Affordable Care Act, Pub. L. No. 111-148, 124 Stat. 119 (2010) (codified in scattered sections of 25, 26, and 42 U.S.C.). The Medicaid expansion is codified at 42 U.S.C. § 1396a(a)(10)(A)(i)(VIII) (2012).

²¹⁶ *Sebelius*, 567 U.S. at 588.

²¹⁷ *Id.*

expressed through the Anti-Commandeering Doctrine.²¹⁸ Commandeering occurs when Congress “require[s] the States in their sovereign capacity to regulate their own citizens,” *not* when federal legislation with an administrative and financial impact on state bureaucracy regulates public and private conduct alike.²¹⁹

b. The Tenth Amendment's Application to Wildlife Management

Prior to 1920, very little judicial activity occurred regarding the interplay of the Tenth Amendment and federal wildlife control.²²⁰ One of the first decisions on the scope of the Tenth Amendment regarding federal wildlife control was *Missouri v. Holland*, which upheld the MBTA.²²¹ As noted above, the Supreme Court flatly rejected Missouri’s argument that the MBTA violated the Tenth Amendment, finding that there were no reserved state powers that would stand in the way of federal enforcement of an act arising under the Treaty power.²²²

It was not until *Palila v. Hawaii Department of Land and Natural Resources*²²³ that the courts again took up the issue of the Tenth Amendment’s implications for federal wildlife management.²²⁴ There, the Hawaii Department of Land and Natural Resources maintained herds of feral sheep and goats for sport-hunting purposes on state-owned lands.²²⁵ These herds were causing significant habitat modification and destruction within the critical habitat of the Palila bird (*Psittirostra bairdii*), a listed species under the ESA.²²⁶ Conservation groups sought declaratory and injunctive relief requiring Hawaii to adopt a plan to eradicate the feral sheep and goat

²¹⁸ See *Massachusetts v. U.S. Dep’t of Health & Human Servs.*, 682 F.3d 1, 12 (1st Cir. 2012) (“Supreme Court interpretations of the Tenth Amendment have varied over the years but those in force today have struck down statutes only where Congress sought to commandeer state governments or otherwise directly dictate the *internal operations* of state government.”).

²¹⁹ *Reno v. Condon*, 528 U.S. 141, 151 (2000); see *Nuclear Energy Inst., Inc. v. Envtl. Prot. Agency*, 373 F.3d 1251, 1305 (D.C. Cir. 2004) (holding that Congress’s designation of a federally owned site for a nuclear repository did not commandeer the state legislative process or officials, but rather merely prescribed the use of federal property); *United States v. Washington*, 887 F. Supp. 2d 1077, 1101 (D. Mont. 2012) (rejecting Tenth Amendment challenge to federal prosecution of participants in state-authorized medical marijuana program).

²²⁰ Although it did not address the Tenth Amendment, in *Geer v. Connecticut*, the Court held that “the ownership of wild animals, so far as they are capable of ownership, is in the state, not as a proprietor, but in its sovereign capacity, as a representative and for the benefit of all its people in common.” 161 U.S. 519, 529 (1896) (quoting *State v. Rodman*, 59 N.W. 1098, 1099 (Minn. 1894)), *overruled by Hughes*, 441 U.S. 322 (1979).

²²¹ *Missouri*, 252 U.S. 416, 435 (1920).

²²² *Id.* at 432–33.

²²³ 471 F. Supp. 985 (D. Haw. 1979), *aff’d on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff’d*, 852 F.2d 1106 (9th Cir. 1988).

²²⁴ *Id.* at 995.

²²⁵ *Id.* at 989.

²²⁶ *Id.* at 988–90; see *Native Fish and Wildlife Endangered Species*, 32 Fed. Reg. 4001, 4001 (Mar. 11, 1967).

herds from the Palila's critical habit.²²⁷ Because Palila are only found in Hawaii and because no federal lands or funds were involved, Hawaii argued that the state retained exclusive sovereignty over the Palila's fate under the Tenth Amendment.²²⁸ The United States District Court for the District of Hawaii held that the Tenth Amendment does not constrain enforcement of the ESA given Congress's power "to enact legislation implementing valid treaties and . . . to regulate commerce."²²⁹ It explained:

[A] national program to protect and improve the natural habitats of endangered species preserves the possibilities of interstate commerce in these species and of interstate movement of persons . . . who come to a state to observe and study these species, that would otherwise be lost by state inaction.²³⁰

In *Gibbs v. Babbitt*,²³¹ individuals and several North Carolina counties challenged a FWS regulation prohibiting the taking of red wolves on private property as an infringement on traditional state power over wildlife.²³² The United States Court of Appeals for the Fourth Circuit found that the regulated activity did "not involve an 'area of traditional state concern,' one to which 'States lay claim by right of history and expertise.'"²³³ It reasoned that, while "States have important interests in regulating wildlife and natural resources within their borders," state power over wildlife has long been circumscribed by federal regulatory power.²³⁴ The *Gibbs* court explained that the regulated activity—the taking of wolves—"is not an area in which the states may assert an exclusive and traditional prerogative in derogation of an enumerated federal power," i.e., the Commerce Clause.²³⁵ The court also took note of "the historic power of the federal government to preserve scarce resources in one locality for the future benefit of all Americans."²³⁶

The Tenth Circuit had the opportunity to consider similar Tenth Amendment arguments in *Wyoming v. United States*, where the State of Wyoming tried to compel FWS to allow it to vaccinate elk against brucellosis at the Jackson Hole National Elk Refuge (NER).²³⁷ In response to Wyoming's

²²⁷ *Palila*, 471 F. Supp. at 987.

²²⁸ *Id.* at 992.

²²⁹ *See id.* at 995.

²³⁰ *Id.* For a detailed discussion of the Commerce Clause and the ESA, see *infra* Part III.A.3.c.

²³¹ 214 F.3d 483 (4th Cir. 2000).

²³² *Id.* at 499; see 50 C.F.R. § 17.84(c)(2) (2016).

²³³ *Gibbs*, 214 F.3d at 486 (citing *United States v. Lopez*, 514 U.S. 549, 580, 583 (1995) (Kennedy, J., concurring)); see also *id.* at 501 ("[T]he federal government possesses a historic interest in such regulation—an interest that has repeatedly been recognized by the federal courts.").

²³⁴ *Id.* at 499 (quoting *Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172, 204 (1999)); see also *id.* at 501 ("[I]t is clear from our laws and precedent that federal regulation of endangered wildlife does not trench impermissibly upon state powers.").

²³⁵ *Id.* at 499.

²³⁶ *Id.* at 492. The portion of the court's opinion rejecting the Commerce Clause challenge is discussed below. See *infra* note 264 and accompanying text.

²³⁷ *Wyoming*, 279 F.3d 1214, 1218, 1222 (10th Cir. 2002).

argument that the Tenth Amendment reserved the sovereign authority to manage wildlife to the states, the court explained that, while states have historically had broad authority to regulate the wildlife within their borders, that authority is not constitutionally derived.²³⁸ Moreover, given the strength and breadth of the federal Property Clause power, the court found it “painfully apparent that the Tenth Amendment does not reserve to the State of Wyoming the right to manage wildlife, or more specifically vaccinate elk, on the NER, regardless of the circumstances.”²³⁹

Subsequently, in *Wyoming v. U.S. Department of the Interior*,²⁴⁰ the State of Wyoming argued that federal regulation of wolves violated the Anti-Commandeering Doctrine.²⁴¹ Wyoming objected to having only two choices: 1) to change state law to eliminate its predator classification for wolves and commit to maintaining at least fifteen packs of wolves, or 2) to endure the restrictions imposed by the continued protection of wolves under the ESA.²⁴² The court held that Wyoming had failed to show a violation of the Tenth Amendment through commandeering or otherwise.²⁴³ It explained: “Wyoming is under no mandate to regulate gray wolves. . . . If Wyoming chooses to ignore the [federal requirement], the State simply will find itself perpetually pre-empted from regulating the gray wolf.”²⁴⁴

In sum, except for those rare instances when the Anti-Commandeering Doctrine is successfully invoked, attempts to use the Tenth Amendment as a basis for state sovereignty over federally protected wildlife have generally failed, from *Missouri v. Holland* to present.

c. The Commerce Clause and Federal Wildlife Management

The federal courts did not immediately support federal wildlife control based on the Commerce Clause. In an early case, *Geer v. Connecticut*, the Supreme Court held that game killed within the state concerned internal state commerce rather than interstate commerce.²⁴⁵ In subsequent years, several district court opinions followed suit.²⁴⁶

²³⁸ *Id.* at 1226–27 (citing 43 C.F.R. § 24.3 (2016)).

²³⁹ *Id.* at 1227.

²⁴⁰ 360 F. Supp. 2d 1214 (D. Wyo. 2005), *aff’d*, 442 F.3d 1262 (10th Cir. 2006).

²⁴¹ *Id.* at 1238.

²⁴² *Id.* at 1240.

²⁴³ *Id.* at 1240, 1244.

²⁴⁴ *Id.* at 1240–41. *But see* N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, No. CV 16-00462 WJ/KBM, 2016 WL 4536465, at *9 (D.N.M. June 10, 2016) (distinguishing *Wyoming* and noting that FWS’s own regulation required FWS to release wolves in compliance with state permit requirements), *rev’d*, 854 F.3d 1236 (10th Cir. 2017).

²⁴⁵ *Geer*, 161 U.S. 519, 534–35 (1896), *overruled by Hughes*, 441 U.S. 322 (1979).

²⁴⁶ *See, e.g.*, *United States v. McCullagh*, 221 F. 288, 292 (D. Kan. 1915) (“The power of the states, by their laws in the protection of their trust title for the common good of all the inhabitants of the state, to exclude wild bird and animal life lawfully reduced to the exclusive possession of the individual from the operation of the commerce clause of the national Constitution, as was held in *Geer* . . . , has been uniformly maintained by the courts of this country.”); *Shauver*, 214 F. 154, 160 (E.D. Ark. 1914) (following *Geer* and setting aside an

With the New Deal, however, the federal government's use of the Commerce Clause power began to expand.²⁴⁷ By the 1970s, it was clear that *Geer* had lost favor. In *Douglas v. Seacoast Products, Inc.*,²⁴⁸ the Supreme Court struck down a Virginia statute prohibiting federally licensed vessels owned by nonresidents of Virginia from fishing in Chesapeake Bay, and also prohibiting ships owned by noncitizens to catch fish anywhere in Virginia.²⁴⁹ The Court stated:

While [Virginia] may be correct in arguing that at earlier times in our history there was some doubt whether Congress had power under the Commerce Clause to regulate the taking of fish in state waters, there can be no question today that such power exists where there is some effect on interstate commerce.²⁵⁰

It concluded that the movement of fishing boats within and between states and to processing plants "certainly" affects interstate commerce.²⁵¹

The following year, in *Baldwin v. Fish & Game Commission of Montana*,²⁵² a Montana hunting guide sued the State of Montana for discriminating against out of state hunters in the price it charged for elk tags. The Supreme Court observed that, in recent years,

[t]he Court has recognized that the States' interest in regulating and controlling those things they claim to "own," including wildlife, is by no means absolute. States may not compel the confinement of the benefits of their resources, even their wildlife, to their own people whenever such hoarding and confinement impedes interstate commerce.²⁵³

With this backdrop, it was not surprising when the Supreme Court expressly overruled *Geer* in 1979 in *Hughes v. Oklahoma*.²⁵⁴ In that case, Hughes challenged his conviction for unlawfully transporting minnows that had been procured within Oklahoma waters for sale outside the state.²⁵⁵ The Court held that the state law, which forbade the out-of-state sale of

indictment for violation of a federal migratory bird protection act). Note, however, that the courts upheld Congress's use of the Commerce Clause to regulate interstate trafficking of state-protected wildlife under the Lacey Act, 16 U.S.C. § 701 (2012). See, e.g., *Rupert v. United States*, 181 F. 87, 91 (8th Cir. 1910) (upholding the Lacey Act as a valid exercise of the commerce power).

²⁴⁷ See, e.g., *Wickard v. Filburn*, 317 U.S. 111, 128-29 (1942) (upholding federal Commerce Clause power over wheat grown for home consumption because of its aggregated effects on wheat sold in interstate commerce). For a more recent case with similar reasoning, see *Gonzales v. Raich*, 545 U.S. 1, 19 (2005) (holding that growing marijuana for personal use affects interstate commerce).

²⁴⁸ 431 U.S. 265 (1977).

²⁴⁹ *Id.* at 268-69, 284-85.

²⁵⁰ *Id.* at 281-82 (footnote omitted).

²⁵¹ *Id.* at 282.

²⁵² 436 U.S. 371 (1978).

²⁵³ *Id.* at 385-86.

²⁵⁴ *Hughes*, 441 U.S. 322, 326 (1979), *overruling Geer*, 161 U.S. 519 (1896).

²⁵⁵ See *id.* at 324-25.

commercially significant numbers of minnows, was "repugnant to the Commerce Clause."²⁵⁶

The cases defining the scope of permissible state regulation in areas of congressional silence reflect an often controversial evolution of rules to accommodate federal and state interests. *Geer v. Connecticut* was decided relatively early in that evolutionary process. We hold that time has revealed the error of the early resolution reached in that case, and accordingly *Geer* is today overruled. . . . "The 'ownership' language of cases such as those cited by appellant must be understood as no more than a 19th-century legal fiction expressing 'the importance to its people that a State have power to preserve and regulate the exploitation of an important resource.'"²⁵⁷

Although the Supreme Court began to establish limits on Congress's use of the Commerce Clause in the 1990s, none of its opinions dilute the strength of *Hughes* or related wildlife precedents. In *United States v. Lopez*,²⁵⁸ the federal Gun-Free School Zones Act²⁵⁹ was struck down as "a criminal statute that by its terms has nothing to do with 'commerce' or any sort of economic enterprise, however broadly one might define those terms."²⁶⁰ Similarly, in *United States v. Morrison*,²⁶¹ a provision of the Violence Against Women Act²⁶² was struck down because it attempted to regulate activities that did not substantially affect interstate commerce.²⁶³

The federal courts that have addressed wildlife-related issues since *Lopez* and *Morrison* have had no trouble finding federal Commerce Clause power. In the *Gibbs* case discussed above, the court emphasized the direct relationship between the removal of red wolves and negative effects to interstate commerce, finding no need to "pile inference upon inference" to reach that conclusion:

The taking of red wolves implicates a variety of commercial activities and is closely connected to several interstate markets. The regulation in question is also an integral part of the overall federal scheme to protect, preserve, and rehabilitate endangered species, thereby conserving valuable wildlife resources important to the welfare of our country.²⁶⁴

²⁵⁶ *Id.* at 338.

²⁵⁷ *Id.* at 326, 335 (footnote omitted) (quoting *Seacoast Products, Inc.*, 431 U.S. 265, 284 (1977)).

²⁵⁸ 514 U.S. 549 (1995).

²⁵⁹ Gun-Free School Zones Act of 1990, Pub. L. No. 101-647, 104 Stat. 4844.

²⁶⁰ *Lopez*, 514 U.S. at 561.

²⁶¹ 529 U.S. 598 (2000).

²⁶² Violence Against Women Act of 1994, Pub. L. No. 103-322, 108 Stat. 1902 (codified in scattered sections of 18 and 42 U.S.C.).

²⁶³ *Morrison*, 529 U.S. at 617. Summarizing, the Court noted that the Commerce Clause provides federal power over: 1) the channels of interstate commerce; 2) the instrumentalities of interstate commerce, or persons or things in interstate commerce; and 3) activities that, in the aggregate, have a substantial effect on interstate commerce. *Id.* at 609.

²⁶⁴ *Gibbs*, 214 F.3d 483, 492 (4th Cir. 2000).

Similarly, the United States Court of Appeals for the District of Columbia Circuit rejected a real estate developer's challenge to the application of the ESA to the arroyo toad, stating that the focus of the Commerce Clause inquiry must be on the regulated activity, not just the toad.²⁶⁵ When the regulated activity is commercial development, "both the 'actor,' a real estate company, and its 'conduct,' the construction of a housing development, have a plainly commercial character . . . [with] a plain and substantial effect on interstate commerce."²⁶⁶

It is now well settled that if the Commerce or Property Clauses are successfully invoked by the federal government as the authority to regulate wildlife, then by definition, inconsistent state law is preempted notwithstanding the Tenth Amendment.

4. Federal Preemption and Savings Clauses

The doctrine of federal preemption, derived from the Supremacy Clause of the U.S. Constitution, holds that state law must yield to federal law where the two conflict.²⁶⁷ This can happen expressly, for instance, under the Marine Mammal Protection Act where Congress stated: "No State may enforce . . . any State law or regulation related to the taking of any species . . . of marine mammal."²⁶⁸ Preemption can also be implied. The Supreme Court, in *California Coastal Commission v. Granite Rock Co.*,²⁶⁹ defined the concept of implied preemption:

If Congress evidences intent to occupy a given field, any state law falling within that field is pre-empted. If Congress has not entirely displaced state regulation over the matter in question, state law is still pre-empted to the extent it actually conflicts with federal law, that is, when it is impossible to comply with both state and federal law, or where the state law stands as an obstacle to the accomplishment of the full purposes and objectives of Congress.²⁷⁰

Therefore, preemption can occur where Congress expressly preempts state law, where Congress occupies a field of law, or where state law interferes

²⁶⁵ *Rancho Viejo, LLC v. Norton*, 323 F.3d 1062, 1064, 1072 (D.C. Cir. 2003).

²⁶⁶ *Id.* at 1072-73 (quoting *Nat'l Ass'n of Home Builders v. Babbitt*, 130 F.3d 1041, 1059 (D.C. Cir. 1997)).

²⁶⁷ See U.S. CONST. art. VI, cl. 2 ("This Constitution, and the Laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land."); *Kleppe*, 426 U.S. 529, 543 (1976) (stating that "federal legislation necessarily overrides conflicting state laws under the Supremacy Clause"); *Wyoming*, 279 F.3d 1214, 1227 (10th Cir. 2002) ("If Congress so chooses, federal legislation, together with the policies and objectives encompassed therein, necessarily override and preempt conflicting state laws, policies, and objectives . . .").

²⁶⁸ 16 U.S.C. § 1379(a) (2012).

²⁶⁹ 480 U.S. 572 (1987).

²⁷⁰ *Id.* at 581 (citations omitted). The Court found that a state mining permit requirement was not preempted because the federal land use and state environmental regulations in question could be interpreted to avoid conflict. *Id.* at 594.

with the implementation of federal law.²⁷¹ Federal regulations have the same preemptive effect.²⁷²

Federal law occupies a field of law (also known as field preemption) where a federal statutory scheme is interpreted to be "so pervasive as to make reasonable the inference that Congress left no room for the States to supplement it."²⁷³ Because federal land management and wildlife laws often contain savings clauses acknowledging some level of state authority, field preemption rarely applies in these areas.²⁷⁴ Conflict preemption, on the other hand, arises whenever "compliance with both federal and state regulations is a physical impossibility."²⁷⁵ Conflict preemption is also invoked where state law "stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress."²⁷⁶ The conflict between federal and state laws may be subtle and yet still trigger preemption, as where state law discourages conduct that federal law attempts to encourage, or vice versa.²⁷⁷ For example, in *National Audubon Society, Inc. v. Davis*,²⁷⁸ California law banned the use of all leg-hold traps, even by federal officials in the course of their duties.²⁷⁹ The Ninth Circuit found that, by eliminating a method of predator control, the ban conflicted with the purposes of the ESA by preventing agencies from protecting listed species.²⁸⁰ Therefore, the state's action prevented the federal law from receiving full effect and was preempted.²⁸¹

Congress may negate or otherwise temper preemption by including a "savings clause" in its legislation. Many federal public health, environmental,

²⁷¹ *Id.* at 581; *Nat'l Audubon Soc'y*, 307 F.3d 835, 851 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷² *Granite Rock Co.*, 480 U.S. at 579–81, 591; *see Hillsborough County v. Automated Med. Labs., Inc.*, 471 U.S. 707, 713 (1985) ("We have held repeatedly that state laws can be pre-empted by federal regulations as well as by federal statutes.").

²⁷³ *Gade v. Nat'l Solid Wastes Mgmt. Ass'n*, 505 U.S. 88, 98, 108–09 (1992) (quoting *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)) (holding that state occupational health and safety regulations were preempted by Occupations Safety and Health Administration, which occupied that field of law).

²⁷⁴ *See generally* Fischman & King, *supra* note 108 (analyzing savings clauses, their uses and trends, and how they incorporate state cooperation).

²⁷⁵ *Fla. Lime & Avocado Growers, Inc. v. Paul*, 373 U.S. 132, 142–43 (1963). For a full treatment of this issue, *see* Julie Lurman & Sanford P. Rabinowitch, *Preemption of State Wildlife Law in Alaska: Where, When, and Why*, 24 ALASKA L. REV. 145 (2007), and Julie Lurman Joly, *National Wildlife Refuges and Intensive Management in Alaska: Another Case for Preemption*, 27 ALASKA L. REV. 27 (2010).

²⁷⁶ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

²⁷⁷ Lurman & Rabinowitch, *supra* note 275, at 161.

²⁷⁸ 307 F.3d 835 (9th Cir. 2002), *amended on denial of reh'g*, 312 F.3d 416, 418 (9th Cir. 2002).

²⁷⁹ *Id.* at 852.

²⁸⁰ *Id.* The court also found that the state's action was preempted by the National Wildlife Refuge Systems Improvement Act because it conflicted with FWS's management authority within national refuges. *Id.* at 854.

²⁸¹ *Id.* at 852; *see also* *North Dakota v. United States*, 460 U.S. 300, 318 (1983) (stating state statutes that are "plainly hostile to the interests of the United States" will not be applied); *Gibbons v. Ogden*, 22 U.S. (9 Wheat.) 1, 211 (1824) ("[T]he act of Congress . . . is supreme; and the law of the State, though enacted in the exercise of powers not controverted, must yield to it.").

and natural resources statutes include savings clauses intended to leave room for state law to provide increased protection consistent with congressional purposes and objectives.²⁸² In public lands and natural resources statutes, Congress has embraced the principle of cooperative federalism through a variety of savings clauses that disclaim an intention to displace state law related to wildlife, water, and other resources, so long as state law does not conflict with or undermine federal prerogatives.²⁸³ These statutory disclaimers are often quite vague, having been included as compromise measures to ensure passage of a piece of legislation.²⁸⁴ As Robert Fischman notes:

Judicial interpretation of a savings clause may elevate or undermine the importance of state interests in federal natural resources programs. Largely, it is the interpretive approach used by a court that determines whether an ambiguous savings clause will compel special consideration not otherwise required under federal law.²⁸⁵

Fischman adds that, "[a]lthough the judiciary places the interpretive fulcrum establishing how much leverage states can expect in federal decision-making, administrative policies have and will play the dominant role in shaping cooperative federalism."²⁸⁶ Other sections of this Article analyze the specific language, agency implementation, and judicial review of savings clauses related to wildlife management on federal lands.

In conclusion, states undoubtedly have well-established historical responsibility over the wildlife within their borders. However, as this Subpart demonstrates, that responsibility is not exclusive, nor dominant, nor constitutionally derived. The U.S. Constitution grants the federal government the authority to manage its own lands and resources, fulfill its treaty obligations, and control interstate commerce, even in the face of objections from the states. And while the Tenth Amendment prevents the federal government from forcing state governments to carry out federal regulatory schemes, it cannot prevent the federal government from implementing those schemes itself.

B. Federal Land Laws and Regulations

This Subpart reviews the laws and regulations of most relevance to wildlife management on federal lands. It begins by explaining how the ESA fundamentally alters the management of all federal land systems. Next, it

²⁸² Fischman & King, *supra* note 108, at 145.

²⁸³ *Id.* at 129–30. Congress has also peppered the organic acts of the federal land management agencies with various directives to cooperate with states in planning and other processes. *Id.* See generally Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179 (2005) (discussing cooperation between state and the federal government in the application of natural resource management).

²⁸⁴ Fischman & King, *supra* note 108, at 159–60.

²⁸⁵ *Id.* at 168.

²⁸⁶ *Id.*

reviews the laws and regulations governing wildlife management in the National Park and National Wildlife Refuge Systems. This is followed by a review of the more contentious management and planning frameworks of USFS and BLM. A concise overview of the special case of Alaska is then provided. The Subpart closes by reviewing wildlife management and the National Wilderness Preservation System.

In Part IV, we return to many of the laws, regulations, and policies introduced here to dispel some of the common myths surrounding wildlife management on federal lands and to explain why federal land agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. The background provided here also shows that multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but Part IV.F explains that they are not generally used to their full potential.

1. The Endangered Species Act

Congress passed the ESA in 1973 “to provide a program for the conservation of . . . endangered species and threatened species” and “to provide a means whereby the ecosystems upon which endangered . . . and threatened species depend may be conserved.”²⁸⁷ The ESA establishes an affirmative obligation for the federal government to use “all methods and procedures which are necessary to bring any [listed] species to the point at which the measures provided in this [Act] are no longer necessary,”²⁸⁸ and states that “all federal departments and agencies shall seek to conserve endangered . . . and threatened species.”²⁸⁹ In defining “conserve” and “conservation,” the ESA establishes an affirmative obligation to use “all methods and procedures which are necessary to bring any endangered . . . or threatened species to the point at which the measures provided” by the statute are no longer necessary.²⁹⁰

A secondary indicator as to the goals of the statute can be found in Congress's explicit recognition of the “esthetic, ecological, educational, historical, recreational, and scientific value” of rare species.²⁹¹ As Freyfogle and Goble have argued, this list of recognized values suggests that the statute is intended to do more than preserve a remnant population in a zoo or at easily visited locations, though this might meet the needs for the esthetic and recreational values.²⁹² Instead, in order to preserve their ecological and scientific values, species and their habitats must be preserved in many natural locations, potentially including areas where they have been extirpated.²⁹³

²⁸⁷ ESA, 16 U.S.C. § 1531(b) (2012).

²⁸⁸ *Id.* § 1532(3). The goal of the statute is not to “list” species but to recover their populations so that they can be “delisted.”

²⁸⁹ *Id.* § 1531(c).

²⁹⁰ *Id.* § 1532(3).

²⁹¹ *Id.* § 1531(a)(3).

²⁹² ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 233–34 (1st ed. 2009).

²⁹³ *Id.*

To understand the role of the ESA in federal land and wildlife management, three central pieces of the statute are most relevant: 1) the listing determination,²⁹⁴ 2) the obligation for federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat,²⁹⁵ and 3) the take prohibition.²⁹⁶ These sections of the statute detail the government's responsibilities and sources of authority. In addition, several provisions of the ESA address federal-state relations with respect to the conservation and management of listed species.²⁹⁷ Each of the relevant sections is addressed below.

a. Listing Determinations (Section 4)

Only those species listed as threatened or endangered are protected by the ESA.²⁹⁸ Listing a species as threatened or endangered is often the result of a citizen petition requesting the listing, though listings may also stem from direct agency initiative (either FWS or, for anadromous and ocean species, the National Marine Fisheries Service (NMFS)).²⁹⁹ In either case, the species must meet the definition of either "threatened" or "endangered" in order to secure the protections provided under the statute.³⁰⁰ An "endangered" species is one that is "in danger of extinction throughout all or a significant portion of its range," and "threatened" species are "likely to become an endangered species within the foreseeable future."³⁰¹

The decision to list a species as either threatened or endangered must be made "solely on the basis of the best scientific and commercial data available."³⁰² The data hurdles that must be surmounted are formidable, and even if met, the agency may decide that the listing is "warranted but precluded" by other more urgent species' needs given the agency's historically tight funding.³⁰³ However, once species are listed they are entitled to the full protections of the statute regardless of the economic consequences.³⁰⁴

Section 4 includes a number of factors to be considered in the listing decision. One inquiry is to assess "the inadequacy of existing regulatory

²⁹⁴ 16 U.S.C. § 1533.

²⁹⁵ *Id.* § 1536(a).

²⁹⁶ *Id.* § 1538.

²⁹⁷ See, e.g., *id.* § 1535 (cooperation with states); *id.* § 1533(b)(1) (listing criteria); *id.* § 1539(a)(2)(B) (incidental take permits).

²⁹⁸ See *id.* § 1533(d).

²⁹⁹ *Id.* § 1533(b)(3)(A); see FREYFOGLE & GOBLE, *supra* note 292, at 236; *Endangered Species Act: Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/CTB5-GTZ5> (last updated Nov. 1, 2017).

³⁰⁰ 16 U.S.C. § 1533(d).

³⁰¹ *Id.* § 1532(6), (20).

³⁰² *Id.* § 1533(b)(1)(A).

³⁰³ FREYFOGLE & GOBLE, *supra* note 292, at 248-49. These "candidate species" receive no protection under the ESA, but the candidate status may provide an opportunity and an incentive for state and private action to prevent listing. *Id.*

³⁰⁴ See *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174 (1978).

mechanisms.³⁰⁵ This means that state laws and regulations pertaining to wildlife, or the lack thereof, are assessed when making listing determinations. Another factor is particularly relevant when it comes to state involvement in ESA implementation: “[conservation] efforts, if any, being made by any State.”³⁰⁶ Accordingly, state efforts to conserve a species may be deemed to offset other threats, such as habitat destruction, and effectively bring the species below the threshold necessary to warrant a federal listing.³⁰⁷ FWS’s Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE) allows FWS to consider conservation efforts that have not yet been implemented so long as FWS evaluates the certainty with which the efforts will be implemented and effective.³⁰⁸ However, courts have found that speculative future plans and voluntary conservation efforts will not suffice to avoid listing.³⁰⁹

³⁰⁵ 16 U.S.C. § 1533(a)(1)(D).

³⁰⁶ *Id.* § 1533(b)(1)(A).

³⁰⁷ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. 15,100, 15,113 (Mar. 28, 2003) (to be codified at 50 C.F.R. ch. 4); *see also* Kevin Cassidy, *Endangered Species’ Slippery Slope Back to the States: Existing Regulatory Mechanisms and Ongoing Conservation Efforts Under the Endangered Species Act*, 32 ENVTL. L. 175, 178–79 (2002) (discussing instances where state and local conservation efforts were invoked to avoid listing).

³⁰⁸ Policy for Evaluation of Conservation Efforts When Making Listing Decisions, 68 Fed. Reg. at 15,114 (requiring a “high level of certainty that the effort will be implemented and/or effective”); *see also* Permian Basin Petroleum Ass’n v. Dep’t of the Interior, 127 F. Supp. 3d 700, 712 (W.D. Tex. 2015) (invalidating FWS’s decision to list the lesser prairie chicken as inconsistent with PECE), *appeal dismissed*, No. 16-50453 (5th Cir. 2016).

³⁰⁹ *See, e.g.,* Alaska v. Lubchenco, 825 F. Supp. 2d 209, 219–20 (D.D.C. 2011) (rejecting Alaska’s claim that NMFS failed to consider the state’s conservation efforts before listing the beluga whale and concluding that “it is not enough for the State to identify conservation efforts that may be beneficial to a species’ preservation”; instead, “the efforts must actually be in place and have achieved some measure of success in order to count”); *Defs. of Wildlife v. Norton*, 258 F.3d 1136, 1146 (9th Cir. 2001) (rejecting FWS’s reliance on a Conservation Agreement (CA) to justify withdrawing a proposed listing because, in several areas designated as management areas for the species, “the designation process was either incomplete or wholly unstarted” and “[n]owhere d[id] the Secretary account for the effects of failure to implement the CA immediately in those areas where delay was expected”); *see also* Or. Nat. Res. Council v. Daley, 6 F. Supp. 2d 1139, 1154–55 (D. Or. 1998) (“NMFS may only consider conservation efforts that are currently operational”; NMFS cannot rely on voluntary measures to preclude listing because “like those planned in the future, [they] are necessarily speculative.”); *Sw. Ctr. for Biological Diversity v. Babbitt*, 939 F. Supp. 49, 51 (D.D.C. 1996) (“[FWS] cannot use promises of proposed future actions as an excuse for not making a determination based on the existing record.”). *But see* *Defs. of Wildlife v. Zinke*, 849 F.3d 1077, 1084 (D.C. Cir. 2017) (holding that FWS properly relied on future implementation of a wolf management plan by the State of Wyoming because the plan was not speculative but rather was “sufficiently certain to be implemented based on the strength of the State’s incentives”); *Defs. of Wildlife v. Jewell*, 70 F. Supp. 3d 183, 197–98 (D.D.C. 2014) (holding that FWS may consider state programs that are not yet fully implemented, as “implementation and effectiveness are often assessed in relative rather than absolute terms; when faced with regulatory uncertainty and risk to certain species, the Service can still chart a course of action, provided it assesses and controls for that uncertainty and risk”), *aff’d*, 815 F.3d 1 (D.C. Cir. 2016).

b. Federal Obligations (Section 7)

i. Affirmative Duty to Conserve (Section 7(a)(1))

The ESA states that the Departments of Interior and Commerce must utilize all of their programs to promote the statute's goals.³¹⁰ The ESA also mandates that *all* federal agencies utilize their authority in the furtherance of the purposes of the ESA.³¹¹ There are few reported cases directly on point, but at least a handful of courts have found that section 7(a)(1) has substantive "teeth."³¹² In *Defenders of Wildlife v. Andrus*, the advocacy group argued that regulations for bird hunting at twilight failed to protect listed species against misidentification by hunters.³¹³ The United States District Court for the District of Columbia, interpreting this section of the statute, found that the ESA requires that the agency "do far more than merely avoid the elimination of protected species," rather there is "an affirmative duty to increase the population of protected species."³¹⁴

The court came to a similar decision in *Carson-Truckee Water Conservancy District v. Watt*.³¹⁵ The cities of Reno and Sparks, Nevada challenged the Department of the Interior's refusal to release greater quantities of water from the Stampede Dam and Reservoir.³¹⁶ The Department of the Interior cited section 7(a)(1) to support its position that the water levels in the reservoir must be maintained at higher levels in order to preserve the spawning ability of two endangered fish (the cui-ui and the Lahontan cutthroat trout).³¹⁷ Ultimately, the court agreed with the federal government's argument that it had a duty "to replenish the species so that they are no longer endangered or threatened with extinction," rather than merely avoiding jeopardy.³¹⁸

By contrast, several courts have refused to mandate the implementation of specific conservation measures, instead finding that the federal agencies

³¹⁰ 16 U.S.C. § 1536(a)(1). For convenience, we reference FWS throughout this Article, but similar duties are imposed upon NMFS, an agency within the Department of Commerce.

³¹¹ *Id.*

³¹² See *Def. of Wildlife v. Andrus*, 428 F. Supp. 167, 169-70 (D.D.C. 1977) (holding that the ESA clearly implied that FWS must "use all methods necessary" to boost species populations for their removal from the protective class); see also *Tenn. Valley Auth.*, 437 U.S. 153, 173 (1978) ("One would be hard pressed to find a statutory provision whose terms were any plainer than those in § 7 of the [ESA]. Its very words affirmatively command all federal agencies 'to insure that actions authorized, funded, or carried about by them do not jeopardize the continued existence' of an endangered species or 'result in the destruction or modification of habitat of such species.'" (quoting 16 U.S.C. § 1536)).

³¹³ *Andrus*, 428 F. Supp. at 169.

³¹⁴ *Id.* at 170.

³¹⁵ 549 F. Supp. 704, 710 (D. Nev. 1982), *aff'd sub nom.*, *Carson-Truckee Water Conservancy Dist. v. Clark*, 741 F.2d 257, 262 (9th Cir. 1984).

³¹⁶ *Clark*, 741 F.2d at 259; *Watt*, 537 F. Supp. at 107-08.

³¹⁷ *Clark*, 741 F.2d at 259, 261-62.

³¹⁸ *Watt*, 549 F. Supp. at 708-10; see also *Sierra Club v. Glickman*, 156 F.3d 606, 618 (5th Cir. 1998) (finding that section 7(a)(1) required the United States Department of Agriculture to develop its own conservation program for listed species dependent on the Edwards aquifer).

have a great deal of discretion in the steps that they take to satisfy section 7(a)(1).³¹⁹ For example, in *Defenders of Wildlife v. U.S. Fish & Wildlife*,³²⁰ the court rejected arguments that USFS should develop and implement its own conservation program for the endangered Mexican wolf and deferred to the agency's decision to act in cooperation with FWS's recommendations in furtherance of previously established wolf reintroduction and recovery goals.³²¹ Similarly, in *Defenders of Wildlife v. Babbitt*,³²² the court held that the federal agencies had not violated section 7(a)(1), even though they had not implemented all possible measures for conservation of the endangered Sonoran pronghorn, absent a showing that the agencies had failed entirely to carry out conservation programs.³²³

To summarize, FWS and other federal agencies are obligated to prevent jeopardy and authorized to proactively improve the circumstances of listed species. Additionally, while the ESA creates a duty to increase populations of protected species, it appears that courts are often unwilling to require the implementation of specific conservation measures.

ii. Prohibition Against Jeopardy (Section 7(a)(2))

Federal agencies must also ensure that their actions are "not likely to jeopardize the continued existence" of listed species.³²⁴ In *Tennessee Valley Authority v. Hill*,³²⁵ the Supreme Court established that, instead of balancing interests between wildlife conservation and economic development, the ESA demands that species conservation be elevated above other concerns, which could include state interests in wildlife.³²⁶

In order to ensure that federal actions do not jeopardize listed species, federal agencies undertaking actions that could harm species must formally consult with FWS.³²⁷ For purposes of section 7, "federal actions" include projects that are funded, authorized, or constructed directly by any federal agency, and projects with discretionary involvement or control by any

³¹⁹ See, e.g., *Leatherback Sea Turtle v. Nat'l Marine Fisheries Serv.*, No. 99-00152 DAE, 1999 WL 33594329, at *13-14 (D. Haw. Oct. 18, 1999) (finding that NMFS satisfied its section 7(a)(1) duty by issuing conservation recommendations and biological opinions); *Coal. for Sustainable Res., Inc. v. U.S. Forest Serv.*, 48 F. Supp. 2d 1303, 1306, 1315-16 (D. Wyo. 1999) (rejecting plaintiff's argument that USFS should implement certain timber harvest and snow management programs for the benefit of listed species), *vacated for lack of ripeness*, 259 F.3d 1244 (10th Cir. 2001).

³²⁰ 797 F. Supp. 2d 949 (D. Ariz. 2011).

³²¹ *Id.* at 958-59.

³²² 130 F. Supp. 2d 121 (D.D.C. 2001).

³²³ *Id.* at 135; see also *Pyramid Lake Paiute Tribe of Indians v. U.S. Dep't of the Navy*, 898 F.2d 1410, 1417-19 (9th Cir. 1990) (holding that section 7(a)(1) did not require the Navy to adopt the "least burdensome alternative" to ensure the conservation of listed species; rather, the Navy retained discretion in meeting the ESA's conservation mandate).

³²⁴ ESA, 16 U.S.C. § 1536(a)(2) (2012).

³²⁵ 437 U.S. 153 (1978).

³²⁶ See *id.* at 184 (noting "[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost").

³²⁷ 16 U.S.C. § 1536(a)(4).

federal agency.³²⁸ If a listed species may be present within the project area, the federal "action agency" must conduct a biological assessment (BA) to identify any such species likely to be affected by the federal action and evaluate the effects.³²⁹ In turn, through its biological opinion (BiOp), FWS must determine whether the potential harm to the species violates section 7(a)(2) and, if so, devise less harmful alternatives or mitigation measures.³³⁰

FWS has interpreted the phrase "jeopardize the continued existence of a species" as any action "that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild."³³¹ According to the Ninth Circuit in *National Wildlife Federation v. National Marine Fisheries Service*,³³² an action that may jeopardize a species can be of any magnitude, slight or severe, since the important factor is the degree of risk to the particular species.³³³ Furthermore, the court stated that jeopardy determinations must consider the action's effect on species recovery, not simply species survival.³³⁴ Therefore, even actions that pose only slight dangers may "jeopardize" the species if the effect of that action poses a high degree of risk to the species.

*iii. Prohibition Against Adversely Modifying Critical Habitat
(Section 7(a)(2))*

At the time a species is listed as endangered or threatened, FWS must also designate its critical habitat.³³⁵ Critical habitat is an area where there are "physical or biological features . . . essential to the conservation of the species and . . . which may require special management considerations."³³⁶ Critical habitat designation is based on "the best scientific data available and after taking into consideration the economic impact, the impact on national security, and any other relevant impact."³³⁷ By directing FWS to consider economic impacts, the designation decision involves a much broader inquiry than is required for the listing determinations.

Section 7 prohibits federal agencies from taking actions that may "result in the destruction or adverse modification of [critical] habitat."³³⁸ FWS regulations specify that:

³²⁸ *Id.* § 1536(a); 50 C.F.R. § 402.02 (2016); see *Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1224–25 (9th Cir. 2015).

³²⁹ 16 U.S.C. § 1536(c).

³³⁰ *Id.* § 1536(b)(3).

³³¹ 50 C.F.R. § 402.02.

³³² 524 F.3d 917 (9th Cir. 2008).

³³³ See *id.* at 930.

³³⁴ *Id.* at 931.

³³⁵ 16 U.S.C. § 1533(a)(3)(A), (b)(6)(C).

³³⁶ *Id.* § 1532(5)(A)(i).

³³⁷ *Id.* § 1533(b)(2).

³³⁸ *Id.* § 1536(a)(2).

Destruction or adverse modification means a direct or indirect alteration that appreciably diminishes the value of critical habitat for [both the survival and recovery] of a listed species . . . includ[ing] . . . those that alter the physical or biological features essential to the conservation of a species or that preclude or significantly delay development of such features.³³⁹

In *Center for Native Ecosystems v. Cables*,³⁴⁰ the Tenth Circuit held that critical habitat is adversely modified by any actions “that adversely affect a species’ recovery and the ultimate goal of delisting.”³⁴¹ This interpretation makes the critical habitat protection a significant prohibition.

c. Take Prohibition (Section 9)

The ESA prohibits the “take” of listed species.³⁴² “Take” is defined by Congress as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect.”³⁴³ This broad protection has been further enlarged by the Supreme Court’s determination that “harm” in this definition includes habitat modification or degradation,³⁴⁴ though a showing that animals have actually been killed or injured may be required to prove that harm has occurred.³⁴⁵ A prohibited take can be either intentional (e.g., hunting and trapping) or unintentional (e.g., poisoning and other contamination).³⁴⁶ Unlike the requirements of section 7, section 9 applies to all persons, not just federal agencies.³⁴⁷

While the take prohibition is unqualified for endangered species, it is up to the agency to determine the breadth of its applicability for threatened species.³⁴⁸ FWS can make the prohibitions of section 9 applicable, either in whole or in part, to threatened species.³⁴⁹ However, FWS’s discretion in this area is not without limits. In *Sierra Club v. Clark*,³⁵⁰ the United States Court of Appeals for the Eighth Circuit struck down FWS regulations that permitted the hunting of threatened wolves because the ESA only empowers FWS to issue regulations for the “conservation” of species, and regulated taking is only permissible under “extraordinary” circumstances which were not present in that case.³⁵¹

³³⁹ 50 C.F.R. § 402.02 (2016) (emphasis omitted).

³⁴⁰ 509 F.3d 1310 (10th Cir. 2007).

³⁴¹ *Id.* at 1322.

³⁴² 16 U.S.C. § 1538(a)(1)(B)–(C).

³⁴³ *Id.* § 1532(19).

³⁴⁴ *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 708 (1995) (citing 50 C.F.R. § 17.3).

³⁴⁵ *See id.* at 696 n.7; FREYFOGLE & GOBLE, *supra* note 292, at 266.

³⁴⁶ FREYFOGLE & GOBLE, *supra* note 292, at 236–37.

³⁴⁷ 16 U.S.C. § 1538(a)(1).

³⁴⁸ *Id.* § 1533(d).

³⁴⁹ *Id.*

³⁵⁰ 755 F.2d 608 (8th Cir. 1985).

³⁵¹ *Id.* at 610, 612–13; *see* 16 U.S.C. § 1532(3).

i. Incidental Take Statements and Incidental Take Permits (Section 7(a)(2) and Section 10)

Federal activities covered by a "no jeopardy" BO may be shielded from section 9 "take" liability if FWS has also issued an incidental take statement (ITS) that excuses the actor from liability when a covered species is incidentally taken during the course of an otherwise lawful activity.³⁵² While an ITS provides protection against federal prosecution, it also constitutes a binding agreement with FWS that may include limitations and other prohibitions for the shielded activity.³⁵³ In addition, section 10(a) allows "take" by nonfederal actors under prescribed conditions in exchange for a habitat conservation plan (HCP).³⁵⁴ To issue an incidental take permit (ITP) under section 10(a), FWS must find that:

- (i) the taking will be incidental;
- (ii) the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking;
- (iii) the applicant will ensure that adequate funding for the plan will be provided;
- (iv) the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild; and
- (v) the measures, if any, [that the Secretary may require as being necessary or appropriate for purposes of the plan] will be met.³⁵⁵

In recent years, FWS has utilized its ability to issue ITPs more frequently, in part to alleviate the perceived harshness of the ESA's prohibitions and in part to foster "creative partnerships between the private sector and all levels of government in the interests of protected species and habitat conservation."³⁵⁶ For example, a court upheld an ITP that authorized the State of Utah, Cedar City, and the Paiute Tribe to trap prairie dogs that

³⁵² 16 U.S.C. § 1536(a)(2), (b)(4); *see Ramsey v. Kantor*, 96 F.3d 434, 446 (9th Cir. 1996) (holding that states did not violate the ESA when they issued fishing regulations allowing taking of listed salmon without obtaining a section 10 permit where NMFS issued a section 7 incidental take statement that clearly anticipated the states would promulgate fishing regulations in accordance with its terms).

³⁵³ *See, e.g.*, 50 C.F.R. § 17.32(b)(2) (2016); *see also Endangered Species Permits: HCPs - Frequently Asked Questions*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/73PV-WQFC> (last updated Apr. 14, 2015) (describing the binding legal obligations included in Habitat Conservation Plans that are usually required when a party obtains an incidental take permit).

³⁵⁴ 16 U.S.C. § 1539(a)(2)(A).

³⁵⁵ *Id.* § 1539(a)(2)(B).

³⁵⁶ Robert L. Fischman & Jaelith Hall-Rivera, *A Lesson for Conservation from Pollution Control Law: Cooperative Federalism for Recovery Under the Endangered Species Act*, 27 COLUM. J. ENVTL. L. 45, 69, 75-76 (2002).

were damaging private and tribal land, and relocate them to a parcel of land covered by a conservation easement surrounded by BLM lands.³⁵⁷

States have avoided liability for a “take” under both ITSs and ITPs, and both tools have the potential to be used to foster cooperation with states in the interest of species conservation. If either an ITS or an ITP is issued without adequate safeguards for the species, however, the ESA’s conservation objectives may be undermined.

d. Cooperation with States (Section 6)

The ESA carves out a role for the states to assist in achieving the ESA’s protective purposes by providing that, in carrying out the statute, FWS “shall cooperate to the maximum extent practicable with the States.”³⁵⁸ Through this provision, Congress recognized the expertise of state agencies and required FWS to solicit and consider relevant information from them, such as preparing proposed and final rules to designate critical habitat.³⁵⁹ In addition, the ESA empowers FWS to “enter into agreements with [states] for the administration and management of any area established for the conservation of [listed] species.”³⁶⁰ FWS may also enter into cooperative agreements with any state that establishes and maintains an “adequate and active” program for the conservation of listed species.³⁶¹ These programs are enacted statutorily and are referred to as “state endangered species acts.”³⁶²

In addition, the statutory savings clause states that the ESA should not be construed “to void any State law or regulation which is intended to conserve migratory, resident, or introduced fish or wildlife, or to permit or prohibit sale of such fish or wildlife.”³⁶³ However, states may not take measures to protect or enhance non-endangered resident wildlife if such measures would take or otherwise endanger listed species.³⁶⁴

FWS and NFMS also adopted an interagency policy to guide their work with the states in ESA implementation. The policy begins by recognizing that

³⁵⁷ *WildEarth Guardians v. U.S. Fish & Wildlife Serv.*, 622 F. Supp. 2d 1155, 1159, 1168 (D. Utah 2009).

³⁵⁸ 16 U.S.C. § 1535(a).

³⁵⁹ See, e.g., *Alaska Oil & Gas Ass’n v. Salazar*, 916 F. Supp. 2d 974, 997 (D. Alaska 2013) (discussing FWS and state’s various joint efforts and ultimately finding that FWS complied with § 1535(a) in designating polar bear critical habitat).

³⁶⁰ 16 U.S.C. § 1535(b).

³⁶¹ *Id.* § 1535(c)(1). For details, see COGGINS & GLICKSMAN, *supra* note 124, § 29:19.

³⁶² Deborah F. Buckman, Annotation, *Construction and Application of State Endangered Species Acts*, 44 A.L.R. 6th 325 (2009); see 16 U.S.C. § 1535.

³⁶³ 16 U.S.C. § 1535(f).

³⁶⁴ See *Nat’l Audubon Soc’y*, 307 F.3d 835, 853 (9th Cir.) (invalidating California’s prohibition on leghold traps), *amended on denial of reh’g*, 312 F.3d 416, 418 (9th Cir. 2002). Cf. *Animal Prot. Inst. v. Holsten*, 541 F. Supp. 2d 1073, 1080–81 (D. Minn. 2008) (finding that the savings clause did not shield a state hunting program from judicial invalidation or protect the state game agency from liability for violating the ESA’s taking clause); *United States v. Glenn-Colusa Irrigation Dist.*, 788 F. Supp. 1126, 1134 (E.D. Cal. 1992) (“[T]o the extent that [a state’s] law on taking is less protective than the [ESA], it is preempted.”).

"States possess broad trustee and police powers over fish, wildlife and plants and their habitats within their borders [and u]nless preempted by Federal authority, States possess primary authority and responsibility for protection and management of fish, wildlife and plants and their habitats."³⁶⁵ The policy specifies ways in which the states can help carry out the purposes of the ESA, such as by taking prelisting conservation actions and utilizing state expertise and information in the ESA recovery process.³⁶⁶

Section 6 and the interagency policy provisions encourage cooperative federalism to effectuate the purposes of the ESA. Like many other federal environmental statutes, the ESA provides a floor, not a ceiling, for species protection.³⁶⁷ The ESA clearly preempts inconsistent or less restrictive state laws.³⁶⁸ And most state-level endangered species acts are relatively limited in comparison to the federal law, with most states having no mechanism for recovery, consultation, critical habitat, or citizen enforcement.³⁶⁹

2. The National Park System

a. The 1916 Organic Act

The National Park Service Organic Act³⁷⁰ makes conservation of park resources, including wildlife, a primary management goal:

[To] promote and regulate the use of the National Park System by means and measures that conform to the fundamental purpose . . . *to conserve the scenery, natural and historic objects, and wild life in the System units* and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations.³⁷¹

Courts have construed this provision as a directive that, between the competing goals of conservation of park resources and facilitating public

³⁶⁵ Endangered and Threatened Wildlife and Plants: Notice of Interagency Cooperative Policy Regarding the Role of State Agencies in Endangered Species Act Activities, 59 Fed. Reg. 34,274, 34,725 (July 1, 1994).

³⁶⁶ *Id.*

³⁶⁷ 16 U.S.C. § 1535(c), (f); see Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 ENVTL. L. 451, 462 (2004).

³⁶⁸ 16 U.S.C. § 1535(f) ("Any State law or regulation respecting the taking of an endangered species or threatened species may be more restrictive than the exemptions or permits provided for in this chapter or in any regulation which implements this chapter but not less restrictive than the prohibitions so defined."); see, e.g., *Nat'l Audubon Soc'y*, 307 F.3d at 851-53 (holding that California's rule prohibiting use of leg-hold traps by federal employees was preempted by the ESA); *Swan View Coal., Inc. v. Turner*, 824 F. Supp. 923, 938 (D. Mont. 1992); *Glenn-Colusa Irrigation Dist.*, 788 F. Supp. at 1134.

³⁶⁹ Susan George & William J. Snape III, *State Endangered Species Acts*, in ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES 345, 346 (Donald C. Baur & W.M. Robert Irvin eds., 2d ed. 2010) (concluding that "most acts lack all but the most basic elements of a legislative scheme to protect a state's imperiled species").

³⁷⁰ Ch. 408, 39 Stat. 535 (1916) (codified in scattered sections of 54 U.S.C.).

³⁷¹ 54 U.S.C. § 100101 (Supp. II 2015) (emphasis added).

enjoyment of park resources, conservation generally takes precedence.³⁷² Notably, the Organic Act's phrase authorizing management for the enjoyment of scenery, natural and historic objects, and wildlife is cabined by the admonition that enjoyment may only occur "in such manner and by such means as will leave them [i.e., park resources] unimpaired for the enjoyment of future generations."³⁷³ Absent an explicit contrary mandate in the relevant individual park establishment act, in the event of a conflict, NPS must prioritize conservation over public enjoyment.³⁷⁴

b. National Park Service Management Policy

NPS's own Management Policies recognize that conservation of park resources is "predominant."³⁷⁵ More specifically:

Congress, recognizing that the enjoyment by future generations of the national parks can be ensured only if the superb quality of park resources and values is left unimpaired, has provided that when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.³⁷⁶

Issues related to wildlife management come squarely within the purview of the conservation mandate. "Impairment" includes disruption of

³⁷² See, e.g., *Greater Yellowstone Coal. v. Kempthorne*, 577 F. Supp. 2d 183, 192–93 (D.D.C. 2008) (invalidating NPS's Winter Use Plan because it violated the conservation mandate by impairing Yellowstone's soundscape, wildlife, and air quality); *Fund for Animals v. Norton*, 512 F. Supp. 2d 49, 54–55 (D.D.C. 2007) (finding that NPS had articulated a satisfactory explanation regarding limited use of snowmobiles in Yellowstone); *Fund for Animals v. Norton*, 294 F. Supp. 2d 92, 108 (D.D.C. 2003) (overturning decision to allow snowmobiles in Yellowstone because NPS had not explained reversal of earlier conclusion that snowmobiles caused impairment); see also *Bicycle Trails of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir. 1996) (noting the "overarching concern" of the Organic Act is "resource protection"); *Defs. of Wildlife v. Salazar*, 877 F. Supp. 2d 1271, 1306–07 (M.D. Fla. 2012) (remanding decision to increase off-road vehicle (ORV) use because of failure to explain change in position as to ORV's adverse impacts to wildlife, soil, and hydrology); *Bluewater Network v. Salazar*, 721 F. Supp. 2d 7, 24–38 (D.D.C. 2010) (remanding NPS's decision to allow jet skis in two national parks given the impacts to wildlife, water and air quality, soundscapes, aquatic vegetation, and visitor experience); *Edmonds Inst. v. Babbitt*, 42 F. Supp. 2d 1, 16 (D.D.C. 1999) (noting that the primary purpose of the Organic Act is "conservation of wildlife resources"); *Nat'l Rifle Ass'n of Am. v. Potter*, 628 F. Supp. 903, 909 (D.D.C. 1986) ("In the Organic Act, Congress speaks of but a single purpose, namely conservation.").

³⁷³ 54 U.S.C. § 100101(a).

³⁷⁴ Eric Biber & Elisabeth Long Esposito, *The National Park Service Organic Act and Climate Change*, 56 NAT. RESOURCES J. 193, 223–24 (2016). But see *Nat'l Parks Conservation Ass'n v. U.S. Dep't of Interior*, 46 F. Supp. 3d 1254, 1278, 1337 (M.D. Fla. 2014) (applying an establishment act that shuffles these priorities and finding that the establishment acts for Big Cypress Preserve and Addition Lands mandate multiple uses, including ORV use on designated trails), *aff'd*, 835 F.3d 1377 (11th Cir. 2016).

³⁷⁵ NAT'L PARK SERV., MANAGEMENT POLICIES 2006 § 1.4.3 (2006), <https://perma.cc/3R3K-EUP8> [hereinafter NPS MANAGEMENT POLICIES].

³⁷⁶ *Id.*

natural abundance, diversity, and ecological integrity, and is not limited to those impacts that "are so intense or sustained that they result in 'the elimination of a native species or significant population declines in a native species.'"³⁷⁷

NPS's Management Policies direct NPS to "maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems."³⁷⁸ Native species are "all species that have occurred, now occur, or may occur as a result of natural processes on lands designated as units of the national park system."³⁷⁹ NPS commits itself to preserving, maintaining, and restoring both populations of species and their habitats, and to "minimizing human impacts on native plants, animals, populations, communities, and ecosystems, and the processes that sustain them."³⁸⁰ In addition, the Management Policies state that NPS will cooperate and work with state and tribal governments, federal agencies, and other land managers to encourage the conservation of species populations and habitats "whenever possible."³⁸¹ Although the Policies are not judicially enforceable, courts have not hesitated to find that deviations from the Policies are arbitrary and capricious.³⁸²

c. Hunting and Fishing

Courts have occasionally upheld NPS decisions that adversely impact wildlife, including decisions to cull deer and other wildlife from parks where the wildlife is undermining conservation goals by destroying vegetation or harming other species.³⁸³ As a general rule, however, hunting and other types of consumptive resource utilization within units of the National Park System are prohibited as contrary to the conservation ethic articulated in the

³⁷⁷ *Bluewater Network*, 721 F. Supp. 2d at 36 (rejecting NPS's interpretation of impairment to allow mortality and other "regular" adverse effects to wildlife as a "draconian" definition that was inconsistent the Organic Act).

³⁷⁸ NPS MANAGEMENT POLICIES, *supra* note 375, § 4.4.1.

³⁷⁹ *Id.* § 4.4.1.3.

³⁸⁰ *Id.* § 4.4.1.

³⁸¹ *Id.* § 4.4.1.1.

³⁸² *See, e.g., Bluewater Network*, 721 F. Supp. 2d at 20 n.13 ("While these Policies are not judicially enforceable, they are 'relevant insofar as NPS puts forth the Policies as justification for the decision under review.'" (citations omitted)).

³⁸³ *See, e.g., Davis v. Latschar*, 202 F.3d 359, 359–60 (D.C. Cir. 2000) (upholding NPS plan to cull deer); *N.M. State Game Comm'n v. Udall*, 410 F.2d 1197, 1200–01 (10th Cir. 1969) (similar); *Grunewald v. Jarvis*, 930 F. Supp. 2d 73, 84–86 (D.D.C. 2013) (similar), *aff'd*, 776 F.3d 893 (D.C. Cir. 2015); *Friends of Animals v. Caldwell*, No. 2:09-cv-5349, 2010 WL 4259753, at *1, *7 (E.D. Pa. Oct. 27, 2010), *aff'd*, 434 F. App'x 72 (3d Cir. 2011) (similar); *see also WildEarth Guardians v. Nat'l Park Serv.*, 703 F.3d 1178, 1191–93 (10th Cir. 2013) (upholding NPS plan to cull elk); *Wilkins v. Sec'y of Interior*, 995 F.2d 850, 851 (8th Cir. 1993) (reversing district court and upholding NPS plan to remove wild horses); *Intertribal Bison Coop. v. Babbitt*, 25 F. Supp. 2d 1135, 1140–41 (D. Mont. 1998) (upholding NPS plan to manage Yellowstone bison), *aff'd*, 175 F.3d 1149 (9th Cir. 1999); *Greater Yellowstone Coal. v. Babbitt*, 952 F. Supp. 1435, 1445–46 (D. Mont. 1996) (upholding NPS plan to authorize capture or killing of bison by state officials), *aff'd*, 108 F.3d 1385 (9th Cir. 1997).

Organic Act.³⁸⁴ Specific establishment legislation for individual parks authorizes limited subsistence or recreational hunting, trapping, or fishing within approximately thirty-one NPS units.³⁸⁵ Those areas permitting hunting, trapping, or fishing typically do so in conformance with applicable federal and state laws.³⁸⁶ NPS regulations prohibit commercial fishing in the parks.³⁸⁷ However, in *Alaska Wildlife Alliance v. Jensen*,³⁸⁸ the Ninth Circuit held that NPS has the discretion to permit commercial fishing in non-wilderness areas of certain Alaska parks.³⁸⁹

3. The National Wildlife Refuge System

a. The National Wildlife Refuge System Improvement Act (1997)

The National Wildlife Refuge System is unique among federal land conservation units in its explicit focus on wildlife and ecosystem conservation as its dominant use.³⁹⁰ FWS manages the Refuge System under the auspices of the National Wildlife Refuge System Administration Act,³⁹¹ which was amended in 1997 by the National Wildlife Refuge System Improvement Act.³⁹² The agency also provides detailed explanations of its statutory obligations in its regulations³⁹³ and the FWS Manual.³⁹⁴

³⁸⁴ COGGINS & GLICKSMAN, *supra* note 124, § 32.14; see *United States v. Jarrell*, 143 F. Supp. 2d 605, 605–06, 609 (W.D. Va. 2001) (upholding conviction for hunting in Shenandoah National Park); *Organized Fisherman of Fla.*, 488 F. Supp. 1351, 1355 (S.D. Fla. 1980) (denying a preliminary injunction to enjoin enforcement of NPS regulations that restricted fishing practices in a national park).

³⁸⁵ Jessica Almy, Student Article, *Taking Aim at Hunting on National Park Service Lands*, 18 N.Y.U. ENVTL. L.J. 184, 185 (2010); see *Nat'l Rifle Ass'n*, 628 F. Supp. 903, 907 n.4 (D.D.C. 1986) (finding express authorization for hunting in the enabling acts of thirty-one NPS properties).

³⁸⁶ 36 C.F.R. § 2.2(b)(4) (2016); 43 C.F.R. § 24.4(f) (2016); *Organized Fishermen of Fla.*, 776 F.2d 1544, 1549 (11th Cir. 1985) (finding that, despite Florida law, there was no right to engage in commercial fishing in Everglades National Park); *United States v. Knauer*, 635 F. Supp. 2d 203, 212 (E.D.N.Y. 2009) (holding that permission for commercial fishing or hunting in Gateway National Park was left to NPS); see also *Fund for Animals v. Mainella*, 294 F. Supp. 2d 46, 48, 52 (D.D.C. 2003) (refusing to enjoin state's bear hunt in Delaware Gap National Recreation Area since statutory language provided that federal regulation was required only when NPS exercised its discretion to place limitations on hunting or to provide areas for intensive management).

³⁸⁷ 36 C.F.R. §§ 2.3(d)(4), 5.3; see *S.F. Herring Ass'n v. U.S. Dep't of Interior*, No. 13-cv-01750-JST, 2014 WL 172232, at *4–6 (N.D. Cal. Jan. 15, 2014) (finding that NPS had authority to issue citations to commercial fishermen in San Francisco Bay near the Golden Gate Recreational Area).

³⁸⁸ 108 F.3d 1065 (9th Cir. 1997).

³⁸⁹ *Id.* at 1067, 1074.

³⁹⁰ *National Wildlife Refuge System Improvement Act of 1997 Public Law 105-57*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/S8FN-FHHT> (last updated Aug. 19, 2009).

³⁹¹ National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. §§ 668dd–668ee (2012); see *The Refuge System and FWS*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/4N9R-GDXQ> (last visited Nov. 11, 2017).

³⁹² National Wildlife Refuge System Improvement Act of 1997, Pub. L. No. 105-57, 111 Stat. 1252 (1997).

³⁹³ See 50 C.F.R. pts. 31–32 (2016).

³⁹⁴ See 50 C.F.R. pts. 31–32 (2016).

The Act authorizes the agency to permit the use of any area within the system for any purpose as long as it is determined that the proposed use is compatible with the "major purposes for which the areas were established."³⁹⁵ The Act further clarifies that all actions on a refuge must be compatible with both the mission of the refuge system and the purposes of the relevant individual refuge (as determined by the establishment legislation of that refuge).³⁹⁶ Where the system mission and refuge purposes conflict, refuge purposes should be given precedence, while still fulfilling the system mission to the extent that is possible.³⁹⁷ The agency's discretion in determining whether a use is compatible is further limited by the requirement that compatibility be based on "sound professional judgment."³⁹⁸ Furthermore, agency regulations require compatibility determinations to: 1) be written, 2) identify the proposed or existing use that the compatibility determination applies to, and 3) state whether the proposed use is in fact a compatible use based on "sound professional judgment."³⁹⁹

The mission of the refuge system, as provided by the Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁴⁰⁰ In meeting the mission of the system, the statute lays out explicit obligations for the agency.⁴⁰¹ Three of these statutory requirements are particularly relevant to this discussion and are elaborated upon in greater detail below:

In administering the system the Secretary shall—

(A) provide for the conservation of fish, wildlife, and plants, and their habitat within the System;

(B) ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans;

³⁹⁴ See *Service Manual Chapters: Series 600 – Land Use and Management Series*, U.S. Fish & Wildlife Serv., <https://perma.cc/Q93L-S223> (last updated Nov. 2, 2017).

³⁹⁵ 16 U.S.C. § 668dd(d)(1)(A).

³⁹⁶ *Id.* § 668ee(1). Establishment legislation is of key importance in refuge management as a source of refuge purposes and a guide to refuge management. Many refuges have purposes derived from multiple pieces of establishment legislation, which can lead to confusion regarding the relative priorities of the various refuge purposes. ROBERT L. FISCHMAN, *THE NATIONAL WILDLIFE REFUGES: COORDINATING A CONSERVATION SYSTEM THROUGH LAW* 164 (2003).

³⁹⁷ 16 U.S.C. § 668dd(a)(4)(D).

³⁹⁸ *Id.* § 668ee(1); see *Del. Audubon Soc'y v. Salazar*, 829 F. Supp. 2d 273, 288–89 (D. Del. 2011) (finding that a dune restoration decision was within sound professional judgment when it was "supported by scientific literature").

³⁹⁹ 50 C.F.R. § 25.12 (2016).

⁴⁰⁰ 16 U.S.C. § 668dd(a)(2).

⁴⁰¹ See *id.* § 668dd(a)(4).

(E) ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the States in which the units of the System are located.⁴⁰²

Two significant court cases interpret many of the provisions of the Act. In *Wyoming v. United States*, the state argued that FWS interfered with the state's sovereign right to manage wildlife by prohibiting the state from vaccinating elk against brucellosis on refuge lands.⁴⁰³ The Tenth Circuit ultimately determined that ordinary principles of preemption applied; if the state's actions would conflict with federal mandates or present an obstacle to their accomplishment, then the state is preempted by the Improvement Act.⁴⁰⁴ In *National Audubon Society, Inc. v. Davis*, environmental groups challenged California over a state law banning the use of all leg-hold traps in the state, including those used on federal lands or to protect endangered species.⁴⁰⁵ The Ninth Circuit found that the ban conflicted with FWS's statutory authority to manage refuges, and so the state law was preempted.⁴⁰⁶ These two cases are discussed in detail below.⁴⁰⁷

i. Provide for the Conservation of Fish, Wildlife, Plants, and Their Habitats

The Refuge Improvement Act groups the terms "conserving," "conservation," "manage," "managing," and "management" together, and provides a single definition for all of them: "to sustain and, where appropriate, restore and enhance, healthy populations of fish, wildlife, and plants."⁴⁰⁸ As the *Wyoming* court states, it would be impossible for the agency to meet its obligation for conservation "unless [refuges] are consistently directed and managed as a national system."⁴⁰⁹ Furthermore, that court found that "Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System]."⁴¹⁰ The *Audubon* court concurred in this reasoning,

⁴⁰² *Id.*

⁴⁰³ *Wyoming*, 279 F.3d 1214, 1222, 1229 (10th Cir. 2002).

⁴⁰⁴ *Id.* at 1234–35.

⁴⁰⁵ 307 F.3d 835, 842–44 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416 (9th Cir. 2002).

⁴⁰⁶ *Id.* at 854.

⁴⁰⁷ See *infra* notes 409–411, 426–433 and accompanying text.

⁴⁰⁸ 16 U.S.C. § 668ee(4) (2012).

⁴⁰⁹ *Wyoming*, 279 F.3d 1214, 1233 (10th Cir. 2002) (quoting H.R. REP. NO. 105-106, at 8 (1997)).

⁴¹⁰ *Id.* at 1234. In another case, *Defenders of Wildlife v. Salazar*, the D.C. Circuit defined "conservation" in this context by referencing the specific facts of the case. 651 F.3d 112, 115–17 (D.C. Cir. 2011). In that case, FWS was accused of violating the conservation mandate of the Improvement Act by failing to commit to a deadline to end the agency's elk feeding program in the National Elk Refuge. *Id.* at 115. The court determined that there was "no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System," yet the court determined that a phased (rather than an abrupt) ending of that program was reasonable. *Id.* at 117.

referencing the goals of the Improvement Act and FWS's authority over refuge lands in its finding that state law was preempted.⁴¹¹

ii. Ensure That the Biological Integrity, Diversity, and Environmental Health of the System Are Maintained

While the statute itself does not define these terms, FWS defines them in its manual.⁴¹² The manual states that the "highest measure of biological integrity, diversity, and environmental health is viewed as those intact and self-sustaining habitats and wildlife populations that existed during historic conditions."⁴¹³ Therefore, the agency "favor[s] management that restores or mimics natural ecosystem processes or functions."⁴¹⁴ The agency's manual also lays out the major principles underlying the biological integrity policy, the first of which is that wildlife conservation must always be the primary concern in the management of the refuges,⁴¹⁵ and that ensuring biological integrity, diversity, and environmental health is necessary for the agency to fulfill the system mission of conservation.⁴¹⁶

The requirement to maintain "biological integrity, diversity, and environmental health" requires refuge officials to "manage lands to conserve the full range of wild species and plant communities" that existed in a refuge before it was substantially changed by humans, and also "calls for the conservation of basic ecological processes with little human alteration, including the natural biological processes that shape genomes, organisms, and communities."⁴¹⁷ As Fischman describes the biological integrity requirement: "No other organic mandate employs as unconditional or specific a series of ecological criteria to constrain management and promote conservation."⁴¹⁸

iii. Ensure Effective Coordination, Interaction, and Cooperation

Congress clearly intended for FWS to cooperate meaningfully with other land managers, particularly states. Included in the statute is a requirement that the agency issue a conservation plan for each refuge that is "consistent with the provisions of this Act and, to the extent practicable, consistent with fish and wildlife conservation plans of the State in which the refuge is located."⁴¹⁹ As the *Wyoming* court states, the Improvement Act calls

⁴¹¹ *Nat'l Audubon Soc'y*, 397 F.3d at 854.

⁴¹² U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 3, BIOLOGICAL INTEGRITY, DIVERSITY, AND ENVIRONMENTAL HEALTH § 3.6 (2001), www.fws.gov/policy/601fw3.html.

⁴¹³ *Id.* § 3.10.

⁴¹⁴ *Id.* § 3.7(E).

⁴¹⁵ *Id.* § 3.7(A).

⁴¹⁶ *Id.* § 3.7(B).

⁴¹⁷ FREYFOGLE & GOBLE, *supra* note 292, at 212.

⁴¹⁸ FISCHMAN, *supra* note 396, at 126; *see also Defs. of Wildlife*, 651 F.3d 112, 116 (D.C. Cir. 2011) (emphasizing the agency's "biological integrity" mandate).

⁴¹⁹ 16 U.S.C. § 668dd(e)(1)(A)(iii) (2012).

for, “at a minimum, state involvement and participation in the management of the [National Wildlife Refuge System] as that system affects surrounding state ecosystems.”⁴²⁰ However, in understanding the statute we must give effect to all of the language provided, and while Congress strongly encourages cooperation, it also tempers that goal by finding that it is only necessary “to the extent practicable,” otherwise the agency would not be capable of fulfilling its congressionally designated mission.⁴²¹ As the *Wyoming* court observed: “Congress undoubtedly intended a preeminent federal role for the FWS in the care and management of the [National Wildlife Refuge System].”⁴²²

iv. Savings Clause

The Improvement Act also contains two savings clauses. First, the Act prohibits the taking of any fish or animal within refuges without FWS permission,⁴²³ but the prohibition does not extend beyond refuge boundaries: “Nothing in this Act shall be construed to authorize the Secretary to control or regulate hunting or fishing of fish and resident wildlife on lands or waters that are not within the System.”⁴²⁴ Next, the Act provides that:

Nothing in this Act shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations in any area within the System. Regulations permitting hunting or fishing of fish and resident wildlife within the System shall be, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans.⁴²⁵

The state in *Wyoming* argued that the first sentence of the savings clause retains to the state “the absolute right to manage wildlife . . . free from federal intervention.”⁴²⁶ However, the Tenth Circuit found that as a matter of statutory construction the first sentence cannot be read in isolation; instead, the clause must be understood in its entirety, giving effect to the whole clause.⁴²⁷ The second sentence of the savings clause indicates that federal regulation of wildlife on refuges only has to be consistent with state law “to the extent practicable.”⁴²⁸ So while consistency is encouraged, it is not mandated at the expense of the other requirements of the statute.

⁴²⁰ *Wyoming*, 279 F.3d 1214, 1231 (10th Cir. 2002).

⁴²¹ 16 U.S.C. § 668dd(e)(1)(A)(iii); *Wyoming*, 279 F.3d at 1233.

⁴²² *Wyoming*, 279 F.3d at 1234.

⁴²³ 16 U.S.C. § 668dd(c); see *United States v. Kilpatrick*, 347 F. Supp. 2d 693, 695 (D. Neb. 2004) (upholding conviction for trespassing on and shooting deer in a closed portion of a wildlife refuge).

⁴²⁴ *Id.* § 668dd(f).

⁴²⁵ *Id.* § 668dd(m).

⁴²⁶ *Wyoming*, 279 F.3d at 1231.

⁴²⁷ *Id.*

⁴²⁸ 16 U.S.C. § 668dd(m); *Wyoming*, 279 F.3d at 1232.

The *Wyoming* court also found that if the first sentence is read so as to exclude the possibility of FWS authority to manage wildlife in ways that might conflict with state law, such a result “would be inconsistent with the [Improvement Act’s] ‘mission . . . to administer a national network of lands.’”⁴²⁹ Interpreting the statute as prohibiting FWS from ever acting contrary to state law would leave the state “free to manage and regulate the [refuge] in a manner the FWS deemed incompatible with the [refuge’s] purpose.”⁴³⁰ The *Wyoming* court found it “highly unlikely . . . that Congress would carefully craft the substantive provisions of the [Improvement Act] to grant authority to the FWS to manage the [refuge] and promulgate regulations thereunder and then essentially nullify those provisions and regulations with a single sentence.”⁴³¹ The *Audubon* court agreed, stating “the first sentence of the savings clause was not meant to eviscerate the primacy of federal authority over [National Wildlife Refuge] management.”⁴³² To the extent that state law conflicts with or undermines statutory requirements or federal objectives, it is preempted.⁴³³ The Department of the Interior has adopted this cooperative federalism interpretation of the savings clause as well.⁴³⁴

v. Compatibility Determinations

The compatibility determination forms the central criterion for determining whether or not actions will be allowed to proceed on refuge lands and therefore is the key mechanism in implementing the statute’s goal of conservation. A compatible use is one that “in the sound professional judgment of [FWS] will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”⁴³⁵ In implementing this provision, FWS must consider direct, indirect, and cumulative impacts of the proposed use.⁴³⁶ However, actions categorized as

⁴²⁹ *Wyoming*, 279 F.3d at 1234 (omission in original) (quoting 16 U.S.C. § 668dd(a)(2)).

⁴³⁰ *Id.*

⁴³¹ *Id.* at 1234–35 (citation omitted); see *Geier v. Am. Honda Motor Co.*, 529 U.S. 861, 870 (2000) (“[T]his Court has repeatedly ‘decline[d] to give broad effect to savings clauses where doing so would upset the careful regulatory scheme established by federal law.’” (second alteration in original) (quoting *United States v. Locke*, 529 U.S. 89, 106–07 (2000))).

⁴³² *Nat’l Audubon Soc’y*, 307 F.3d 835, 854 (9th Cir.), *amended on denial of reh’g*, 312 F.3d 416 (9th Cir. 2002).

⁴³³ *Id.*; see *Sch. Bd. of Avoyelles Par. v. U.S. Dep’t of Interior*, 647 F.3d 570, 582 (5th Cir. 2011) (finding that Louisiana law was in direct conflict with Property Clause and the National Refuge Act and was therefore pre-empted insofar as the Louisiana statute—allowing owner of estate that has no access to public road to claim right of passage over neighboring property—“would permit the School Board to enter, use, or otherwise occupy Refuge lands in violation of FWS regulations”).

⁴³⁴ 43 C.F.R. § 24.4(e) (2016).

⁴³⁵ 16 U.S.C. § 668ee(1) (2012); 50 C.F.R. § 25.12(a) (2016).

⁴³⁶ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. 62,484, 62,489 (Oct. 18, 2000).

"refuge management activity" do not require compatibility determinations,⁴³⁷ though refuge management activities must be actions in furtherance of the system mission or refuge purposes and so are inherently compatible.⁴³⁸ State wildlife management activities may be considered "refuge management activities" if they are taken "pursuant to a cooperative agreement between the State and [FWS] where the Refuge Manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission."⁴³⁹ Because compatibility determinations must be made using "sound professional judgment,"⁴⁴⁰ the *Wyoming* court found that a reviewing court has "law to apply," and the determinations are reviewable in court.⁴⁴¹

In conclusion, Congress delegated to FWS the responsibility to manage the national wildlife refuges in accordance with the specific requirements laid out in both the Refuge Improvement Act and the establishment legislation for individual refuges. Ultimately, it is up to refuge managers to determine whether it is "practicable" and "consistent" for state laws to be applied on refuge lands.⁴⁴² As the *Wyoming* court stated: "The first sentence of the saving clause does not deny the FWS, where at odds with the State, the authority to make a binding decision bearing upon the 'biological integrity, diversity, and environmental health of the System.'"⁴⁴³ Both the compatibility requirement and the mandate to promote biological integrity, diversity, and environmental health impose legally enforceable restrictions and obligations on FWS that cannot be cast aside at the request of states.

4. The National Forest System

a. The 1897 Organic Act

USFS's 1897 "Organic Act"⁴⁴⁴ authorizes the establishment of national forests.⁴⁴⁵ It states in part that "[n]o national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States."⁴⁴⁶ The law also authorizes USFS to regulate "the occupancy

⁴³⁷ *Id.* at 62,488; U.S. FISH & WILDLIFE SERV., SERVICE MANUAL 610 FW 1, GENERAL OVERVIEW OF WILDERNESS STEWARDSHIP POLICY § 1.5(V) (2008) [hereinafter FWS WILDERNESS POLICY].

⁴³⁸ 50 C.F.R. § 25.12(a); Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,489; see Joly, *supra* note 275, at 45–46.

⁴³⁹ Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. at 62,488.

⁴⁴⁰ 16 U.S.C. § 668ee(1).

⁴⁴¹ *Wyoming*, 279 F.3d 1214, 1237 (10th Cir. 2002).

⁴⁴² FREYFOGLE & GOBLE, *supra* note 292, at 215.

⁴⁴³ *Wyoming*, 279 F.3d at 1234 (quoting 16 U.S.C. § 668dd(a)(4)(B)).

⁴⁴⁴ Act of June 4, 1897, ch. 2, 30 Stat. 11, 34–36 (codified as amended at 16 U.S.C. §§ 473–482, 551 (2012)).

⁴⁴⁵ 16 U.S.C. § 475.

⁴⁴⁶ *Id.*

and use" of the national forests and "to preserve the forests thereon from destruction."⁴⁴⁷

The Organic Act is silent on fish and wildlife management on national forests. In an early wildlife decision, however, the Supreme Court found USFS to have broad powers in protecting the national forests (in this case the Kaibab) from damage inflicted by deer in northern Arizona.⁴⁴⁸ The power of the United States, said the Court, to "protect its lands and property does not admit of doubt, the game laws of any other statute of the state to the contrary notwithstanding."⁴⁴⁹

b. The Multiple-Use Sustained-Yield Act of 1960

In 1960, Congress passed the Multiple-Use Sustained-Yield Act⁴⁵⁰ (MUSYA). For the first time, it was statutorily recognized that USFS had some responsibility to consider fish and wildlife values on the national forests.⁴⁵¹ MUSYA states in pertinent part: "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, *and wildlife and fish* purposes."⁴⁵² This language does not require USFS to conserve wildlife in any specific way, only to consider wildlife and fish in the context of multiple-use decision making. As defined in the law, multiple use means:

The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various

⁴⁴⁷ See *id.* § 551 ("The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests which may have been set aside or which may be hereafter set aside under the provisions of section 471 of this title, and which may be continued; and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction." (footnote omitted)); see also *Forest Serv. Emps. for Envtl. Ethics v. U.S. Forest Serv.*, 689 F. Supp. 2d 891, 905 (W.D. Ky. 2010) (finding that USFS unlawfully delegated its Organic Act authority in allowing the National Wild Turkey Federation to issue special use permits on forest lands).

⁴⁴⁸ *Hunt*, 278 U.S. 96, 100 (1928).

⁴⁴⁹ *Id.* (citations omitted).

⁴⁵⁰ Multiple-Use Sustained-Yield Act of 1960, Pub. L. No. 86-517, 74 Stat. 215 (codified as amended at 16 U.S.C. §§ 528-531).

⁴⁵¹ 16 U.S.C. § 528.

⁴⁵² *Id.* (emphasis added).

resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.⁴⁵³

As the courts generally view it, the multiple-use mandate “breathe[s] discretion at every pore”⁴⁵⁴ and grants USFS wide latitude in determining the “proper mix of uses” for national forest lands.⁴⁵⁵ In *Perkins v. Bergland*, the plaintiffs argued that MUSYA contained standards that cabined USFS’s discretion over the proper number of grazing permits to protect the public land from damage.⁴⁵⁶ The Ninth Circuit disagreed:

These sections of MUSYA contain the most general clauses and phrases. For example, the agency is “directed” in section 529 to administer the national forests “for multiple use and sustained yield of the several products and services obtained therefrom,” with “due consideration [to] be given to the relative values of the various resources in particular areas.” This language, partially defined in section 531 in such terms as “that [which] will best meet the needs of the American people” and “making the most judicious use of the land,” can hardly be considered concrete limits upon agency discretion. Rather, it is language which “breathe[s] discretion at every pore.” What appellants really seem to be saying when they rely on the multiple-use legislation is that they do not agree with the Secretary on how best to administer the forest land on which their cattle graze. While this disagreement is understandable, the courts are not at liberty to break the tie by choosing one theory of range management as superior to another.⁴⁵⁷

Since *Perkins v. Bergland*, the courts have consistently found that USFS has broad discretion under the multiple-use framework.⁴⁵⁸ This includes *Wyoming v. U.S. Department of Agriculture*, where the Tenth Circuit upheld the 2001 Roadless Rule⁴⁵⁹ over challenges that the Rule failed to satisfy the statutory multiple-use mandate because it precluded timber harvesting in

⁴⁵³ *Id.* § 531(a).

⁴⁵⁴ *Perkins v. Bergland*, 608 F.2d 803, 806 (9th Cir. 1979) (alteration in original) (quoting *Strickland v. Morton*, 519 F.2d 467, 469 (9th Cir. 1975)).

⁴⁵⁵ *Wyoming v. U.S. Dep’t of Agric.*, 661 F.3d 1209, 1268 (10th Cir. 2011).

⁴⁵⁶ *Perkins*, 608 F.2d at 806.

⁴⁵⁷ *Id.* at 806–07 (alterations in original) (citations and footnotes omitted).

⁴⁵⁸ See, e.g., *Cal. Forestry Ass’n v. Bosworth*, No. 2:05-cv-00905-MCE-GGH, 2008 WL 4370074, at *4 (E.D. Cal. Sept. 24, 2008); *Pac. Rivers Council v. U.S. Forest Serv.*, No. 2:05-cv-00953-MCE-GGH, 2008 WL 4291209, at *16–17 (E.D. Cal. Sept. 18, 2008), *aff’d in part and rev’d in part*, 689 F.3d 1012 (9th Cir. 2012); *California ex rel. Lockyer v. U.S. Dep’t of Agric.*, No. 2:05-cv-0211-MCE-GGH, 2008 WL 3863479, at *7–8 (E.D. Cal. Aug. 19, 2008), *aff’d sub nom.*, *Sierra Forest Legacy v. Sherman*, 646 F.3d 1161 (9th Cir. 2011); *Nat. Res. Def. Council, Inc. v. U.S. Forest Serv.*, 634 F. Supp. 2d 1045, 1058 (E.D. Cal. 2007); *Clinch Coal v. Damon*, 316 F. Supp. 2d 364, 378 (W.D. Va. 2004); *Sierra Club v. Marita*, 845 F. Supp. 1317, 1328 (E.D. Wis. 1994), *aff’d*, 46 F.3d 606 (7th Cir. 1995); *Wind River Multiple-Use Advocates v. Espy*, 835 F. Supp. 1362, 1372 (D. Wyo. 1993), *aff’d*, 85 F.3d 641 (10th Cir. 1996); *Big Hole Ranchers Ass’n v. U.S. Forest Serv.*, 686 F. Supp. 256, 264 (D. Mont. 1988).

⁴⁵⁹ *Special Areas; Roadless Area Conservation*, 66 Fed. Reg. 3244 (Jan. 12, 2001).

certain areas.⁴⁶⁰ The court reaffirmed MUSYA's discretionary nature and found that, while the Rule did not permit timber harvesting, it permitted other multiple uses, such as "outdoor recreation," "watershed," and "wildlife and fish purposes."⁴⁶¹

A relatively short and simple savings clause is also provided in MUSYA: "Nothing herein shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish on the national forests."⁴⁶² However, as noted above, in *California Coastal Commission v. Granite Rock Co.*, the Supreme Court held that federal law preempted the extension of state land use plans onto national forest lands because the savings clause merely indicates that ordinary principles of preemption govern such disputes.⁴⁶³ By the same token, contradictory state regulation of wildlife in the national forests would be preempted despite the savings clause.⁴⁶⁴

c. The National Forest Management Act of 1976

Born out of the timber clear-cutting controversies of the 1960s and 1970s, NFMA was passed in order to better balance timber management, resource use, and environmental protection.⁴⁶⁵ Unlike the highly discretionary Organic Act and MUSYA, NFMA provides substantive and procedural planning requirements, goals, and constraints on the agency, including obligations for managing fish and wildlife.⁴⁶⁶ NFMA requires the writing of land and resource management plans (LRMPs or forest plans) by every national forest and grassland in the National Forest System (NFS).⁴⁶⁷

NFMA created a three-tiered regulatory approach to planning.⁴⁶⁸ At the highest level, national-level NFMA regulations govern the development and revision of second-tier forest plans.⁴⁶⁹ Forest plans typically make zoning and suitability decisions, and limit and regulate various activities within a forest area, therefore acting as a gateway through which subsequent project-level proposals must pass.⁴⁷⁰ Forest plans also include long-term goals and desired

⁴⁶⁰ *Wyoming*, 661 F.3d at 1267-69; accord *Am. Whitewater v. Tidwell*, 959 F. Supp. 2d 839, 863 (D.S.C. 2013), *aff'd*, 770 F.3d 1108 (4th Cir. 2014); *Ark Initiative v. Tidwell*, 816 F.3d 119, 128 (D.C. Cir.), *cert. denied*, 137 S. Ct. 301 (2016).

⁴⁶¹ *Wyoming*, 661 F.3d at 1268-69 (quoting 16 U.S.C. § 528 (2012)).

⁴⁶² 16 U.S.C. § 528.

⁴⁶³ *Granite Rock Co.*, 480 U.S. 572, 585, 593-94 (1987).

⁴⁶⁴ *Hunt*, 278 U.S. 96, 100 (1928) (upholding federal removal of deer from the Kaibab National Forest to protect the forest from damage caused by overgrazing, despite objections from the state).

⁴⁶⁵ 16 U.S.C. § 1600.

⁴⁶⁶ See *id.* §§ 1603-1604; 36 C.F.R. § 219.1 (2016).

⁴⁶⁷ 16 U.S.C. § 1604(a).

⁴⁶⁸ *Id.* § 1604. For a more elaborate explanation of this tiered approach, see *Citizens for Better Forestry v. U.S. Department of Agriculture*, 341 F.3d 961, 965-66 (9th Cir. 2003).

⁴⁶⁹ *Citizens for Better Forestry*, 341 F.3d at 965 (citing 16 U.S.C. § 1604(g)).

⁴⁷⁰ Scott W. Hardt, *Federal Land-Use Planning and Its Impact on Resource Management Decisions*, in *PUBLIC LAND LAW II* (Rocky Mountain Mineral Law Found., Special Inst. 1997).

conditions of the land and resources.⁴⁷¹ Site-specific projects make up the third tier of planning.⁴⁷² Any such proposed use of a national forest is subject to the requirement in NFMA that “[r]esource plans and permits, contracts, and other instruments for use and occupancy of National Forest System lands shall be consistent with” the applicable forest plan.⁴⁷³ Thus, to the extent that states are subject to USFS authority, that authority must be exercised in conformance with the provisions in the current forest plan.

i. NFMA and Wildlife

One of NFMA’s most powerful provisions is its wildlife diversity mandate.⁴⁷⁴ It requires that forest plans “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁴⁷⁵ According to Wilkinson and Anderson’s authoritative history of NFMA’s development, the diversity provision was meant to require “[USFS] planners to treat the wildlife resource as a controlling, co-equal factor in forest management and, in particular, as a substantive limitation on timber production.”⁴⁷⁶ Regulations implementing NFMA address requirements for diversity in greater detail.⁴⁷⁷ If state wildlife management actions occur on national forest lands they must be considered in this statutory and regulatory context, and may be subject to preemption based on USFS’s authority and obligations for wildlife diversity.⁴⁷⁸

Most “first-generation” forest plans were written pursuant to the 1982 NFMA regulations. Those regulations required that “[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area.”⁴⁷⁹ While this language emphasized management of habitat, the regulation also established a minimum population threshold, at least in concept, by defining “viable population” as “one which has the estimated numbers and distribution of

⁴⁷¹ See generally Michael J. Gippert & Vincent L. DeWitte, *The Nature of Land and Resource Management Planning Under the National Forest Management Act*, 3 ENVTL. LAW. 149 (1996) (discussing the various planning processes under NFMA); see also *Ohio Forestry Ass’n v. Sierra Club*, 523 U.S. 726, 729 (1998) (describing the nature of forest plans).

⁴⁷² *Citizens for Better Forestry*, 341 F.3d at 966.

⁴⁷³ 16 U.S.C. § 1604(i).

⁴⁷⁴ See generally Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service’s 2012 Planning Rule*, 77 J. WILDLIFE MGMT. 428 (2013) (exploring the broad implications for wildlife management under the 2012 Planning Rule).

⁴⁷⁵ 16 U.S.C. § 1604(g)(3)(B).

⁴⁷⁶ CHARLES F. WILKINSON & H. MICHAEL ANDERSON, *LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS* 296 (1987).

⁴⁷⁷ See, e.g., National Forest System Land and Resource Management Planning, 47 Fed. Reg. 43,026, 43,050 (Sept. 30, 1982) (to be codified at 36 C.F.R. pt. 219).

⁴⁷⁸ See, e.g., 36 C.F.R. § 219.26 (2016) (discussing the requirements for pursuing and maintaining ecological diversity).

⁴⁷⁹ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19); see, e.g., *Seattle Audubon Soc’y v. Moseley*, 80 F.3d 1401, 1404–05 (9th Cir. 1996) (applying viability regulations to northern spotted owl).

reproductive individuals to insure its continued existence is well distributed in the planning area.⁴⁸⁰

Existing forest plans will be revised (many during the next decade) and amended under new NFMA implementing procedures codified in the 2012 Planning Rule.⁴⁸¹ They include a different set of substantive requirements for management of wildlife. For ESA-listed species, forest plan components (e.g., desired future conditions, objectives, standards, and guidelines) must provide the "ecological conditions necessary to[] contribute to" their recovery.⁴⁸² For other at-risk species, referred to as species of conservation concern (SCC), forest plan components must provide the "ecological conditions necessary to . . . maintain a viable population of each species of conservation concern within the plan area."⁴⁸³ There is an exception for SCC management: where population viability is beyond the authority of USFS or capability of the land, USFS must coordinate to the extent practicable with others having management authority over lands relevant to a larger population.⁴⁸⁴

The 2012 Planning Rule defines "ecological conditions" to include "habitat and other influences on species and the environment."⁴⁸⁵ Other influences include "human uses."⁴⁸⁶ The Rule defines "viable population" as "[a] population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments."⁴⁸⁷ Like its predecessor, the 2012 Planning Rule thus establishes population levels for at-risk species as a goal, which is to be achieved by providing ecological conditions and regulating human uses.

Forest plans may be considered as "regulatory mechanisms," as defined by the ESA, during the listing process and may be a basis for not listing a species.⁴⁸⁸ Regulations of the United States Department of Agriculture

⁴⁸⁰ National Forest System Land and Resource Management Planning, 47 Fed. Reg. at 43,048 (to be codified at 36 C.F.R. § 219.19).

⁴⁸¹ National Forest System Land Management Planning, 77 Fed. Reg. 21,162 (Apr. 9, 2012).

⁴⁸² 36 C.F.R. § 219.9(b)(1).

⁴⁸³ *Id.* Agency planning policy requires that species identified by states as being at risk be considered as potential SCC. U.S. FOREST SERV., FOREST SERVICE HANDBOOK: LAND MANAGEMENT PLANNING HANDBOOK § 1909.12 (2013).

⁴⁸⁴ 36 C.F.R. § 219.9(b)(2).

⁴⁸⁵ *Id.* § 219.19.

⁴⁸⁶ *Id.*

⁴⁸⁷ *Id.* § 219.49.

⁴⁸⁸ *See* Greater Yellowstone Coal, Inc. v. Servheen, 665 F.3d 1015, 1030-32 (9th Cir. 2011) (finding forest plan direction was properly considered a valid regulatory mechanism for providing protection for grizzly bears). The decision to list Canada lynx as a threatened species was based largely on the lack of regulatory mechanisms in federal plans. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule, 65 Fed. Reg. 16,052, 16,074 (Mar. 24, 2000) (to be codified at 50 C.F.R. pt. 17) ("Therefore, amendment of Forest Plans to provide protection for lynx and lynx habitat is needed to conserve habitat for lynx and its prey on Federal forest lands. Without such amendments, the species is threatened."). The decision to not list the greater sage grouse was based largely on plans for federal lands that conserved the species. *See* Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to

(USDA) require USFS—and other USDA agencies—to “avoid actions which may cause a species to become threatened or endangered.”⁴⁸⁹ Under current plans and policies, species identified as “sensitive” were so designated in part to avoid their listing under the ESA,⁴⁹⁰ and agency actions may not create “significant trends towards federal listing.”⁴⁹¹ Current forest plans must ensure that viable populations of sensitive species are maintained.⁴⁹² The relationship of newly identified SCC and the ESA has not been as clearly articulated, but their role in developing adequate forest plan regulatory mechanisms should be similar.

When forest plans are amended or revised, they are also subject to the substantive requirements of the ESA for listed species.⁴⁹³ This means that they cannot jeopardize the continued existence of listed species,⁴⁹⁴ or destroy or adversely modify any critical habitat that has been designated,⁴⁹⁵ or result in prohibited incidental take.⁴⁹⁶ Forest plans may also be viewed as the primary means by which the agency is “carrying out programs for the conservation of” listed species, in accordance with section 7(a)(1) of the ESA.⁴⁹⁷

When it prepares forest plans under NFMA, USFS may include plan components that govern activities affecting wildlife.⁴⁹⁸ These plan components may include both desired ecological conditions and restrictions

List Greater Sage-Grouse (*Centrocercus urophasianus*) as an Endangered or Threatened Species, 80 Fed. Reg. 59,858, 59,858 (Oct. 2, 2015) (to be codified at 50 C.F.R. pt. 17).

⁴⁸⁹ U.S. DEPT OF AGRIC., NO. 9500-004, DEPARTMENTAL REGULATION: FISH AND WILDLIFE POLICY § 1(d) (2008), <https://perma.cc/7T2X-FD7T>.

⁴⁹⁰ U.S. FOREST SERV., FOREST SERVICE MANUAL [FSM] § 2670.22(1) (2005).

⁴⁹¹ *Id.* § 2670.32(4).

⁴⁹² *Id.* § 2672.41 (2009).

⁴⁹³ *See, e.g., Cottonwood Envtl. Law Ctr. v. U.S. Forest Serv.*, 789 F.3d 1075, 1086–88 (9th Cir. 2015), *cert. denied*, 137 S. Ct. 293 (2016).

⁴⁹⁴ *See, e.g., Res. Ltd. v. Robertson*, 35 F.3d 1300, 1304 n.3 (9th Cir. 1993) (finding FWS conditioned its “no jeopardy” conclusion on the USFS’s continued adherence to grizzly bear guidelines).

⁴⁹⁵ *See Cottonwood*, 789 F.3d at 1088 (reinitiation of consultation on forest plans required after designation of critical habitat for Canada lynx).

⁴⁹⁶ Recently settled litigation involving the Superior National Forest Plan claimed that USFS is responsible for the take of Canada lynx resulting from hunting and trapping on the national forest. Complaint for Declaratory and Injunctive Relief at 2, 6, Ctr. for Biological Diversity v. Tidwell, No. 1:16-cv-01049-TSC (D.D.C. June 6, 2016).

⁴⁹⁷ 16 U.S.C. § 1536(a)(1) (2016). The Preamble to the 2012 Planning Rule states that the requirement to contribute to recovery, “will further the purposes of § 7(a)(1) of the ESA, by actively contributing to threatened and endangered species recovery and maintaining or restoring the ecosystems upon which they depend.” National Forest System Land Management Planning, 77 Fed. Reg. 21,162, 21,215 (Apr. 9, 2012) (to be codified at 50 C.F.R. pt. 219). The FWS Handbook for consultation states that a programmatic review based on section 7(a)(1) is appropriate for Federal agency planning and program management documents. U.S. FISH & WILDLIFE SERV. & NAT’L MARINE FISHERIES SERV., CONSULTATION HANDBOOK: PROCEDURES FOR CONDUCTING CONSULTATION AND CONFERENCE ACTIVITIES UNDER SECTION 7 OF THE ENDANGERED SPECIES ACT 1-1, 5-1 (1998), <https://perma.cc/LN7H-HNNL>.

⁴⁹⁸ *See National Forest System Land and Resource Management Planning*, 47 Fed. Reg. 43,026, 43,044 (Sept. 30, 1982) (to be codified at 36 C.F.R. § 219.11) (listing ecological factors as a planning criteria).

on activities that are likely to adversely affect these conditions.⁴⁹⁹ Such restrictions could be applicable to state actions occurring in a national forest.⁵⁰⁰ However, the 2012 Planning Rule states that plans do not themselves regulate uses by the public, such as hunting and fishing.⁵⁰¹

ii. Wildlife and Special Use Authorization

Several wildlife conflicts playing out in the national forests involve the question of whether or not USFS should authorize a wildlife-focused action by a nonfederal actor. For example, states may be engaged in introducing new species on national forest lands, or limiting or removing species that are undesirable from the state's perspective. Questions may arise about USFS's role in these state actions and the applicability of federal law to them.

USFS implements forest plans by authorizing specific uses that promote achievement of the desired outcomes, such as plant and animal diversity and viable populations.⁵⁰² It may also authorize activities that would not necessarily promote these outcomes.⁵⁰³ This is often the case with requests for special use authorizations by applicants for permits, which could include state and local governments.⁵⁰⁴ A forest plan may include mandatory requirements (e.g., standards or guidelines) applicable to the issuance of such permits.⁵⁰⁵

The objective of the USFS special uses program is to "[a]uthorize and manage special uses of National Forest System lands in a manner which protects natural resources and public health and safety, consistent with [forest plans]."⁵⁰⁶ Permits may be granted only if "[t]he proposed use cannot reasonably be accommodated on non-National Forest System lands."⁵⁰⁷

Almost all uses of NFS lands, improvements, and resources are designated "special uses."⁵⁰⁸ Wildlife management activities on national

⁴⁹⁹ *See id.*

⁵⁰⁰ A conflict between a state action and NFMA's diversity requirement could possibly arise where a state game species is considered at-risk by USFS. This is the case for bighorn sheep, where the State of Wyoming passed a law authorizing removal of bighorn sheep if USFS were to eliminate domestic sheep grazing. WYO. STAT. ANN. § 11-19-604(e) (2017); *see also* Idaho Wool Growers Ass'n v. Vilsack, 7 F. Supp. 3d 1085, 1092 (D. Idaho 2014) (finding USFS's forest plan "committed 'no clear error in judgment'" by reducing domestic sheep grazing in order to prevent disease transmission to bighorn sheep), *aff'd*, 816 F.3d 1095 (9th Cir. 2016).

⁵⁰¹ 36 C.F.R. § 219.2(b)(2) (2016). A forest plan direction to limit public uses must be implemented by a closure order, pursuant to *id.* § 261.50, and may include special closures to protect wildlife pursuant to *id.* § 261.53(a).

⁵⁰² *Id.* § 219.9.

⁵⁰³ *Id.* § 219.9(b)(2).

⁵⁰⁴ *Id.* § 251.50(a).

⁵⁰⁵ *Id.* § 251.52.

⁵⁰⁶ FSM § 2702 (2011).

⁵⁰⁷ *Id.* § 2703.2(2)(b).

⁵⁰⁸ 36 C.F.R. § 251.50(a), (e) (some uses are not considered "special uses" because they are regulated by separate authorities); *see also* FSM § 2701.1 (listing the various authorities for different kinds of special uses).

forests by nonfederal parties would be considered special uses.⁵⁰⁹ Before conducting a special use, individuals or entities must obtain a special use authorization from the authorized officer, unless that requirement is waived by regulation.⁵¹⁰ There is no waiver provision that necessarily allows state actions taken on NFS lands without a permit. A special use authorization is normally not required for hunting or fishing.⁵¹¹ However, USFS may manage public recreation of any kind by issuing a closure order.⁵¹²

iii. Coordination with State and Local Governments

NFMA includes a requirement to coordinate with the land and resource management planning processes of state and local governments in the development of forest plans.⁵¹³ The 2012 Planning Rule requires review of the planning and land use policies of state and local governments, consideration of the objectives of these policies, and opportunities to reduce conflicts.⁵¹⁴ However, it explicitly does not permit the responsible USFS official to “conform the management to meet non-[USFS] objectives or policies.”⁵¹⁵

The 2012 Planning Rule also requires the official responsible for forest planning to “encourage States, counties, and other local governments to seek cooperating agency status in the NEPA process for development, amendment, or revision of a plan.”⁵¹⁶ The role of such cooperating agencies is to assist in the environmental review process.⁵¹⁷ NEPA also includes a requirement to “cooperate with State and local agencies to the fullest extent possible to reduce duplication between NEPA and State and local requirements.”⁵¹⁸ In addition, NEPA documents must identify any inconsistencies with state and local plans or laws, and “describe the extent to which the agency would reconcile its proposed action with the plan or

⁵⁰⁹ 36 C.F.R. § 251.50(a).

⁵¹⁰ *Id.* § 251.50(c)–(e) (the requirement for a special use permit is waived for most noncommercial recreational activities not involving a large organized group, most forms of travel on NFS roads, uses with nominal effects, and uses regulated by a state agency or another federal agency in a manner that adequately protects national forest lands and resources).

⁵¹¹ *Id.* § 251.50(c).

⁵¹² *Id.* § 261.50; *see also id.* § 261.70(a)(4) (among other reasons, closure orders are authorized for the “[p]rotection of threatened, endangered, rare, unique, or vanishing species of plants, animals, birds or fish, or special biological communities”).

⁵¹³ *See* NFMA, 16 U.S.C. § 1604(a) (2012) (providing that, “as appropriate,” forest plan revisions should be “coordinated with the land and resource management planning processes of State and local governments and other Federal agencies”); *see also* 36 C.F.R. § 219.4(b)(1) (requiring NFMA officials to coordinate with the “equivalent and related planning efforts” of Tribes, agencies, and state and local governments).

⁵¹⁴ 36 C.F.R. § 219.4(b)(2).

⁵¹⁵ *Id.* § 219.4(b)(3); *see, e.g.*, Letter from USDA Forest Serv., Intermountain Region, to Matt Mead, Governor of Wyo. (Feb. 20, 2015) (on file with authors) (Bridger-Teton National Forest refused to “adopt” a Wyoming plan for bighorn sheep, describing it only as “a valuable framework”).

⁵¹⁶ 36 C.F.R. § 219.4(a)(1)(iv).

⁵¹⁷ *Id.* § 219.4(a)–(b).

⁵¹⁸ 40 C.F.R. §§ 1501.6, 1506.2(b) (2016).

law.⁵¹⁹ There is no general NEPA requirement to coordinate decision-making processes or for USFS decisions to be consistent with state plans.

In conclusion, although it is clear that USFS must coordinate the development of LRMPs with tribal, state, and local governments, this coordination requirement does not give such nonfederal entities equal footing in managing NFS lands, nor does it require USFS to act and manage NFS lands consistent with these nonfederal plans.

d. U.S. Forest Service Cooperation in Wildlife Management

Federal regulations applicable to USFS require cooperation among wildlife management agencies:

The Chief of [USFS], through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of [USFS] will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.⁵²⁰

USFS directives provide additional coordination guidance.⁵²¹ In particular, they require development of a written Memorandum of Understanding with each state involving policies or procedural matters.⁵²²

Hunting, fishing, and trapping on NFS lands are subject to state fish and wildlife laws and regulations, unless those regulations conflict with federal laws or they would permit activities that conflict with land and resource management responsibilities of USFS or that are inconsistent with direction in forest plans.⁵²³ Memorandums with state fish and wildlife agencies must

⁵¹⁹ *Id.* § 1506.2(d) ("To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.").

⁵²⁰ 36 C.F.R. § 241.2.

⁵²¹ *See* FSM § 2671.1 (2005).

⁵²² *Id.* § 2611.1 (1990).

⁵²³ *Id.* § 2643.1 (1995); *see, e.g.,* Meister v. U.S. Dep't of Agric., 623 F.3d 363, 379–80 (6th Cir. 2010) (stating that it is not beyond USFS's authority to consider using a forest plan to prohibit gun hunting in areas to be managed for non-motorized recreation); La. Sportsmen All. v. Vilsack, 984 F. Supp. 2d 600, 611 (W.D. La. 2013) (holding that a forest plan may prohibit hunting deer with dogs to reduce conflicting uses), *rev'd on other grounds*, 583 F. App'x 379 (5th Cir. 2014); Ctr. for Biological Diversity v. U.S. Forest Serv., No. CV-12-8176-PCT-SMM, 2013 WL 3335234,

"recognize the role of [USFS] in cooperating in the development of State fish and wildlife laws and regulations, especially those addressing hunting, fishing, and trapping as they would apply to occupancy and use of National Forest System lands."⁵²⁴

"Introductions or stocking of species may be made to restore resources following environmental changes, [and] to provide recreation opportunities where reproduction is insufficient to meet demand."⁵²⁵ Authority is also provided to "restore locally extinct indigenous species, to recover threatened and endangered species, and to introduce new species in coordination with State and Federal agencies."⁵²⁶ A prior joint agreement with appropriate state fish and wildlife agencies is needed for any introductions.⁵²⁷ "Such MOU's must document agreements on each fish and wildlife translocation project and appropriate environmental documentation."⁵²⁸ When stocking and reintroductions occur, USFS "has the responsibility to prevent damage to resources occurring on [NFS] lands" and comply with the ESA and Wilderness Act.⁵²⁹

State cooperative agreements are found in MOUs that are appended to the USFS Manual as regional supplements that pertain to the states found in each region. For example, an MOU between Idaho and USFS commits USFS to considering state goals when developing its forest plans.⁵³⁰ It also recognizes that special use permits may be needed for some state actions on federal lands.⁵³¹ The MOU requires prior consultation (but not permission) for use of chemicals and for transplants or introductions of wildlife or fish "with sufficient lead time to permit joint field investigations regarding the effects of such programs on National Forest System lands."⁵³² It also contains a savings clause regarding state and federal authorities.⁵³³

e. Special Designated Areas Managed by the U.S. Forest Service

The laws and regulations reviewed above generally apply throughout the NFS, but the System also includes special areas, designated by Congress or the President, that may include additional authority and direction for

*3 (D. Ariz. July 2, 2013) (determining that USFS has authority to regulate the use of lead bullets to protect California condors), *rev'd on other grounds*, 640 F. App'x 617 (9th Cir. 2016).

⁵²⁴ FSM § 2643.

⁵²⁵ *Id.* § 2640.3(3); *see also* Exec. Order No. 11,987, 3 C.F.R. § 116 (1977) (generally restricting federal agencies from introducing exotic species to lands they administer and encouraging the prevention of introductions by other levels of government and by private citizens).

⁵²⁶ FSM § 2640.3. "The State has the responsibility to make the determination as to which wildlife and fish species are native or indigenous." *Id.* § 2641.

⁵²⁷ *Id.* §§ 2640.41–42.

⁵²⁸ *Id.* § 2641.

⁵²⁹ *Id.*

⁵³⁰ *Id.* § 1561.2(A)(3) (1994).

⁵³¹ *Id.* § 1561.2(A)(6)–(7).

⁵³² *Id.* § 1561.2(B)(6)–(8).

⁵³³ *Id.* § 1561.2(C)(12).

managing wildlife. These include an assortment of USFS-administered national recreation areas, conservation areas, and other specially designated landscapes.⁵³⁴ These include national monuments that are established by the President using the Antiquities Act.⁵³⁵ A recent national monument established on NFS lands (which also includes BLM lands) is the Sand to Snow National Monument in California.⁵³⁶ President Obama's Proclamation establishing the monument emphasizes the area's "remarkable species richness that makes it one of the most biodiverse areas in southern California," that it "is home to 12 federally listed threatened and endangered animal species" and "frequented by over 240 species of birds," and that the area's "intersection of mountains makes th[e] area a critical bridge for wildlife traversing the high elevations of southern California's desert landscape."⁵³⁷ The Proclamation orders USFS and BLM to use "their respective applicable legal authorities" to implement these wildlife-focused purposes of the national monument and includes a savings clause stating that the Proclamation does nothing "to enlarge or diminish the jurisdiction of the State of California, including its jurisdiction and authority with respect to fish and wildlife management."⁵³⁸

5. Public Lands Managed by the Bureau of Land Management

a. Federal Land Policy Management Act (1976)

Of most relevance to wildlife on public lands managed by BLM is the Federal Land Policy Management Act of 1976. FLPMA is considered to be BLM's Organic Act because it consolidated and articulated the agency's mission and management responsibilities.⁵³⁹ Its full history is beyond the purview of this Article, but it is commonly recognized that the Act was designed, in part, to correct the agency's historic practice of prioritizing livestock grazing and mining as the dominant uses of public lands.⁵⁴⁰ In FLPMA, Congress declared that fish and wildlife values were to be balanced with other resources and uses of the public lands, and expressed a policy that:

⁵³⁴ For a comprehensive listing of "special recreation and conservation overlays," see GEORGE CAMERON COGGINS ET AL., *FEDERAL PUBLIC LAND AND RESOURCES LAW* 946-47 (6th ed. 2007); NAT. RES. LAW CTR., *PROTECTIVE DESIGNATIONS ON FEDERAL LANDS: CASE STUDIES OF NATIONAL CONSERVATION AREAS, NATIONAL MONUMENTS, NATIONAL PARKS, NATIONAL RECREATION AREAS, AND WILDERNESS AREAS 2* (2004); Martin Nie & Michael Fiebig, *Managing the National Forests Through Place-Based Legislation*, 37 *ECOLOGY L.Q.* 1, 15-23 (2010).

⁵³⁵ Antiquities Act of 1906, 54 U.S.C. §§ 320301-320303 (Supp. III 2016); see *id.* § 320301.

⁵³⁶ Proclamation No. 9396, 81 Fed. Reg. 8379 (Feb. 18, 2016).

⁵³⁷ *Id.* at 8380.

⁵³⁸ *Id.* at 8382-83.

⁵³⁹ See DEBRA L. DONAHUE, *THE WESTERN RANGE REVISITED: REMOVING LIVESTOCK FROM PUBLIC LANDS TO CONSERVE NATIVE BIODIVERSITY* 203 (1999); JAMES R. SKILLEN, *THE NATION'S LARGEST LANDLORD: THE BUREAU OF LAND MANAGEMENT IN THE AMERICAN WEST* 102 (2009).

⁵⁴⁰ See DONAHUE, *supra* note 539, at 206-07; SKILLEN, *supra* note 539, at 102-03.

[T]he public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.⁵⁴¹

FLPMA also codified a multiple-use mandate,⁵⁴² which is defined as follows:

[T]he management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all of the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, *wildlife and fish*, and natural scenic, scientific and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output.⁵⁴³

Three components of this definition are essential to understanding BLM's multiple-use mandate. First, it means that some lands may be used for less than all of the possible resources and values present in an area. In fact, some land may be used for only one resource or value. Second, "multiple use" means that some lands may be used for purposes that do not return the greatest profit to individuals, corporations, or federal, state, or local governments. Third, the diverse resources for which BLM is given direction to manage include "wildlife and fish," and not just fish and wildlife *habitat*. We return to this issue in Part IV.A.

Similar to other federal land laws, Congress recognized the national interest in these public lands and wanted their management to be based on a systematic inventory and an informed land use planning process. To this end, FLPMA requires the preparation of resource management plans.⁵⁴⁴ In preparing these plans, the agency must consider such things as the "present and potential uses of the public lands[,] . . . the relative scarcity of the values involved," to "rely, to the extent it is available, on the inventory of the public

⁵⁴¹ 43 U.S.C. § 1701(a)(8).

⁵⁴² Congress first codified a multiple-use management for BLM in the Classification and Multiple Use Act of 1964, 43 U.S.C. §§ 1411–1418 (1970) (omitted as obsolete in 1976).

⁵⁴³ 43 U.S.C. § 1702(c) (2012) (emphasis added).

⁵⁴⁴ *Id.* § 1712.

lands, their resources, and others values," and "weigh long-term benefits to the public against short-term benefits."⁵⁴⁵

As in the case of the national forests, the multiple-use mandate given to BLM provides a great deal of agency discretion.⁵⁴⁶ But this discretion is not boundless. The agency violates FLPMA if it fails to "engage in any reasoned or informed decisionmaking process" concerning the implementation of multiple use.⁵⁴⁷ FLPMA's multiple-use mandate is also bounded by two additional provisions of FLPMA: 1) the requirement to avoid "permanent impairment . . . [to] the quality of the environment,"⁵⁴⁸ and 2) the requirement that the Secretary of Interior (and hence BLM) must "take any action necessary to prevent unnecessary or undue degradation of the lands."⁵⁴⁹

i. Areas of Critical Environmental Concern

FLPMA requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern" (ACECs).⁵⁵⁰ As defined in FLPMA:

The term "areas of critical environmental concern" means areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, *fish and wildlife resources* or other natural systems or processes, or to protect life and safety from natural hazards.⁵⁵¹

This is a unique provision in federal land law. ACECs are often designated because of the fish and wildlife values associated with them.⁵⁵² Congress, in unambiguous fashion, ordered the agency to *prioritize* the designation and protection of ACECs.⁵⁵³ This means that BLM should be giving ACECs priority for consideration in the planning process and extra

⁵⁴⁵ *Id.* § 1712(c)(4)–(7).

⁵⁴⁶ See, e.g., *Nat. Res. Def. Council, Inc. v. Hodel*, 624 F. Supp. 1045, 1058 (D. Nev. 1985), *aff'd*, 819 F.2d 927 (9th Cir. 1987).

⁵⁴⁷ *Nat'l Wildlife Fed'n*, 140 Interior Dec. 85, 101 (IBLA 1997). For a more complete history of this case and its implications for multiple use, see generally Joseph M. Feller, *The Comb Wash Case: The Rule of Law Comes to the Public Rangelands*, 17 PUB. LAND & RESOURCES L. REV. 25 (1996).

⁵⁴⁸ 43 U.S.C. § 1702(c).

⁵⁴⁹ *Id.* § 1732(b). See generally Roger Flynn, *Daybreak on the Land: The Coming of Age of the Federal Land Policy and Management Act of 1976*, 29 VT. L. REV. 815 (2005) (reviewing the application of this provision as it relates to water, mining, and property rights).

⁵⁵⁰ 43 U.S.C. § 1712(c)(3).

⁵⁵¹ *Id.* § 1702(a) (emphasis added).

⁵⁵² Karin P. Sheldon & Pamela Baldwin, *Areas of Critical Environmental Concern: FLPMA's Unfulfilled Conservation Mandate*, 28 COLO. NAT. RESOURCES ENERGY & ENVTL. L. REV. 1, 28 (2017).

⁵⁵³ Debra L. Donahue, *Federal Rangeland Policy: Perverting Law and Jeopardizing Ecosystem Services*, 22 J. LAND USE & ENVTL. L. 299, 337–38 (2007).

weight in decision making.⁵⁶⁴ As summarized in a recent study: “The legislative history of FLPMA establishes Congress’ clear intent to provide for special protection of ACECs and to direct BLM to accord priority for that protection over other multiple uses in the agency’s inventory, land designation and planning activities.”⁵⁶⁵ The study finds that such prioritization has not taken place and recommends a number of steps be taken to meet FLPMA’s mandate. This includes “restor[ing] the visibility and effectiveness of ACECs”—in BLM regulations, policy guidance, and budget justifications—and providing them “the heightened level of protection required by FLPMA.”⁵⁶⁶

ii. Bureau of Land Management Regulation and Policy

Three provisions are of particular importance to wildlife management on public lands managed by BLM. The first is the “fundamentals of rangeland health” regulation that requires standards and guidelines to be developed by BLM, including those focused on wildlife habitat.⁵⁶⁷ The regulation requires that “[h]abitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal proposed or candidate threatened and endangered species, and other special status species.”⁵⁶⁸

The second is found in the BLM Manual for management of “special status species.”⁵⁶⁹ This policy was written pursuant to FLPMA, the ESA, and other laws.⁵⁶⁹ BLM special status species are defined as: “(1) species listed or proposed for listing under the [ESA], and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA.”⁵⁶¹ The objectives of the policy are “[t]o conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed for these species,” and “[t]o initiate proactive conservation measures that reduce or eliminate threats to Bureau sensitive species to minimize the likelihood of and need for listing of these species under the ESA.”⁵⁶² Candidate species for ESA listing are included in BLM’s sensitive species category.⁵⁶³ Furthermore, BLM must address “Bureau sensitive species and their habitats in land use plans and associated NEPA documents.”⁵⁶⁴ With

⁵⁶⁴ See *id.* (noting that Congress repeatedly emphasized the “priority” to be given to ACECs).

⁵⁶⁵ Sheldon & Baldwin, *supra* note 552, at 5.

⁵⁶⁶ *Id.* at 61, 63.

⁵⁶⁷ 43 C.F.R. § 4180.1 (2016).

⁵⁶⁸ *Id.* § 4180.1(d).

⁵⁶⁹ BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6840—SPECIAL STATUS SPECIES MANAGEMENT (2008), <https://perma.cc/ME8D-HBTM>.

⁵⁶⁰ *Id.* § 6840.03.

⁵⁶¹ *Id.* § 6840.01.

⁵⁶² *Id.* § 6840.02.

⁵⁶³ *Id.* § 6840.01; see also *id.* at Glossary 5.

⁵⁶⁴ *Id.* § 6840.2A1(B).

respect to implementation-level planning, BLM "should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the Bureau sensitive species policies would no longer be necessary."⁵⁶⁵

The third regulation pertains to the issuance of special recreation permits. Wildlife is implicated when it is the object of a commercial or competitive event.⁵⁶⁶ BLM is obligated to regulate the use and occupancy of public lands,⁵⁶⁷ and its regulations and policy require special recreation permits for "commercial use, organized group activities or events, competitive use, and for use of special areas."⁵⁶⁸ Discretion is provided to the agency over whether to issue a permit based on the following factors:

- (a) Conformance with laws and land use plans,⁵⁶⁹
- (b) Public safety,
- (c) Conflicts with other uses,
- (d) Resource protection,
- (e) The public interest served,
- (f) Whether in the past [the applicant] complied with the terms of [the] permit or other authorization from BLM and other agencies, and
- (g) Such other information that BLM finds appropriate.⁵⁷⁰

BLM may also impose stipulations and conditions on the permit "to meet management goals and objectives and to protect lands and resources and the public interest."⁵⁷¹

⁵⁶⁵ *Id.*

⁵⁶⁶ 43 C.F.R. § 2932.11 (2016) ("[Y]ou must obtain a Special Recreation Permit for: (1) Commercial use, including vending associated with recreational use; or (2) Competitive use."); *see also id.* § 2932.14(b) ("Outfitters and guides providing services to hunters, trappers, or anglers must obtain Special Recreation Permits from BLM. Competitive event operators and organized groups may also need a Special Recreation Permit for these activities.").

⁵⁶⁷ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁵⁶⁸ 43 C.F.R. § 2931.2. A competitive use is defined as "[a]ny organized, sanctioned, or structured use, event, or activity on public land in which 2 or more contestants compete" and either register, enter, or apply for the event and/or use a "predetermined course or area." *Id.* § 2932.5. Commercial use means "recreational use of the public lands and related waters for business or financial gain," and the activity, service, or use is commercial if "[a]ny person, group, or organization makes or attempts to make a profit, receive money, amortize equipment, or obtain goods or services, as compensation from participants in recreational activities occurring on public lands led, sponsored, or organized by that person, group, or organization." *Id.*

⁵⁶⁹ Permits must be consistent with the applicable resource management plan for the area. *See* 43 U.S.C. § 1732(a); 43 C.F.R. § 1610.5-3(a).

⁵⁷⁰ 43 C.F.R. § 2932.26.

⁵⁷¹ *Id.* § 2932.41.

b. The National Landscape Conservation System

BLM is also tasked with managing units within the National Landscape Conservation System (NLCS).⁵⁷² NLCS includes BLM-administered national conservation areas (NCAs) and similar designations, national monuments, and wilderness study areas, and provides direction, either through statute or presidential proclamation, in how to manage individual units.⁵⁷³ It is beyond the scope of this Article to review the full extent and diversity of the NLCS. Importantly, however, most conservation areas and monuments managed by BLM include special provisions, going beyond FLPMA, that pertain to wildlife management and the biological values associated with the designations. For example, a purpose declared by Congress in establishing the Morley Nelson Snake River Birds of Prey NCA in Idaho is to “provide for the conservation, protection, and enhancement of raptor populations and habitats and the natural and environmental resources and values associated therewith.”⁵⁷⁴ Many of these laws also include wildlife savings clauses, some simply stating that nothing in the designation “shall be deemed to enlarge or diminish the jurisdiction” of the state “with respect to fish and wildlife management.”⁵⁷⁵ In 2009, Congress formally recognized and established the NLCS and provided another wildlife-specific savings clause that would serve as a backup if the enabling legislation was silent on the matter.⁵⁷⁶

c. Federal-State Interactions

FLPMA includes a provision encouraging the coordination and consistency of federal and state land use plans:

[T]o the extent consistent with the laws governing the administration of the public lands, coordinate the land use inventory, planning, and management

⁵⁷² 16 U.S.C. § 7202(c) (2012).

⁵⁷³ *Id.* § 7202(b). BLM manages roughly 4.1 million acres of NCAs and lands with similar designations, and roughly 9.5 million acres of national monuments. BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL CONSERVATION AREAS AND SIMILAR DESIGNATIONS, <https://perma.cc/XYV3-H4UZ> (last updated Oct. 2016); BUREAU OF LAND MGMT., NATIONAL LANDSCAPE CONSERVATION SYSTEM: NATIONAL MONUMENTS, <https://perma.cc/8F7Y-6CNV> (last updated Jan. 2017). Federal wilderness areas are also included in the NLCS, and we address those areas in Part III.B.7.

⁵⁷⁴ 16 U.S.C. § 460iii-2(a)(2).

⁵⁷⁵ *E.g.*, Proclamation No. 7398, 66 Fed. Reg. 7359, 7361 (Jan. 22, 2001).

⁵⁷⁶ Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, 123 Stat. 991 (codified as amended in scattered sections of 7, 16, 33, 36, 42, and 43 U.S.C.)

“Nothing in this chapter shall be construed as affecting the authority, jurisdiction, or responsibility of the several States to manage, control, or regulate fish and resident wildlife under State law or regulations, including the regulation of hunting, fishing, trapping and recreational shooting on public land managed by the Bureau of Land Management. Nothing in this chapter shall be construed as limiting access for hunting, fishing, trapping, or recreational shooting.”

16 U.S.C. § 7202(d)(2).

activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of the States and local governments within which the lands are located In implementing this directive, the Secretary shall, to the extent he finds practical, keep apprised of State, local, and tribal land use plans; assure that consideration is given to those State, local, and tribal plans that are germane in the development of land use plans for public lands; assist in resolving, to the extent practical, inconsistencies between Federal and non-Federal Government plans, and shall provide for meaningful public involvement of State and local government officials, both elected and appointed, in the development of land use programs, land use regulations, and land use decisions for public lands, including early public notice of proposed decisions which may have a significant impact on non-Federal lands. Such officials in each State are authorized to furnish advice to the Secretary with respect to the development and revision of land use plans, land use guidelines, land use rules, and land use regulations for the public lands within such State and with respect to such other land use matters as may be referred to them by him. Land use plans of the Secretary under this section *shall be consistent with State and local plans to the maximum extent he finds consistent with Federal law and the purposes of this Act.*⁵⁷⁷

This provision provides state governors the opportunity to advise BLM of their positions on draft land use plans. BLM must consider this advice in so-called "consistency reviews."⁵⁷⁸

In short, there are several engagement points for state and local governments to participate in the land use planning process and multiple responsibilities on the part of BLM to respond to state and local concerns. But this entire process is conditioned on federal primacy: that priority be given to federal law and purposes in the land use planning processes. We return to this provision in Part IV.F, as we believe the coordination/consistency provisions of FLPMA provide a constructive opportunity for federal and state governments to plan for the management and conservation of wildlife across political jurisdictions.

FLPMA's savings clause pertaining to wildlife provides additional direction on federal-state interactions regarding wildlife management:

That nothing in this Act shall be construed as authorizing the Secretary concerned to require Federal permits to hunt and fish on public lands or on lands in the National Forest System and adjacent waters or as enlarging or diminishing the responsibility and authority of the States for management of fish and resident wildlife. However, the Secretary concerned may designate areas of public land and of lands in the National Forest System where, and establish periods when, no hunting or fishing will be permitted for reasons of

⁵⁷⁷ 43 U.S.C. § 1712(c)(9) (2012) (emphasis added).

⁵⁷⁸ Resource Management Planning, 81 Fed. Reg. 89,580, 89,666 (Dec. 12, 2016) (to be codified at 43 C.F.R. § 1610.3-3); see *New Mexico ex rel. Richardson v. Bureau of Land Mgmt.*, 565 F.3d 683, 721 (10th Cir. 2009) ("A meaningful opportunity to comment is all the regulation requires."); *W. Expl., LLC v. U.S. Dep't of the Interior*, No. 3:15-cv-00491-MMD-VPC, 2017 WL 1237971, at *16 (D. Nev. Mar. 31, 2017) ("The statute and regulations are silent on how detailed or specific BLM needs to be," and that BLM met its obligation to resolve inconsistencies between local plans and federal sage grouse plans "to the extent practical.").

public safety, *administration, or compliance with provisions of applicable law*. Except in emergencies, any regulations of the Secretary concerned relating to hunting and fishing pursuant to this section shall be put into effect only after consultation with the appropriate State fish and game department. Nothing in this Act shall modify or change any provision of Federal law relating to migratory birds or to endangered or threatened species.⁵⁷⁹

This provision was at the center of a dispute involving a proposed wolf hunt on federal lands by the State of Alaska. In *Alaska v. Andrus*,⁵⁸⁰ the United States District Court for the District of Alaska found that this provision of FLPMA, along with the multiple-use mandate, “taken together clearly provide the Secretary with the power to halt the wolf hunt.”⁵⁸¹ Furthermore, said the court, under the power of “[a]dministration,” the Secretary is commanded to manage the public lands under principles of multiple use [and m]ultiple use includes the management of wildlife.”⁵⁸² Although FLPMA grants authority to either permit or prohibit the wolf hunt, this authority, in and of itself, did not trigger NEPA when the agency failed to exercise it because there was no major federal action.⁵⁸³ The NEPA application question was at the heart of two circuit court reviews, both affirming that the non-exercise of power by the Secretary did not trigger NEPA, though the Ninth Circuit seemed to lament that it did “not reach the intriguing questions of statutory construction and application that would lurk in defining the Secretary’s power to supersede the State in managing wildlife.”⁵⁸⁴ We return to the questions unresolved by these courts in Part IV.D.

The Department of the Interior sought to provide more guidance on federal-state relationships through a policy statement in 1983.⁵⁸⁵ In essence, Department of Interior’s Policy simply recognizes some of the principles of wildlife federalism that we covered in Parts II and III.A of the Article, from states as trustees of wildlife to federal constitutional powers to manage

⁵⁷⁹ 43 U.S.C. § 1732(b) (emphasis added).

⁵⁸⁰ 429 F. Supp. 958 (D. Alaska 1977), *aff’d*, 591 F.2d 537 (9th Cir. 1979).

⁵⁸¹ *Id.* at 961–62.

⁵⁸² *Id.* at 962.

⁵⁸³ *Id.* at 963; *see* NEPA, 42 U.S.C. § 4332(c) (2012); COGGINS & GLICKSMAN, *supra* note 124, § 17:16 (noting that “[i]f federal and state projects are sufficiently interrelated to constitute a single ‘federal action’ for NEPA purposes, state agencies may be enjoined for NEPA violations”).

⁵⁸⁴ *Alaska v. Andrus*, 591 F.2d 537, 538 (9th Cir. 1979). The District of Columbia Circuit reached the same conclusion regarding NEPA, but used language in dicta that was relatively favorable to the state’s authority to manage wildlife. *See* *Defs. of Wildlife v. Andrus*, 627 F.2d 1238, 1250 (D.C. Cir. 1980) (“We are simply unable to read [FLPMA’s] cautious and limited permission to intervene in an area of state responsibility and authority as imposing such supervisory duties on the Secretary that each state action he fails to prevent becomes a ‘Federal action.’”).

⁵⁸⁵ Department of the Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24). Although the Policy appears in the C.F.R. “as a matter of convenience to the public,” *id.*, it was not subject to the rulemaking requirements of the Administrative Procedure Act, 5 U.S.C. § 553 (2012), and as such does not carry the force of law. *Christensen v. Harris County*, 529 U.S. 576, 587 (2000).

wildlife. For example, the Policy states that "[f]ederal authority exists for specified purposes while State authority regarding fish and resident wildlife remains the comprehensive backdrop applicable in the absence of specific, overriding Federal Law."⁵⁸⁶

The Policy goes further than these fundamental principles of federalism, however, by stating that it is intended "to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife."⁵⁸⁷ In other sections, the Policy recognizes that "[s]tate jurisdiction remains concurrent with Federal authority,"⁵⁸⁸ and asserts that, in passing FLPMA, Congress "recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁵⁸⁹ While the Policy does acknowledge basic constitutional principles pertaining to the Property Clause, Commerce Clause, federal preemption, and treaty-making powers,⁵⁹⁰ it also makes the often-repeated assertion that BLM "has custody of the land itself and the habitat upon which fish and resident wildlife are dependent" and that "[m]anagement of the habitat is a responsibility of the Federal Government,"⁵⁹¹ thereby implying that BLM only has power over the land and not the wildlife that inhabit it.

In Part IV.C, we explain the fundamental problems with the Department of Interior's Policy on federal-state relationships and discuss the implications resulting from this problematic interpretation of law.

6. The Special Case of Alaska

a. Alaska National Interest Lands Conservation Act

Alaska presents a unique situation within the federal public lands system. Alaska includes all of the same land categories and federal laws that exist elsewhere in the country. However, federal land managers in Alaska must also contend with the Alaska National Interest Lands Conservation Act⁵⁹² (ANILCA), which creates new land categories⁵⁹³ and statutory exceptions⁵⁹⁴ that do not exist elsewhere, as well as an overarching system of subsistence management which adds an additional management

⁵⁸⁶ 43 C.F.R. § 24.1(a) (2016).

⁵⁸⁷ *Id.* § 24.2(a).

⁵⁸⁸ *Id.* § 24.3(c).

⁵⁸⁹ *Id.* § 24.4(c).

⁵⁹⁰ *Id.* § 24.3.

⁵⁹¹ *Id.* § 24.4(d).

⁵⁹² 16 U.S.C. §§ 3101–3233 (2012).

⁵⁹³ *See, e.g., id.* § 3201 (establishing National Preserves, a subcategory of National Park Lands on which sport hunting is permitted); *id.* § 410hh-2.

⁵⁹⁴ Such as exceptions to the prohibitions laid out by the Wilderness Act. For instance, snow machine use, which is banned as mechanized transport in every other state, is permitted in Alaska Wilderness Areas where that use was established before the creation of the Wilderness Area. *See id.* §§ 3121(a)–(b), 3170(a), 3171(a).

mission/goal to nearly all federal lands in Alaska.⁵⁹⁵ In *Sturgeon v. Frost*,⁵⁹⁶ the Supreme Court explicitly acknowledged this unusual status, stating that “ANILCA repeatedly recognizes that Alaska is different [And] ANILCA itself accordingly carves out numerous Alaska-specific exceptions.”⁵⁹⁷

i. Subsistence

It is the subsistence requirement that is the single biggest difference between managing wildlife on federal lands in Alaska and managing them in the rest of the country. ANILCA is the establishment legislation for nearly every federal conservation unit in the state.⁵⁹⁸ This creates an opportunity for uniformity in management strategy across agencies and conservation units that could not exist elsewhere in the country where units were set aside in a more haphazard manner. Taking advantage of that opportunity, ANILCA establishes that subsistence shall be permitted on all federal lands with few exceptions,⁵⁹⁹ and creates a subsistence preference that applies to rural Alaskans that grants them a priority position in relation to other consumptive users of fish and game.⁶⁰⁰

Subsistence is defined by ANILCA as “the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption.”⁶⁰¹ More colloquially, it refers to rural hunting, fishing, and gathering of resources for personal use.⁶⁰² When ANILCA was originally passed, the intent of the statute was for the state to administer the subsistence hunting program (like all other hunting programs) on federal lands, and merely required that the state abide by ANILCA’s requirements.⁶⁰³ It soon became clear, however, that the state could not implement the rural subsistence preference because it violated the state’s constitutional requirement for equal access to fish and game, according the Alaska Supreme Court.⁶⁰⁴ Several efforts were made to amend the Alaska constitution so that the state could reclaim authority over all

⁵⁹⁵ See generally *id.* §§ 3111–3126 (establishing the overarching system of subsistence management under ANILCA).

⁵⁹⁶ 136 S. Ct. 1061 (2016).

⁵⁹⁷ *Id.* at 1070.

⁵⁹⁸ 16 U.S.C. §§ 410hh–410hh-1; *id.* §§ 460mm–460mm-2; *id.* § 539; ANILCA, Pub. L. No. 96-487, §§ 302–303, 94 Stat. 2371, 2385–93 (1980); *id.* §§ 601–603, 94 Stat. 2412–15; *id.* §§ 701–704, 94 Stat. 2371, 2417–19.

⁵⁹⁹ The exceptions are within the original boundaries of Denali National Park and Preserve and Glacier Bay National Park and Preserve, which were both expanded by ANILCA. 16 U.S.C. § 410hh-1(1), (3)(a).

⁶⁰⁰ See *id.* § 3112(2) (“[N]onwasteful subsistence uses of fish and wildlife and other renewable resources shall be the priority consumptive uses of all such resources on the public lands of Alaska.”).

⁶⁰¹ *Id.* § 3113.

⁶⁰² ANILCA states that “the situation in Alaska is unique in that, in most cases, no practical alternative means are available to replace the food supplies and other items gathered from fish and wildlife which supply rural residents dependent on subsistence uses.” *Id.* § 3111(2).

⁶⁰³ *Id.* § 3115(d).

⁶⁰⁴ *McDowell v. State*, 785 P.2d 1, 9 (Alaska 1989).

hunting, but those attempts were never successful.⁶⁰⁵ In 1990, the Federal Subsistence Board, which mirrors the functions of the state's Board of Game, was created, and the federal government began to assume control of subsistence hunting on federal lands.⁶⁰⁶

ANILCA instructs the agencies to manage subsistence "consistent with sound management principles, and the conservation of healthy populations of fish and wildlife," and "consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit."⁶⁰⁷ ANILCA also states that "[n]othing in this title shall be construed as . . . permitting the level of subsistence uses of fish and wildlife within a conservation system unit to be inconsistent with the conservation of healthy populations, and within a national park or monument to be inconsistent with the conservation of natural and healthy populations, of fish and wildlife."⁶⁰⁸ So the management standard for all federal public lands is the requirement to maintain healthy populations, but for national park lands, the requirement is to maintain natural and healthy populations of wildlife. Agencies must also evaluate the effect of all uses on public lands on subsistence uses and needs, and formally notify subsistence users if there could be any effects on subsistence harvests as a result of other uses.⁶⁰⁹

ii. Sport Hunting

Sport hunting (non-subsistence hunting) is permitted on most non-park lands in Alaska and is managed largely through the state regulatory process, as it is elsewhere in the United States.⁶¹⁰ However, ANILCA creates a new category of park lands called "Preserves" where sport hunting and commercial trapping are permitted.⁶¹¹ The State of Alaska regulates sport hunting statewide, including on federal lands.⁶¹² However, conflicts have arisen between the state's hunting regulations, which express the state's wildlife laws and goals, and the wildlife management goals expressed by several federal statutes. For instance, the State of Alaska is required to intensively manage wildlife populations in order to maximize a sustained yield of desirable prey (e.g., moose, caribou, and deer).⁶¹³ This intensive

⁶⁰⁵ FRANK NORRIS, ALASKA SUBSISTENCE: A NATIONAL PARK SERVICE MANAGEMENT HISTORY 162-63 (2002).

⁶⁰⁶ *Id.* at 165; Kyle Joly, Sanford P. Rabinowitch & Julie Lurman Joly, *Dual Management of Wildlife in Alaska: Making Federal Practice Align with Federal Mandates*, 32 GEORGE WRIGHT F. 18, 18 (2015).

⁶⁰⁷ 16 U.S.C. § 3112(1).

⁶⁰⁸ *Id.* § 3125(1).

⁶⁰⁹ *Id.* § 3120(a).

⁶¹⁰ *Id.* § 3202(c).

⁶¹¹ *Id.* §§ 410hh-2, 3201; see Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. 64,325, 64,325 (Oct. 23, 2015) (to be codified at 36 C.F.R. pt. 13).

⁶¹² Alaska, Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326.

⁶¹³ ALASKA STAT. § 16.05.255(e) (2016).

management requirement often leads to predator reduction efforts.⁶¹⁴ NPS on the other hand is required to maintain natural and healthy populations of all species according to ANILCA and “to conserve the scenery and the natural and historic objects and the wild life” according to the NPS Organic Act.⁶¹⁵ NPS policies implementing the Organic Act require the agency to “protect natural ecosystems and processes, including the natural abundances, diversities, distributions, densities, age-class distributions, populations, habitats, genetics, and behaviors of wildlife.”⁶¹⁶ These state and federal goals are mutually exclusive.⁶¹⁷

In 2015, NPS promulgated new regulations restricting how the state’s sport hunting laws could apply within parks, so that they do not conflict with NPS’s legal obligations under the Organic Act and ANILCA.⁶¹⁸ The new rules clarify that state wildlife regulations that conflict with NPS regulations or laws are not applicable on NPS lands.⁶¹⁹ The Alaska Regional Park Service Director will publish a list, at least annually, of all state-permitted activities that are prohibited on NPS lands.⁶²⁰

There has been a great deal of criticism of these rule changes. NPS’s effort has been characterized by the state as statutory overreach and a violation of the public trust doctrine,⁶²¹ though both ANILCA and the Organic Act recognize NPS’s authority to regulate these activities.⁶²²

Once the NPS rules were successfully promulgated, FWS began a similar rulemaking process. FWS’s effort to follow a similar course was initially marked by efforts to block the development of such rules on national wildlife refuges,⁶²³ though FWS’s effort was eventually successful,

⁶¹⁴ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (“In the last several years, the State of Alaska has allowed an increasing number of liberalized methods of hunting and trapping wildlife and extended seasons to increase opportunities to harvest predator species.”).

⁶¹⁵ 54 U.S.C. § 100101 (Supp. II 2015) (previously codified at 16 U.S.C. § 1).

⁶¹⁶ See Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,326 (citing NPS MANAGEMENT POLICIES, *supra* note 375, §§ 4.1, 4.4.1, 4.4.1.2, and 4.4.2).

⁶¹⁷ Lurman & Rabinowitch, *supra* note 275, at 165.

⁶¹⁸ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,325. This rule change has been followed by a similar rule change on National Wildlife Refuges. See *infra* notes 623–624 and accompanying text.

⁶¹⁹ 36 C.F.R. § 13.42(a), (f) (2016).

⁶²⁰ *Id.* § 13.42(f)(1).

⁶²¹ See, e.g., Doug Vincent-Lang, *Alaska Must Reject Feds’ Claim to Control Hunting in Preserves and Refuges*, ALASKA DISPATCH NEWS (June 26, 2016), <https://perma.cc/2F3L-VGYN>. Lang is the former director of Wildlife Conservation at the Alaska Department of Fish and Game. *Id.*

⁶²² Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,329, 64,333.

⁶²³ Senator Sullivan (R. AK) submitted an amendment, which was ultimately never passed, to the Bipartisan Sportsmen’s Act of 2015 that would prohibit FWS from implementing regulations restricting the application of state hunting rules on Refuge lands. Sam Friedman, *Sullivan Moves to Prohibit Federal Refuge Predator Hunt Rules*, FAIRBANKS DAILY NEWS-MINER (Jan. 20, 2016), <https://perma.cc/E7EA-WNY9>.

and the rules were promulgated.⁶²⁴ Ultimately, in 2017, Congress—exercising its authority under the Congressional Review Act⁶²⁵—abolished the FWS regulations.⁶²⁶ Therefore, the FWS regulations are no longer in force (though this elimination of the regulations does not speak in any way to their legality), while the NPS regulations remain in place. Furthermore, while the FWS regulations have been eliminated, the statutes animating them are still in place. FWS still possesses the authority, and often the obligation, to prevent the state from acting in ways contrary to federal mandates regarding wildlife management on refuges, regardless of the status of these particular regulations. As NPS states, “the State’s responsibility [to manage fish and wildlife] is not exclusive and it does not preclude federal regulation of wildlife on federal public lands, as is well-established in the courts and specifically stated in ANILCA.”⁶²⁷

7. *The National Wilderness Preservation System*

a. The Policy and Objectives of the Wilderness Act

The Wilderness Act of 1964 expresses the following policy:

In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness. For this purpose there is hereby established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as “wilderness areas”, and *these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness.*⁶²⁸

The Act defines wilderness⁶²⁹ and imposes a duty on the federal agencies to administer designated areas for “preserving the wilderness character.”⁶³⁰ In addition, Congress designated fifty-four areas managed by USFS,⁶³¹ detailed inventory procedures,⁶³² prohibited a number of uses,⁶³³ and

⁶²⁴ Non-Subsistence Take of Wildlife, and Public Participation and Closure Procedures, on National Wildlife Refuges in Alaska, 81 Fed. Reg. 52,248 (Aug. 5, 2016) (to be codified at 50 C.F.R. pts. 32 and 36).

⁶²⁵ 5 U.S.C. §§ 801–808 (2012). The law authorizes Congress to review and repeal federal agency regulations passed within the last sixty legislative days. *Id.* § 801(a)(3).

⁶²⁶ Act of Apr. 3, 2017, Pub. L. No. 115-20, 131 Stat. 86 (providing congressional disapproval).

⁶²⁷ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. at 64,331.

⁶²⁸ 16 U.S.C. § 1131(a) (2012) (emphasis added).

⁶²⁹ *Id.* § 1131(c).

⁶³⁰ *Id.* § 1133(b).

⁶³¹ *Id.* § 1132(a); KATIE HOOVER, CONG. RESEARCH SERV., RL31447, WILDERNESS: OVERVIEW AND STATISTICS (2015).

adopted special provisions to clarify certain other uses.⁶³⁴ Sections of the Act particularly relevant to managing wildlife in wilderness areas include the definition of wilderness and the federal responsibility to preserve wilderness character; the prohibited uses; and the congressionally authorized special provisions that apply to managing wildlife in wilderness.

i. Preserving Wilderness Character

Congress directed each federal agency managing a wilderness to “preserve its wilderness character.”⁶³⁵ To implement this requirement, the four wilderness-managing agencies have endorsed the following definition of wilderness character:

Wilderness character is a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection with nature. Taken together, these tangible and intangible values define wilderness character and distinguish wilderness from all other lands.⁶³⁶

Specifically, five qualities of wilderness character are identified in the Act’s definition of wilderness: untrammeled; natural; undeveloped; solitude or primitive and unconfined recreation; and other features of value, including ecological and scientific features.⁶³⁷ We review each of these qualities below.

Untrammeled. In one of the most poetic passages found in the U.S. Code, the Wilderness Act provides that “wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are

⁶³² 16 U.S.C. § 1132(b)–(d). BLM’s authority to inventory for wilderness characteristics and to manage areas designated by Congress was expressed in FLPMA. 43 U.S.C. §§ 1711, 1782 (2012).

⁶³³ 16 U.S.C. § 1133(c).

⁶³⁴ *Id.* § 1133(d).

⁶³⁵ *Id.* § 1133(b).

⁶³⁶ PETER LANDRES ET AL., RMRS-GTR-340, KEEPING IT WILD 2: AN UPDATED INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 7 (2015) [hereinafter KIW2]; see Memorandum from Chair, Interagency Wilderness Steering Committee to Chair, Interagency Wilderness Policy Council, Interagency Wilderness Steering Committee’s *Keeping It Wild 2* Recommendations (Sep. 21, 2015) (approved by the Wilderness Policy Council Dec. 23, 2015). Understanding the complex meaning of the term “wilderness character” has been an ongoing task for the federal agencies mandated to preserve it for over a decade. See PETER LANDRES ET AL., RMRS-GTR-212, KEEPING IT WILD: AN INTERAGENCY STRATEGY TO MONITOR TRENDS IN WILDERNESS CHARACTER ACROSS THE NATIONAL WILDERNESS PRESERVATION SYSTEM 5–7 (2008) [hereinafter KIW]; PETER LANDRES ET AL., RMRS-GTR-151, MONITORING SELECTED CONDITIONS RELATED TO WILDERNESS CHARACTER: A NATIONAL FRAMEWORK, at iii–iv, 4–6 (2005).

⁶³⁷ 16 U.S.C. § 1131(c).

untrammeled by man" that "generally appears to have been affected primarily by the forces of nature" and "retain[s] its primeval character and influence."⁶³⁸ Untrammeled means "essentially unhindered and free from the intentional actions of modern human control or manipulation."⁶³⁹ In terms of wildlife management, this concept precludes intentional manipulation of species, populations, and individuals (with the exception of casual, noncommercial hunting and fishing, where allowed).⁶⁴⁰ The Untrammeled Quality is a unique requirement among federal land management legislation; it is what puts the "wild" in "wilderness." When manipulation is necessary—for instance, to comply with another law such as the ESA or to improve another quality of wilderness character—action should be taken with the utmost restraint and humility.⁶⁴¹

Natural. The Act provides that wilderness is "protected and managed so as to preserve its natural conditions."⁶⁴² This means that ecological systems within wilderness areas "are substantially free from the effects of modern civilization."⁶⁴³ In terms of wildlife management, wilderness ecosystems should retain their native or indigenous species composition, distribution patterns, and ecological processes, including predator-prey dynamics, disturbance regimes, and abiotic and biotic fluctuations.⁶⁴⁴ These ecosystems should be uncompromised by non-native species, or by artificially increased (or decreased) populations of native species or other biophysical conditions.⁶⁴⁵ While the Untrammeled Quality reflects the wilderness character mandate to halt actions undertaken to consciously manipulate "the earth and its community of life," the Natural Quality minimizes the adverse ecological effects to a wilderness area from intentional or unintentional actions, as well as the adverse effects from larger scale ecological change occurring outside the wilderness—for example, the spread of non-native species and habitat fragmentation.⁶⁴⁶

Undeveloped. The Wilderness Act also identifies wilderness as "an area of undeveloped Federal land . . . without permanent improvements or human habitation," "where man himself is a visitor who does not remain . . . with the imprint of man's work substantially unnoticeable."⁶⁴⁷ This means that wilderness is unmarred by "the sights and sounds of modern human occupation."⁶⁴⁸ The Act's prohibition on "improvements" is not restricted to those that are permanent, but includes any physical developments (e.g.,

⁶³⁸ *Id.*

⁶³⁹ KIW2, *supra* note 636, at 10–11.

⁶⁴⁰ *See id.* at 104.

⁶⁴¹ *See* Sandra B. Zellmer, *Wilderness Imperatives and Untrammeled Nature*, in ENVIRONMENTAL LAW AND CONTRASTING IDEAS OF NATURE: A CONSTRUCTIVIST APPROACH 179, 184–85 (Keith H. Hirokawa ed., 2014).

⁶⁴² 16 U.S.C. § 1131(c).

⁶⁴³ KIW2, *supra* note 636, at 11; *see also id.* at 39.

⁶⁴⁴ *Id.* at 41–43.

⁶⁴⁵ *Id.* at 11.

⁶⁴⁶ *Id.* at 101, 109–10.

⁶⁴⁷ 16 U.S.C. § 1131(c).

⁶⁴⁸ KIW2, *supra* note 636, at 11; *see also id.* at 45–48.

structures, installations, and both permanent and temporary roads) as well as temporal developments (i.e., where the wilderness is “developed” for the duration of the use of the prohibited tool, such as motor vehicles, motorized equipment, and mechanical transport).⁶⁴⁹ Again, restraint and humility are key: “[In wilderness areas] we stand without our mechanisms that make us immediate masters over our environment.”⁶⁵⁰ The implications for wildlife management are discussed in greater detail below.⁶⁵¹

Solitude or Primitive and Unconfined Recreation. Wilderness areas provide “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”⁶⁵² This means that, in wilderness, recreational opportunities occur “in an environment that is relatively free from the encumbrances of modern society, and for the experience of the benefits and inspiration derived from self-reliance, self-discovery, physical and mental challenge, and freedom from societal obligations.”⁶⁵³ In terms of wildlife management, recreational opportunities to enjoy wildlife (including hunting and fishing) are allowed within the constraints of preserving wilderness character as a whole—that is, without structures, installations, the use of motorized equipment, motor vehicles, or mechanical transport, and without manipulating populations for a more “desirable” (and less natural) assemblage of species.⁶⁵⁴

Other Features of Value. Finally, the Wilderness Act provides that wilderness “may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.”⁶⁵⁵ “This quality captures important elements or ‘features’ of a particular wilderness that are not [necessarily] covered by the other four qualities.”⁶⁵⁶ In terms of wildlife management, the ecological and scientific values are key, and in most cases, they are already addressed within the purview of the Natural Quality.⁶⁵⁷

ii. *Within and Supplemental*

Under section 4(a) of the Wilderness Act: “The purposes . . . are hereby declared to be within and supplemental to the purposes for which national forests and units of the national park and national wildlife refuge systems are established and administered.”⁶⁵⁸ As section 4(b) makes clear, however, “each agency administering any area designated as wilderness shall be responsible for *preserving the wilderness character* of the area and shall so administer such area for such other purposes for which it may have been

⁶⁴⁹ See 16 U.S.C. § 1133(c).

⁶⁵⁰ Howard Zahniser, *The Need for Wilderness Areas*, 59 LIVING WILDERNESS 37, 38 (1956).

⁶⁵¹ See discussion *infra* Part III.B.7.a.iii.

⁶⁵² 16 U.S.C. § 1131(c).

⁶⁵³ KIW2, *supra* note 636, at 11–12; see also *id.* at 51–55.

⁶⁵⁴ *Id.* at 51, 78.

⁶⁵⁵ 16 U.S.C. § 1131(c).

⁶⁵⁶ KIW2, *supra* note 636, at 12; see also *id.* at 57–60.

⁶⁵⁷ *Id.* at 39, 57–58.

⁶⁵⁸ 16 U.S.C. § 1133(a).

established as also *to preserve its wilderness character*.⁶⁵⁹ For all four agencies, upon designation as wilderness, the preservation of wilderness character becomes the primary duty of the underlying unit,⁶⁶⁰ and management of other purposes must meet the requirements of the Wilderness Act in addition to the requirements of each agency's Organic Act.⁶⁶¹

All four land management agencies struggle with this concept, but it has been especially problematic for FWS and NPS, largely because many employees of these two agencies believe that their conservation-oriented purposes are equivalent to wilderness preservation.⁶⁶² How these agencies have addressed this problem is discussed below.⁶⁶³ Implications and continuing issues surrounding "within and supplemental" are discussed in Part IV.E. The "within and supplemental" requirement crops up routinely with respect to justifying uses explicitly prohibited by the Wilderness Act.⁶⁶⁴

iii. Prohibition of Certain Uses

Section 4(c) of the Wilderness Act specifically prohibits ten uses.⁶⁶⁵ These are all subject to two exceptions: "Except as specifically provided for in this chapter, and subject to existing private rights."⁶⁶⁶ Notably, there are no "existing private rights" associated with the management of wildlife in wilderness, and other specific provisions are discussed below.⁶⁶⁷ Two of the ten prohibited uses—commercial enterprise and permanent roads—are subject *only* to these two exceptions (unless specifically authorized in subsequent legislation).⁶⁶⁸ The prohibition on commercial enterprises has been a significant issue in wildlife management.

Commercial enterprise is defined as "a project or undertaking of or relating to commerce."⁶⁶⁹ Only three types of commercial activity may be allowed in wilderness, as they are specifically provided for in the Act:

⁶⁵⁹ *Id.* § 1133(b) (emphasis added).

⁶⁶⁰ See *Wilderness Watch v. Vilsack*, 229 F. Supp. 3d 1170, 1182 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal. v. Timchak*, No. CV-06-04-E-BLW, 2006 WL 3386731, at *6 (D. Idaho Nov. 21, 2006))), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁶⁶¹ 16 U.S.C. § 1133(a).

⁶⁶² See Sandra B. Zellmer, *Wilderness Management in National Parks and Wildlife Refuges*, 44 ENVTL. L. 497, 500 (2014) (analyzing wilderness management on dominant use lands).

⁶⁶³ See discussion *infra* Part III.B.7.c

⁶⁶⁴ See discussion *infra* Part IV.E.

⁶⁶⁵ 16 U.S.C. § 1133(c).

⁶⁶⁶ *Id.*

⁶⁶⁷ See discussion *infra* Part III.B.7.a.iv.

⁶⁶⁸ ROSS W. GORTE, CONG. RESEARCH SERV., R41649, WILDERNESS LAWS: STATUTORY PROVISIONS AND PROHIBITED AND PERMITTED USES 10–11 (2011).

⁶⁶⁹ See *Wilderness Soc'y v. U.S. Fish & Wildlife Serv. (Tustemena Lake)*, 353 F.3d 1051, 1061, 1065 (9th Cir. 2003) (en banc) (stating that commercial means "work that is intended for the mass market" and "even non-profit entities may engage in commercial activity"), *amended en banc by* 360 F.3d 1374 (9th Cir. 2004).

livestock grazing,⁶⁷⁰ exercising certain mineral rights,⁶⁷¹ and commercial services.⁶⁷² Absent those three activities, no commercial enterprise can take place in wilderness, and no wilderness resources can be removed for financial gain, including animals or parts of animals such as antlers and fur.⁶⁷³ Therefore, collection of wilderness wildlife resources may be allowed only for personal use. Not only is it a violation of the Wilderness Act to remove wilderness resources for financial gain, but also, no action may be taken to enhance a commercial activity, even if the activity itself takes place entirely outside the wilderness and even if it causes only “minimal intrusion on wilderness values.”⁶⁷⁴

Although commercial enterprises and permanent roads are tightly proscribed by the Wilderness Act, the other eight prohibited uses—temporary roads; use of motor vehicles, motorized equipment, and motorboats; landing of aircraft; any other form of mechanical transport; structures; and installations—are subject to an exception “as necessary to meet minimum requirements for the administration of the area for the purpose of this chapter.”⁶⁷⁵ This “minimum requirements” exception has three components.

For the purpose of this Act. As described above, the purpose of the Wilderness Act, and congressional direction to the federal agencies on the means of accomplishing that purpose, is to preserve wilderness character.⁶⁷⁶ Unless necessary in the exercise of a legal right, or unless specifically allowed elsewhere in the Wilderness Act (or other federal law), Congress has made it clear that otherwise-prohibited uses cannot be authorized for any purpose other than preserving wilderness character.⁶⁷⁷

For the administration of the area. Otherwise-prohibited uses cannot be authorized to facilitate management objectives or activities occurring *outside* of the wilderness area.⁶⁷⁸ Notably, in section 4(c), Congress clearly

⁶⁷⁰ 16 U.S.C. § 1133(d)(4).

⁶⁷¹ *Id.* § 1133(d)(3).

⁶⁷² *Id.* § 1133(d)(5); see *supra* notes 693–696 and accompanying text.

⁶⁷³ See BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 6340—MANAGEMENT OF DESIGNATED WILDERNESS AREAS (PUBLIC) § 1.6(C)(21)(c)(ix)(E) (2012), <https://perma.cc/287T-JA3V> [hereinafter BLM MANUAL] (“Sale of wildlife products gathered from wilderness is prohibited.”).

⁶⁷⁴ *Tustemena Lake*, 353 F.3d at 1062, 1066–67 (prohibiting FWS approval of salmon stocking within the Kenai Wilderness).

⁶⁷⁵ 16 U.S.C. § 1133(c).

⁶⁷⁶ See discussion *supra* Part III.B.7.a.i.

⁶⁷⁷ 16 U.S.C. § 1133(b)–(c).

⁶⁷⁸ See *High Point, LLP v. Nat’l Park Serv.*, 850 F.3d 1185, 1197–98 (11th Cir. 2017) (finding that, just as a van filled with tourists could not “be construed as ‘necessary’ to meet the ‘minimum requirements’ for administering the area,” neither could enlargement of a dock (a prohibited structure) be construed as an “existing private right[]” given the narrow construction applied to Wilderness Act exceptions (citing *Wilderness Watch v. Mainella*, 375 F.3d 1085, 1092 (11th Cir. 2004))); *High Sierra Hikers Ass’n v. U.S. Forest Serv.*, 436 F. Supp. 2d 1117, 1134, 1137, 1144 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance downstream flows for fisheries and to preserve historical values was not necessary to meet minimum requirements for the administration of the area as the

referenced “the area”;⁶⁷⁹ not, as the Act does elsewhere, the National Wilderness Preservation System as a whole.⁶⁸⁰ In other words, prohibited uses cannot be authorized in Wilderness A to preserve the wilderness character of Wilderness B, unless they also preserve the wilderness character of Wilderness A.

Necessary to meet minimum requirements. Defining the “minimum” “necessary” is a work of art. One court cautioned that a generic finding of necessity will not suffice, and while it declared that the agencies need not “make a finding of ‘absolute necessity,’”⁶⁸¹ it offered no measure of exactly how necessary is necessary enough to meet the statute’s requirements when coupled with the qualifier “minimum.”⁶⁸² To guide the agencies, the Arthur Carhart National Wilderness Training Center (Carhart) has devised a two-step process: first, managers must determine if any action is *necessary* to address a problem of wilderness stewardship; if so, managers must then determine what the *least amount* of an otherwise prohibited use is necessary to accomplish the problem identified in the first step.⁶⁸³ Though not specifically required by the Act, Carhart’s *Minimum Requirements Decision Guide* is the most frequently used tool for making a minimum requirements decision, and the two-step analysis process has become ubiquitous.⁶⁸⁴ In any event, the courts have made it clear that before the federal agency can authorize one of these prohibited uses, it must explain why non-prohibited uses would be insufficient to preserve the area’s wilderness character.⁶⁸⁵

enhancement of fisheries was not necessary to meet minimum requirements for the administration of the area).

⁶⁷⁹ 16 U.S.C. § 1133(c).

⁶⁸⁰ See, e.g., *id.* § 1281(b) (“Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system . . . shall be subject to the provisions of both the Wilderness Act and this chapter . . .”).

⁶⁸¹ *Wilderness Watch, Inc. v. U.S. Fish & Wildlife Serv. (Kofa)*, 629 F.3d 1024, 1037 n.8 (9th Cir. 2010) (emphasis added).

⁶⁸² See *id.* at 1049 & n.9 (Bybee, J., dissenting) (arguing that the word “necessary” should be construed broadly, as it has with respect to other legislation, but failing to recognize that none of the other examples couples “necessity” with the Wilderness Act’s qualifier “minimum”).

⁶⁸³ See ARTHUR CARHART NAT’L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: OVERVIEW 1, 3 (2016), <https://perma.cc/XDH4-F6BP>.

⁶⁸⁴ See, e.g., Director’s Order No. 41, Jonathan Jarvis, Dir., Nat’l Park Serv., U.S. Dep’t of Interior, Wilderness Stewardship § 6.4 (May 13, 2013), <https://perma.cc/5XKB-L9TJ> (requiring national parks to follow the two-step analysis process when completing the minimum requirements analysis); ARTHUR CARHART NAT’L WILDERNESS TRAINING CTR., MINIMUM REQUIREMENTS DECISION GUIDE: U.S. FOREST SERVICE GUIDELINES 1 (2008), <https://perma.cc/8YL6-S3V7> (“Use of the MRDG is not currently required by law or agency policy However, use of the MRDG or a similar minimum requirements analysis (MRA) process was strongly recommended by the chief in a 2000 memo.”); BLM MANUAL, *supra* note 673, app. B-1 (“BLM will use the Minimum Requirements Decision Guide (MRDG) developed by the Arthur Carhart National Wilderness Training Center.”); FWS WILDERNESS POLICY, *supra* note 437, § 1.20 (requiring national wildlife refuge staff to attend a wilderness training at Carhart before making minimum requirement decisions).

⁶⁸⁵ See *Kofa*, 629 F.3d at 1037–38 (“[T]he key question—whether water structures were necessary at all—remains entirely unanswered and unexplained by the record . . . [N]owhere in the record does the Service explain why [conforming] actions, alone or in combination, are insufficient”); *cf.* *High Sierra Hikers Ass’n v. Blackwell*, 390 F.3d 630, 646 (9th Cir. 2004)

iv. Special Provisions

The Wilderness Act contains a number of “special provisions.”⁶⁸⁶ Three of these are applicable to the management of wildlife in wilderness. One special provision deals wholly with wildlife management, the so-called savings clause: “Nothing in this chapter shall be construed as affecting the jurisdiction or responsibilities of the several States with respect to wildlife and fish in the national forests.”⁶⁸⁷ As with similar savings clauses discussed above, this provision retains federal jurisdiction over wildlife on federal lands, while recognizing the traditional interest of the states with respect to wildlife management insofar as consistent with Wilderness Act purposes.⁶⁸⁸ Federal land managers cannot defer to state management prerogatives when doing so would violate the express terms of the Wilderness Act,⁶⁸⁹ or undermine the purposes of the Act.⁶⁹⁰

The second relevant special provision involves pre-existing uses of aircraft or motorboats. The Wilderness Act states “the use of aircraft or motorboats, where these uses have already become established, may be permitted to continue subject to such restrictions as the Secretary . . . deems

(construing the Wilderness Act’s provision for commercial services “to the extent necessary for activities which are proper for realizing the recreational or other wilderness purposes of the areas,” and holding that in order to invoke that exception, the agency must make a reasoned finding of necessity (quoting 16 U.S.C. § 1133(d)(5))).

⁶⁸⁶ 16 U.S.C. § 1133(d).

⁶⁸⁷ *Id.* § 1133(d)(7). This provision was extended to BLM: “Once an area has been designated for preservation as wilderness, the provisions of the Wilderness Act which apply to national forest wilderness areas shall apply with respect to the administration and use of such designated area.” FLPMA, 43 U.S.C. § 1782(c) (2012) (citation omitted).

⁶⁸⁸ See Lindsay Sain Jones, Note, *The Problem with the Bureau of Land Management’s Delegation of Wildlife Management in Wilderness*, 47 GA. L. REV. 1281, 1310 (2013) (stating that the savings clause does not affect “the nature of the jurisdiction or responsibility of the states with respect to wildlife on federal lands”; thus “the federal government’s jurisdiction over wildlife on federal lands remains intact”); cf. *Izaak Walton League of Am. v. St. Clair*, 353 F. Supp. 698, 707 (D. Minn. 1973) (holding that, despite the general rule that the federal government has no inherent police power and that zoning is a power of the states, state zoning provisions were not applicable within a national forest wilderness area), *rev’d on other grounds*, 497 F.2d 849 (8th Cir. 1974).

⁶⁸⁹ See *Kofa*, 629 F.3d at 1027, 1039–40 (invalidating a cooperative initiative with Arizona to maintain water structures); *Tustemena Lake*, 353 F.3d 1051, 1066–67, 1069 (9th Cir. 2003) (*en banc*) (prohibiting a salmon enhancement project as a prohibited “commercial enterprise” even though the state had previously administered and maintained regulatory control over the project), *amended en banc* by 360 F.3d 1374 (9th Cir. 2004); *Californians for Alts. to Toxics v. U.S. Fish & Wildlife Serv.*, 814 F. Supp. 2d 992, 996 (E.D. Cal. 2011) (invalidating a joint federal-state plan to restore cutthroat trout to its historic range in a wilderness area by eradicating non-native trout with rotenone); *High Sierra Hikers Ass’n*, 436 F. Supp. 2d 1117, 1122, 1137 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance fisheries was not necessary to meet minimum requirements and thus was prohibited despite involvement and support of the California Department of Fish and Game).

⁶⁹⁰ See *Wolf Recovery Found. v. U.S. Forest Serv.*, 692 F. Supp. 2d 1264, 1266, 1269–70 (D. Idaho 2010) (affirming a decision to allow the Idaho Fish and Game Commission to use helicopters to monitor wolves in the Frank Church Wilderness, but only because the activity was “designed to aid the restoration of a specific aspect of the wilderness character of the Frank Church Wilderness that had earlier been destroyed by man”).

desirable.⁶⁹¹ Agency regulations and policy specify the conditions to allow such uses and also limit the permissible locations to established sites to be used by the public, rather than for any agency's administrative uses (such as wildlife management), which is subject to the more liberal analysis of simply meeting the "minimum necessary" test.⁶⁹²

Third, while commercial activity in wilderness is severely restricted, commercial services are allowable "to the extent necessary for activities which are proper for realizing . . . wilderness purposes."⁶⁹³ In a series of cases over outfitters in wilderness areas on the Inyo National Forest as well as the Sequoia-Kings Canyon Wilderness, the courts have made it clear that "the [federal] agency's primary responsibility is to protect the wilderness, not cede to commercial needs."⁶⁹⁴ Determining the "extent necessary" is paramount: "[The] argument that [certain services] are not specifically forbidden in the wilderness area confuses the absence of a specific prohibition with the requirement of *necessity*; the fact that something is otherwise 'legal' does not make it necessary."⁶⁹⁵ In allocating guiding permits, the federal agency errs if it "elevate[s] recreational activity over the long-term preservation of the wilderness character of the land."⁶⁹⁶

*b. Subsequent Wilderness Legislation with Wildlife Provisions*⁶⁹⁷

A common refrain from wilderness managers is that "the Act designating *my* wilderness contains special direction on the management of wildlife." In most cases, however, the precise language of any given piece of

⁶⁹¹ 16 U.S.C. § 1133(d)(1); see also *Wilderness Watch, Inc. v. Bureau of Land Mgmt.*, 799 F. Supp. 2d 1172, 1176, 1181 (D. Nev. 2011) (holding that this exception supported BLM's determination to allow police department to conduct search and rescue helicopter training where aircraft use pre-dated designation as protected wilderness area); *United States v. Gregg*, 290 F. Supp. 706, 706-08 (W.D. Wash. 1968) (upholding conviction for an unauthorized landing of an airplane in a wilderness, but noting that the Secretary could, by regulation, "create an exception to this blanket prohibition at places where the use of aircraft was established before the passage of the Act").

⁶⁹² See, e.g., U.S. FOREST SERV., HELICOPTER LANDINGS IN WILDERNESS: FINAL ENVIRONMENTAL IMPACT STATEMENT 2-3 (1997), <https://perma.cc/BS2C-PGTU> ("Established helicopter use was for general public access, not helicopter access authorized by . . . law (such as . . . administrative use by [USFS] or other agencies)."); see also Memorandum from James Sippel, Wilderness Planner, Bureau of Land Mgmt., to Robert Taylor, Assistant Field Manager for Nat'l Landscape Conservation Sys., & Juan Palma, Las Vegas Field Manager (Mar. 1, 2007) (on file with authors) (stating that this section of the Wilderness Act is "in reference to previously existing landing strips used as fly-in trailheads" in relatively few wilderness areas).

⁶⁹³ 16 U.S.C. § 1133(d)(5).

⁶⁹⁴ *High Sierra Hikers Ass'n v. U.S. Dep't of the Interior*, 848 F. Supp. 2d 1036, 1042, 1047 (N.D. Cal. 2012); see also *Blackwell*, 390 F.3d 630, 636, 647 (9th Cir. 2004).

⁶⁹⁵ *High Sierra Hikers Ass'n v. Weingardt*, 521 F. Supp. 2d 1065, 1078 (N.D. Cal. 2007) (emphasis added) (noting the agency's conclusion "improperly equates 'preference' with 'need'").

⁶⁹⁶ *Blackwell*, 390 F.3d at 636, 647.

⁶⁹⁷ For a comprehensive analysis of wildlife management provisions in post-1964 wilderness bills, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

subsequent legislation makes no substantive difference in the implementation of the Wilderness Act's provisions.⁶⁹⁸

As of 2017, Congress has designated 711 wilderness areas⁶⁹⁹ since the original fifty-four were designated in 1964.⁷⁰⁰ Each subsequent bill contains nearly identical "boilerplate" regarding administration of the area: "Subject to valid existing rights, this wilderness area shall be administered by the Secretary . . . in accordance with the Wilderness Act."⁷⁰¹

The first wilderness legislation to include extra special language⁷⁰² specifically pertaining to wildlife was passed in 1972, with the establishment of the Sawtooth National Recreation Area, including the Sawtooth Wilderness.⁷⁰³ The relevant language of this extra special provision makes no actual difference in wildlife management within the Sawtooth Wilderness.⁷⁰⁴ In 1978, Congress started the custom of including not only the blanket "boilerplate" direction,⁷⁰⁵ but also repeating or rewording the Wilderness Act's statement on wildlife jurisdiction and responsibilities.⁷⁰⁶

⁶⁹⁸ See *infra* notes 707–708 and accompanying text.

⁶⁹⁹ *National Wilderness Preservation System Fact Sheet*, WILDERNESS CONNECT, <https://perma.cc/7EUS-4TBN> (last updated June 27, 2017).

⁷⁰⁰ Shannon Meyer & Peter Landres, *A National Wilderness Preservation System Database*, INT'L J. WILDERNESS, April 2000, at 13, 13.

⁷⁰¹ See, e.g., Act of Mar. 21, 1968, Pub. L. No. 90-271, § 3, 82 Stat. 51, 52 (codified at 16 U.S.C. § 1132 (2012)) ("The . . . Wilderness shall be administered by the Secretary . . . in accordance with the provisions of the Wilderness Act governing areas designated by that Act as wilderness areas, except that any reference in such provisions to the effective date of the Wilderness Act shall be deemed to be a reference to the effective date of this Act."); Sawtooth National Recreation Area and Jerry Peak Wilderness Additions Act, Pub. L. No. 114-46, § 102(a), 129 Stat. 477, 477 (2015) (similar); Big Sur Wilderness and Conservation Act of 2002, Pub. L. No. 107-370, § 3(a), 116 Stat. 3071, 3073 (similar). With minor variations, this wording is found in every subsequent law designating wilderness.

⁷⁰² We use the term "extra special language" to describe provisions other than those found in the Special Provisions enumerated at 16 U.S.C. § 1133(d) or other direction found in the Wilderness Act of 1964.

⁷⁰³ Sawtooth National Recreation Area Act, Pub. L. No. 92-400, §§ 1(a), 8, 86 Stat. 612, 612, 614 (1972) (codified at 16 U.S.C. §§ 460aa-460aa-14).

⁷⁰⁴ See 16 U.S.C. § 460aa-7 (providing that hunting and fishing "shall" be permitted "within the boundaries of the recreation area in accordance with applicable laws of the United States and the State of Idaho, except that the Secretary may designate zones where, and establish periods when, no hunting or fishing shall be permitted for reasons of public safety, administration, or public use and enjoyment," after consultation with the State; the consultation requirement is inapplicable in emergencies); *id.* § 460aa-1(b) ("The lands designated as the Sawtooth Wilderness Area . . . shall be administered in accordance with the provisions of this Act and the provisions of the Wilderness Act whichever is more restrictive . . ." (citation omitted)).

⁷⁰⁵ See *supra* note 701 and accompanying text (describing boilerplate language found in all bills designating wilderness areas).

⁷⁰⁶ See, e.g., Act of Oct. 21, 1978, Pub. L. No. 95-495, § 14, 92 Stat. 1649, 1657 ("Nothing in this Act shall be construed as affecting the jurisdiction or responsibilities of the State with respect to fish and wildlife in the wilderness . . ."); *cf.* Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(a), 116 Stat. 1994, 2005 (reasserting that nothing "affects or diminishes" state jurisdiction).

Of the 139 laws designating wilderness since the passage of the 1964 Act,⁷⁰⁷ only four have extra special language that create minor effects in wilderness stewardship of wildlife resources in those particular wilderness areas,⁷⁰⁸ and only one has extra special language affecting that particular wilderness that is completely out of the norm of all other wilderness legislation. That bill designated the Wovoka Wilderness and is embedded within the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.⁷⁰⁹ The unique provisions of this law are as confusing as they are astonishing, and so are given extended attention here as an extreme outlier. On the one hand, the legislation states the Wovoka "shall be administered by the Secretary in accordance with the Wilderness Act"⁷¹⁰ and House Report 101-405 Appendix B.⁷¹¹ The law then adds: "The State, including a designee of the State, may conduct wildlife management activities . . . in accordance with the . . . 'Memorandum of Understanding: Intermountain Region [USFS] and the Nevada Department of Wildlife State of Nevada' and signed . . . [in] 1984."⁷¹² The legislation says "may," retaining a measure of federal discretion. But the cited MOU, which does not mention wilderness, contains contradictory direction and does not conform to federal law: "[USFS] agrees [t]o recognize the Department [of Wildlife of the State of Nevada] as the agency responsible for the preservation and management of the wildlife resources in Nevada and for determining the regulations under which fish and wildlife will be managed, utilized, and protected."⁷¹³ There is no authority for a state to determine federal regulations, and this provision is contradicted later in the document: "[E]ach and every provision of the Memorandum is subject to the laws of the State of Nevada, the laws of the United States, and the regulations of the Secretary of Agriculture."⁷¹⁴ The MOU also defines "exotic" wildlife species as "those species that do not or have not existed within the continental United States within recorded historical times."⁷¹⁵ By this definition, any

⁷⁰⁷ Methodology for counting wilderness bills varies. Here, we count as a separate law bills with their own public law number, separate titles within one public law, and separate sections where the law refers to that section as a Wilderness Act.

⁷⁰⁸ See California Desert Protection Act of 1994, Pub. L. No. 103-433, §§ 503, 506(b), 108 Stat. 4471, 4490 (directing the Secretary to allow hunting in the Mojave National Preserve Wilderness, which was created largely out of BLM lands where hunting was permitted); North Cascades National Park Service Complex Fish Stocking Act, Pub. L. No. 113-137, § 3, 128 Stat. 1741, 1741 (2014) (mandating fish stocking in the North Cascades NPS Complex); Endangered American Wilderness Act of 1978, Pub. L. No. 95-237, § 4(c), 92 Stat. 40, 44 (directing the USFS to conduct wildlife research in cooperation with the State of Idaho in the Gospel-Hump Wilderness); Lee Metcalf Wilderness and Management Act of 1983, Pub. L. No. 98-140, § 2(c), 97 Stat. 901, 901-02 (limiting the use of motor vehicles for wildlife management in the Lee Metcalf Wilderness).

⁷⁰⁹ Pub. L. No. 113-291, § 3066(b)(1), 128 Stat. 3292, 3838 (2014) (codified in scattered sections of 10, 16, 40, and 46 U.S.C.).

⁷¹⁰ *Id.* § 3066(c)(1), 128 Stat. at 3839.

⁷¹¹ *Id.* § 3066(d)(2)(B)(ii), 128 Stat. at 3841; see H.R. REP. NO. 101-405 (1990).

⁷¹² *Id.* § 3066(d)(5), 128 Stat. at 3842.

⁷¹³ FSM § 1561.2 exhibit 3(A)(1) (1994).

⁷¹⁴ *Id.* § 1561.2 exhibit 3(C)(16).

⁷¹⁵ *Id.* § 1561.2 exhibit 3(B)(6)(1).

species from anywhere in the world that is currently anywhere within the continental United States is not exotic (and, according to the MOU, no USFS-advanced approval is necessary for species within the continental United States to be transplanted by the State).⁷¹⁶ This conflicts with the Executive Order defining exotic species as, “with respect to a particular ecosystem, any species . . . that is not native to that ecosystem,” and defining a native species as, “with respect to a particular ecosystem, a species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.”⁷¹⁷

Two other statutes are notable in that they contain language affecting the management of wildlife in multiple wilderness areas. The first is ANILCA, which contains far more extra special language on a variety of issues than any other wilderness-designating language “in recognition of the unique conditions in Alaska.”⁷¹⁸ Concerning wildlife, ANILCA provides that in national forest wilderness areas the Secretary *may* allow activities and facilities to enhance aquaculture “in a manner which adequately assures protection, preservation, enhancement, and rehabilitation of the wilderness resource.”⁷¹⁹ Other provisions dealing with wildlife center on allowable public uses, rather than management actions per se. These include construction of certain structures—with some Secretarial discretion—to facilitate the taking of fish and wildlife,⁷²⁰ and public use of motor vehicles for subsistence hunting.⁷²¹ Additional analysis of the wildlife provisions in ANILCA is found in Part III.B.6.

The other wilderness legislation with extra special language affecting multiple areas is in Title I of the California Desert Protection Act of 1994,⁷²² which designated sixty-nine wilderness areas under the stewardship of BLM.⁷²³ Section 103(f) contains a unique provision: “Management activities to maintain or restore fish and wildlife populations and . . . habitats . . . *may* be carried out . . . and *shall* include the use of motorized vehicles by the appropriate State agencies.”⁷²⁴ The contradictory use of “shall” and “may” caused considerable confusion in the offices tasked with stewardship of

⁷¹⁶ See *id.* § 1561.2 exhibit 3(B)(6) (requiring Regional Forester approval “before transplanting nonindigenous, Federally classified endangered or threatened or exotic[] wildlife species” but not for all other species).

⁷¹⁷ Exec. Order No. 13,112, 3 C.F.R. § 159 (2000) (emphasis added) (defining “alien” and “native” species); see also *Frequently Asked Question About Invasive Species*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/A9YV-MRHT> (last updated Nov. 20, 2012) (“Other terms sometimes used for exotic species include ‘non-native[]’ ‘non-indigenous,’ and ‘alien.’ . . . These definitions come from Executive Order 13112.”).

⁷¹⁸ 16 U.S.C. § 3203(a) (2012).

⁷¹⁹ *Id.* § 3203(b).

⁷²⁰ *Id.* § 3204(a).

⁷²¹ *Id.* § 3121(b).

⁷²² *Id.* §§ 410aaa–410aaa-83.

⁷²³ See, e.g., California Desert Protection Act of 1994, Pub. Law No. 103-433, § 102(3), (55), (61), 108 Stat. 4471, 4473, 4479–80 (designating, among others, the Bighorn Mountain Wilderness, Rodman Mountains Wilderness, and Sheephole Valley Wilderness).

⁷²⁴ *Id.* § 103(f), 108 Stat. at 4482 (emphasis added).

these areas.⁷²⁵ Ultimately, BLM determined the correct interpretation of this language is that "BLM continues to hold the ultimate responsibility for managing any actions occurring within [sic] the wilderness areas . . . [and w]hen BLM and [the California Department of Fish and Wildlife (CDFG)] cooperatively determine the need [for any access by CDFG] . . . CDFG and their volunteer organizations will be allowed to continue to use motor vehicles to carry out these necessary activities."⁷²⁶

Another notable wilderness bill is the Arizona Desert Wilderness Act of 1990,⁷²⁷ which was the first of many laws to direct wildlife management "in accordance with appropriate policies and guidelines such as those set forth in Appendix B of [House Report 101-405]."⁷²⁸ As discussed below, this House Report is a verbatim transcript of the substantive portions of the 1986 International Association of Fish and Wildlife Agencies (IAFWA) agreement,⁷²⁹ and Congressional direction here contains two important points: 1) management actions "*may* be carried out"—i.e., action is not mandatory but discretionary; and 2) actions should be "consistent with relevant wilderness management plans"—i.e., discretion to take action lies with the federal land manager.⁷³⁰ In short, except for aerial fish stocking,⁷³¹ the federal responsibility to manage wildlife in such a way as to preserve an area's wilderness character was not changed.

Some more recent laws in Nevada and Idaho have lengthy sections on wildlife management that affirm federal discretion, but (with one exception)⁷³² these sections change nothing of substance from the authority found in the Wilderness Act itself.⁷³³ The considerable confusion and

⁷²⁵ Memorandum from Ed Hartey, State Dir., Bureau of Land Mgmt., to Dist. Managers of Bakersfield and Cent. Cal. Dist., Bureau of Land Mgmt. (Sept. 30, 1997), <https://perma.cc/T4MU-N2GT>.

⁷²⁶ *Id.*

⁷²⁷ Pub. L. No. 101-628, 104 Stat. 4469 (codified at 16 U.S.C. § 460ddd).

⁷²⁸ *Id.* § 101(h), 104 Stat. at 4474; see H.R. REP. NO. 101-405 (1990).

⁷²⁹ See discussion *infra* Part III.B.7.d.

⁷³⁰ Arizona Desert Wilderness Act of 1990, § 101(h), 104 Stat. at 4474.

⁷³¹ See U.S. FOREST SERV., BUREAU OF LAND MGMT. & INT'L ASS'N OF FISH & WILDLIFE AGENCIES, APPENDIX I: POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS I-8 to -9 (1986), <https://perma.cc/YE3K-8DEF> [hereinafter IAFWA 1986 AGREEMENT]. Under the IAFWA 1986 Agreement: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* (emphasis added). While "[a]erial stocking requires approval by the administering agency," agency discretion is limited in that such use of aircraft is exempted from the "minimum necessary" requirement as discussed above in Part III.B.7.a.iii. *Id.* at I-9.

⁷³² See *supra* notes 709-717 and accompanying text (discussing the Wovoka Wilderness legislation). We review extra special wildlife provisions in wilderness law in more detail in the FAQs accompanying this Article. See *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³³ See Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208, 116 Stat. 1994 (2005); Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209, 118 Stat. 2403, 2411-12; Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329, 120 Stat. 2922, 3036-37; Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11, § 1503(b)(8), 123 Stat. 991, 1035-36; Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015,

misinterpretation of these laws by federal managers, state employees, and nongovernmental organizations is discussed in Part IV.E.

c. Agency Policy

Each of the four agencies has developed policy measures to guide wilderness managers. According to NPS's policy, both planning and management activities "must ensure that wilderness character is likewise preserved" within designated units of the National Park System.⁷³⁴ It provides: "The purpose of wilderness in the national parks includes the preservation of wilderness character and wilderness resources in an unimpaired condition and, in accordance with the Wilderness Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."⁷³⁵ "In addition to managing these areas for the preservation of the physical wilderness resources, planning for these areas must ensure that the wilderness character is likewise preserved."⁷³⁶

FWS's policy provides that, upon designation, wilderness character becomes an additional purpose of any wilderness area within a refuge. More specifically, the agency's policy states: "As we carry out individual refuge establishing purpose(s), the Administration Act purposes, the Refuge System mission and goals, and [FWS]'s mission in areas designated as wilderness, we do so in a way that preserves wilderness character."⁷³⁷

For the National Forest System, USFS's policy states that "[w]ildlife and fish management programs shall be consistent with wilderness values."⁷³⁸ It commits the agency to "[b]ase any [USFS] recommendation to State wildlife and fish agencies on the need for protection and maintenance of the wilderness resource"; "[p]rovide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist";⁷⁴⁰ and "[d]iscourage measures for direct control (other than normal harvest) of wildlife and fish populations."⁷⁴¹ In addition, practical application of the USFS policies reflects the *Policies and Guidelines for Fish and Wildlife Management in*

Pub. L. No. 113-291, §§ 3064(e), 3066(d), 128 Stat. 3292, 3831-32, 3841-42 (2014). For a section-by-section analysis of these laws, see *Federal Lands & Wildlife*, *supra* note 3 (FAQs currently under construction).

⁷³⁴ NPS MANAGEMENT POLICIES, *supra* note 375, §§ 6.1, 6.3.1.

⁷³⁵ *Id.* § 6.1.

⁷³⁶ *Id.* § 6.3.1.

⁷³⁷ FWS WILDERNESS POLICY, *supra* note 437, § 1.12(B).

⁷³⁸ FSM § 2323.32(2) (2006).

⁷³⁹ *Id.* § 2323.32(1). This provision recognizes that states also have responsibilities for the protection of wildlife in wilderness and calls for cooperative federalism in fish and wildlife management. *Id.*

⁷⁴⁰ *Id.* § 2323.31(1).

⁷⁴¹ *Id.* § 2323.32(3).

National Forest and Bureau of Land Management Wilderness developed with AFWA.⁷⁴² This document is discussed below.

BLM's wilderness policy was completely rewritten in 2012.⁷⁴³ Though never explicitly stated, the wildlife section of this policy purposefully adheres more closely to the IAFWA 1986 Agreement than the 2006 Agreement.⁷⁴⁴ Importantly, the 2012 BLM policy provides that "States have a primary and critical role" rather than "the primary role" in wildlife management,⁷⁴⁵ recognizing that the states' interests are not supreme, but that either the states or the federal agency may initiate wildlife stewardship proposals in wilderness. In addition, the policy plainly declares "[t]he ultimate responsibility to preserve wilderness character rests with the BLM"; it emphasizes wilderness preservation and requires the use of the Carhart *Minimum Requirements Decision Guide* for any wildlife management action.⁷⁴⁶ It also clarifies the prohibition on commercial use of wildlife.⁷⁴⁷

d. Wilderness and the Association of Fish & Wildlife Agencies

While Congress has not substantially changed wildlife management in wilderness with the recent legislation discussed above, for a little more than a decade there have been significant efforts to do so through legally questionable policy channels and nontransparent agreements between federal agencies and IAFWA or AFWA (the Association changed names in 2006).

In 1986, USFS and BLM made a comprehensive revision of their wilderness management directives with the cooperation of IAFWA.⁷⁴⁸ This agreement consists of a statement of purpose, general sideboards for the management of fish and wildlife in wilderness, and details regarding specified actions that may or may not be taken in cooperation with the states.⁷⁴⁹ It maintains federal control over decision-making processes,

⁷⁴² See *id.* § 2323.32(5) (citing U.S. FOREST SERV. ET AL., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS (2006), <https://perma.cc/MSMK-WDCY> [hereinafter AFWA 2006 AGREEMENT]). For details on the AFWA 2006 Agreement, see discussion *infra* Part III.B.7.d.

⁷⁴³ BLM MANUAL, *supra* note 673 (superseding BUREAU OF LAND MGMT., MANUAL TRANSMITTAL SHEET: 8560—MANAGEMENT OF DESIGNATED WILDERNESS AREAS).

⁷⁴⁴ See, e.g., *id.* § 1.6(C)(21)(c)(v) (discussing chemical treatment of pesticides). Compare AFWA 2006 AGREEMENT, *supra* note 742, at 6 (providing a less comprehensive policy and guidelines for application of pesticides), with IAFWA 1986 AGREEMENT, *supra* note 731, at I-6 to -7 (providing a more comprehensive policy and guidelines for application of pesticides).

⁷⁴⁵ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(i) (emphasis added). This is a shift from the misleading language of 43 C.F.R. § 24.3 (2016). See discussion *infra* Part IV.C.

⁷⁴⁶ BLM MANUAL, *supra* note 673, § 1.6(C)(21)(b)(ii)–(iii), app. B-1 (discussing application of the ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., *supra* note 683).

⁷⁴⁷ *Id.* § 1.6(C)(21)(c)(ix)(E).

⁷⁴⁸ IAFWA 1986 AGREEMENT, *supra* note 731, at I-1.

⁷⁴⁹ *Id.* at I-1 to -2. Fourteen specific action areas are listed: use of motorized equipment; fish and wildlife research and management surveys; facility development and habitat alteration; threatened and endangered species; angling, hunting, and trapping; population sampling; chemical treatment; spawn taking; fish stocking; aerial fish stocking; transplanting wildlife;

recognizes the responsibility afforded federal managers by the Wilderness Act, and is guided by the following direction: "Fish and wildlife management activities will emphasize the protection of natural processes . . . [and] by the principle of doing only the minimum necessary to manage the area as wilderness."⁷⁵⁰ As noted above, these guidelines were incorporated into House Report 101-405 and referenced in several subsequent wilderness bills.⁷⁵¹

Although USFS, BLM, and IAFWA "reaffirmed [their] mutual commitment" to the 1986 Agreement in 1995⁷⁵² and again in 2002,⁷⁵³ the agencies initiated a complete revision of the document and ultimately issued a revamped "Policies and Guidelines" in 2006.⁷⁵⁴ There were remarkable changes between the 1986 Agreement and the 2006 Agreement.⁷⁵⁵ The solicitor assigned to review the 2006 Agreement on behalf of the Department of the Interior noted several problems with it, including significant inconsistencies with federal law.⁷⁵⁶ At least one AFWA officer was unconcerned: "[U.S. Department of the Interior] Solicitors balked but BLM Director made the decision to sign."⁷⁵⁷

wildlife damage control; visitor management to protect wilderness wildlife resources; and management of fire. *Id.* at I-2 to -11.

⁷⁵⁰ *Id.* at I-1. The 1986 Agreement veers off course in one respect, found in the section on aerial fish stocking: "Aerial stocking of fish *shall* be permitted for those waters in wilderness where this was an established practice before wilderness designation or where other practical means are not available." *Id.* at I-8 to -9 (emphasis added).

⁷⁵¹ See *supra* notes 710-712, 727-729 and accompanying text.

⁷⁵² Memorandum from Jack Ward Thomas, Chief, U.S. Forest Serv., et al., to Reg'l Foresters et al., Int'l Ass'n of Fish & Wildlife Agencies 1 (Feb. 23, 1995) (on file with authors).

⁷⁵³ Memorandum from Dale N. Bosworth, Chief, U.S. Forest Serv., et al., to State Gov't Members of the Int'l Ass'n of Fish & Wildlife Agencies, et al. 1-2 (Aug. 9, 2002) (on file with authors) (noting "the statutory endorsement of the existing guidelines by the Arizona Desert Wilderness Act").

⁷⁵⁴ AFWA 2006 AGREEMENT, *supra* note 742.

⁷⁵⁵ Compare IAFWA 1986 AGREEMENT, *supra* note 731, at I-5 ("[S]uch actions [related to threatened and endangered species] must be necessary for the perpetuation or recovery of the species and it must be demonstrated that the actions cannot be done more effectively outside wilderness."), with AFWA 2006 AGREEMENT, *supra* note 742, at 8-9 (omitting the language from the IAFWA 1986 Agreement).

⁷⁵⁶ See Facsimile Transmission from Kris Clark, Div. of Land & Water Res., U.S. Dep't of the Interior, to Dwight Fielder, Bureau of Land Mgmt., & Jeff Jarvis, Bureau of Land Mgmt. 1, 6-7 (Aug. 10, 2006) (on file with authors) ("[T]he handling of the 'minimum requirements' analysis appears to conflict with the Wilderness Act. . . . [I]t materially changes the meaning of the provision [of section 4(c) in the Wilderness Act]. . . . [T]he Agreement fails to recognize that] Federal law, including regulations and discretionary actions, preempt[s] state jurisdiction."); see also e-mail from Kris Clark to E. Dwight Fielder, Chief, Div. of Fish, Wildlife & Plant Conservation, Bureau of Land Mgmt. (June 22, 2006) (on file with authors) (explaining that "decisions about federal agency management of wildlife in wilderness areas is not the appropriate subject for negotiation with an outside group" and stating that the Agreement's characterizations of the Wilderness Act "are misleading and in many cases incorrect").

⁷⁵⁷ E-mail from Gary J. Taylor, Legislative Dir., Ass'n of Fish & Wildlife Agencies, to Duane Shroufe et al. (July 18, 2006) (on file with authors) (also noting "USDI Solicitors question[ed] [the] legal status of AFWA being able to speak for the states. Whatever . . . the important thing is that it is signed." (omission in original)); see also *id.* (stating that the USFS Chief, BLM Director,

A complete inventory of the changes is available elsewhere,⁷⁵⁸ but problematic additions or deletions include the following:

- Declaring that "State fish and wildlife management activities that do not involve Wilderness Act prohibitions identified . . . in Section 4(c) . . . are generally exempt from authorizations by the Federal administering agencies,"⁷⁵⁹ when in fact federal requirements to preserve wilderness character go beyond prohibiting section 4(c) uses and include prevention of any action that may degrade an area's wilderness character (e.g., introducing a non-native species).⁷⁶⁰
- Giving states responsibility to determine whether wildlife and fish species are indigenous, thereby possibly degrading the Natural Quality of wilderness character.⁷⁶¹ Associated with this change is the deletion of the IAFWA 1986 Agreement prohibition on stocking exotic fish.⁷⁶²
- Identifying any state plans and agreements as sufficient to establish if an action is necessary in wilderness, when the Wilderness Act states prohibited uses can be approved only to manage the area for the purpose of the Act.⁷⁶³
- Deleting a passage committing the agencies to being guided by the principle of doing "only the minimum necessary to manage the area as wilderness," and assigning authority for completing the "minimum requirements" analysis in part to the states,⁷⁶⁴ when the Act unequivocally gives federal agencies the sole responsibility to manage wilderness areas and preserve their wilderness character.⁷⁶⁵
- Analyzing implementation alternatives on the basis of impacts to "the wilderness characteristics (naturalness, outstanding

and AFWA Executive Vice President "all agreed no fanfare, news release or anything spotlighting it").

⁷⁵⁸ ARTHUR CARHART NAT'L WILDERNESS TRAINING CTR., POLICIES AND GUIDELINES FOR FISH AND WILDLIFE MANAGEMENT IN NATIONAL FOREST AND BUREAU OF LAND MANAGEMENT WILDERNESS: A COMPARISON OF THE 1986 IAFWA AND 2006 AFWA DOCUMENTS, <https://perma.cc/KR83-7CNK> (last updated May 30, 2017).

⁷⁵⁹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶⁰ See discussion *supra* Part.III.B.7.a.i.

⁷⁶¹ AFWA 2006 AGREEMENT, *supra* note 742, at 5.

⁷⁶² See IAFWA 1986 AGREEMENT, *supra* note 731, at 1-8 ("Exotic species of fish shall not be stocked.").

⁷⁶³ Wilderness Act, 16 U.S.C. § 1133(c) (2012); AFWA 2006 AGREEMENT, *supra* note 742, at 5, 16.

⁷⁶⁴ See IAFWA 1986 Agreement, *supra* note 731, at 1 (containing the now-deleted language about doing only the minimum necessary); AFWA 2006 Agreement, *supra* note 742, at 14 ("[T]he intent of this attachment is to document the analysis process used by the BLM and [USFS], in cooperation with the State fish and wildlife agencies, to determine the 'minimum requirements' for accomplishing fish and wildlife projects and activities within a wilderness area.").

⁷⁶⁵ 16 U.S.C. § 1133(b).

opportunities for solitude or primitive and unconfined recreation, and other special features),” and omitting consideration of other important impacts, in particular, to the untrammelled quality and the undeveloped quality.⁷⁶⁶

These provisions, and other AFWA initiatives, reflect AFWA’s fundamental misunderstanding of the federal role in managing wildlife. According to AFWA: “The state fish and wildlife agencies are responsible for fish and wildlife management within their borders, even on most federal public lands—including federal lands designated as Wilderness.”⁷⁶⁷ While the states have duties related to wildlife management, no statute grants them authority in wilderness—or other federal lands—superior to the federal agencies.⁷⁶⁸

It is clear from the plain text of the Wilderness Act that Congress intended the preservation of wilderness character as the primary purpose of the Act. Congress was adamant that wilderness areas shall be “administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment *as wilderness*,”⁷⁶⁹ and that allowing otherwise prohibited uses to meet minimum necessary requirements must be for the purpose of the Act,⁷⁷⁰ not for meeting “states’ abilities to accomplish big game harvest objectives.”⁷⁷¹ The misconception that federal agencies should only utilize “[w]ilderness management planning processes that support the state wildlife agencies and their wildlife management responsibilities and goals”⁷⁷² is exactly backward. In wilderness, state wildlife agencies should support—and cannot undermine—the congressional mandate to preserve wilderness character. While the state agencies may not be required to do so, the federal agencies must evaluate any action that may degrade wilderness character and are required to deny any action that does so.⁷⁷³

IV. ANALYSIS AND RECOMMENDATIONS

A. The Federal Obligation to Manage and Conserve Fish and Wildlife on Federal Lands

We begin our analysis by recognizing that federal land agencies have an *obligation*, and not just the discretion, to manage and conserve fish and

⁷⁶⁶ AFWA 2006 AGREEMENT, *supra* note 742, at 17.

⁷⁶⁷ John Kennedy, Speech at the National Wilderness Conference in Albuquerque, New Mexico: Fish and Wildlife Management in Wilderness 2 (Oct. 17, 2014) [hereinafter Kennedy Speech] (transcript on file with authors).

⁷⁶⁸ See 16 U.S.C. § 1133(a)(3) (“Nothing in this chapter shall modify the statutory authority under which units of the national park system are created.”).

⁷⁶⁹ *Id.* § 1131(a) (emphasis added).

⁷⁷⁰ *Id.* § 1133(c).

⁷⁷¹ Kennedy Speech, *supra* note 767, at 6.

⁷⁷² *Id.* at 11.

⁷⁷³ 16 U.S.C. § 1133(b).

wildlife on federal lands. Before explaining, it is important to first dispel the common myth that "the states manage wildlife, federal land agencies only manage wildlife habitat."⁷⁷⁴ We found this mantra repeated throughout our study, and it was commonly invoked by state and federal agencies in multiple cases and contexts.

The mantra has a long history and can be traced to the different sources of federal and state powers regarding wildlife management. As discussed in Part II.A, states claim ownership of wildlife and a commensurate public trust duty to manage it in the public's interest. On the other hand, the Property Clause of the U.S. Constitution provides federal land agencies with vast plenary powers to manage public lands—and the wildlife thereon.⁷⁷⁵ Writing in 1970, the Public Land Law Review Commission noted that "[h]istorically, the states have regulated the game population, and the Federal Government has managed the habitat."⁷⁷⁶ But the Commission also observed that, "increasingly, . . . the line between the traditional functions has become shadowy" because of the interplay between wildlife populations and habitat.⁷⁷⁷ The Commission released its report prior to passage of the ESA, NFMA, and FLPMA.⁷⁷⁸ And while these laws gave federal land agencies new responsibilities to conserve at-risk species and manage wildlife, and not just wildlife habitat, the "federal lands-habitat" refrain continued.

Part of the mantra's endurance is also due to the states' traditional role in regulating hunting, fishing, and trapping. As discussed previously, FLPMA and the Sikes Act include provisions related to hunting and fishing on public lands administered by USFS and BLM, meaning that federal agencies most often defer to the states when it comes to regulating the harvest of fish and wildlife on federal lands.⁷⁷⁹ Congress has shown no interest in usurping this traditional role of the states. However, wildlife management goes beyond simply setting harvest levels and methods. Just because the federal government has traditionally deferred to the states in establishing regulations pertaining to hunting, fishing, and trapping does not mean "the states manage wildlife, and federal land agencies manage wildlife habitat." We suspect that this non sequitur explains why the mantra has been so rarely questioned in the past.

⁷⁷⁴ See, e.g., *Kleppe*, 426 U.S. 529, 534 n.4, 536–37 (1976) ("[The State of New Mexico] contend[s] that the [Property] Clause grants Congress essentially two kinds of power: (1) the power to dispose of and make incidental rules regarding the use of federal property; and (2) the power to protect federal property. According to [the State], the first power is not broad enough to support legislation protecting wild animals that live on federal property; and the second power is not implicated since the Act is designed to protect the animals, which are not themselves federal property, and not the public lands.").

⁷⁷⁵ See *id.* at 546; Blum & Paulsen, *supra* note 5, at 1461.

⁷⁷⁶ PUB. LAND LAW REVIEW COMM'N, ONE THIRD OF THE NATION'S LAND: A REPORT TO THE PRESIDENT AND TO THE CONGRESS BY THE PUBLIC LAND LAW REVIEW COMMISSION 158 (1970), <https://perma.cc/7R83-JWLF>.

⁷⁷⁷ *Id.*

⁷⁷⁸ See *id.* at iii (submitting the report in 1970). The ESA, NFMA, and FLPMA were passed in 1973, 1976, and 1976, respectively. See *supra* notes 87–88, 287 and accompanying text.

⁷⁷⁹ See *supra* notes 104–105, 579–582 and accompanying text.

The mantra is wrong from a legal standpoint, limited from a biological one, and problematically simplifies the complexity of wildlife-habitat relationships. We take issue with the mantra because it invariably leads to fragmented approaches to wildlife conservation and unproductive battles over agency turf, and it often leads to an abdication of federal responsibility over wildlife.

We begin with a review of the public land laws surveyed in Part III.B. We then turn to the public trust and national interest in federal lands, and finally to the biological and ecological concerns perpetuated by the wildlife-habitat mantra.

1. Federal Land Laws Governing Wildlife Management

Part III.B makes clear that Congress directed all four federal land management agencies to manage wildlife on federal lands and to not just provide wildlife habitat. The ESA is a good starting point because the Act and its regulations so clearly intertwine the fate of species and ecosystems. The two are linked together under the law, and the statute mandates that all federal land agencies utilize their authorities to effectuate the purposes of the Act.⁷⁸⁰ And the purpose of the Act, after all, is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved.”⁷⁸¹ Furthermore, the meaning of “harm,” in the definition of “take” includes “significant habitat modification or degradation.”⁷⁸² The ESA obligates federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat.⁷⁸³

The ESA is also significant because of the role played by federal lands in the conservation of listed and candidate species. The most recent assessment, completed in 2008, measured the distribution of ESA-status species (listed as endangered, threatened, or candidate) and species defined by NatureServe as imperiled.⁷⁸⁴ It found that federal lands are significant reservoirs of biodiversity.⁷⁸⁵ Lands managed by USFS and the Department of Defense (DOD) stood out in terms of supporting the greatest number of species with status under the ESA. Both agencies harbored about 23% of species with ESA-status (at least 355 species for each agency), followed by

⁷⁸⁰ ESA, 16 U.S.C. § 1536(a)(1) (2012); see *supra* note 311 and accompanying text.

⁷⁸¹ 16 U.S.C. § 1531(b).

⁷⁸² 50 C.F.R. § 17.3(c)(3) (2016).

⁷⁸³ 16 U.S.C. § 1536(a)(1)–(2).

⁷⁸⁴ Bruce A. Stein et al., *Federal Lands and Endangered Species: The Role of Military and Other Federal Lands in Sustaining Biodiversity*, 58 BIOSCIENCE 339, 341 (2008). NatureServe provides independent conservation status assessments for extinction risks facing species in the United States. *Id.* at 340; *About Us*, NATURESERVE, <https://perma.cc/K8TD-6J8R> (last visited Nov. 11, 2017) (“[W]e collect decision-quality data about imperiled species and entire ecosystems, transform that data into knowledge products and visualizations, and provide meaning through expert analyses and support to guide decision-making, implement action, and enhance conservation outcomes.”).

⁷⁸⁵ Stein et al., *supra* note 784, at 346.

NPS (19%), FWS (18%), and BLM (16%).⁷⁸⁶ USFS also harbored the most NatureServe-defined imperiled species: approximately 27% of the total (at least 821 species).⁷⁸⁷ This was followed by BLM (20%) and DOD lands (15%).⁷⁸⁸

To put these percentages in context, consider the importance of national forest lands to fish and wildlife more broadly:

The 193 million acres of the National Forest System support much of North America's wildlife heritage, including: habitat for 430 federally listed threatened and endangered species, six proposed species, and 60 candidate species, with over 16 million acres and 22,000 miles of streams designated as critical habitat for endangered species; approximately 80% of the elk, mountain goat, and bighorn sheep habitat in the lower 48 States; nearly 28 million acres of wild turkey habitat; approximately 70% of the Nation's remaining old growth forests; over 5 million acres of waterfowl habitat; habitat for more than 250 species of migratory birds; habitat for more than 3,500 rare species; some of the best remaining habitat for grizzly bear, lynx, and many reptile, amphibian and rare plant species; over two million acres of lake and reservoir habitat; and over two hundred thousand miles of fish-bearing streams and rivers.⁷⁸⁹

Amongst federal land agencies, BLM has the "fewest ESA status species" and "ranks second for number of imperiled species."⁷⁹⁰ Nonetheless, over 245 ESA-listed species and at least another 31 candidate species are found on BLM lands, and roughly 450 rare and listed plant and animal species "are believed to occur only on BLM-managed lands."⁷⁹¹ While private and other landholdings are essential to biodiversity conservation, federal lands will play an increasingly crucial role in the future.⁷⁹²

The wildlife conservation mandates given to NPS and FWS are unambiguous in the obligation to prioritize the conservation of fish and wildlife. The National Park Service Organic Act makes the conservation of

⁷⁸⁶ *Id.* at 343 & fig.2.

⁷⁸⁷ *Id.*

⁷⁸⁸ *Id.*

⁷⁸⁹ U.S. FOREST SERV., BIOLOGICAL ASSESSMENT OF THE UNITED STATES DEPARTMENT OF AGRICULTURE NATIONAL FOREST SYSTEM LAND MANAGEMENT PLANNING RULE FOR FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES; SPECIES PROPOSED FOR FEDERAL LISTING; SPECIES THAT ARE CANDIDATES FOR FEDERAL LISTING ON NATIONAL FOREST SYSTEM LANDS 17-18 (2011), <https://perma.cc/F4EP-4LQZ>.

⁷⁹⁰ Stein et al., *supra* note 784, at 345.

⁷⁹¹ *Threatened and Endangered Species*, BUREAU LAND MGMT., <https://perma.cc/2RYC-DFY2> (last visited Nov. 11, 2017); see *Threatened and Endangered* . . . , FLICKR, <https://perma.cc/W65S-3QD4> (last visited Nov. 11, 2017) (follow "Show more" hyperlink).

⁷⁹² Stein and colleagues conclude that "[g]iven the current and projected pace of private land development, we can expect that federal lands will assume greater importance for the protection of our native species." Stein et al., *supra* note 784, at 346; see also U.S. FOREST SERV., FUTURE OF AMERICA'S FORESTS AND RANGELANDS: FOREST SERVICE 2010 RESOURCES PLANNING ACT ASSESSMENT 11 (2012), <https://perma.cc/ZDB2-TJUR> (reviewing how development pressure on nonpublic lands is affecting "the ability of those public lands to sustain important ecosystem services and biodiversity"); *The Disappearing West*, CTR. FOR AM. PROGRESS, <https://perma.cc/RU3C-54L2> (last visited Nov. 11, 2017) (discussing the loss of natural land due to human development and the need for private, state, and federal conservation efforts).

park resources, including wildlife, a primary management goal, and the courts are consistent in their reading that conservation is to be prioritized over facilitating public enjoyment.⁷⁹³ Furthermore, the enjoyment of park resources and wildlife may only occur in “such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”⁷⁹⁴ The wildlife conservation mandate is even more well defined for national wildlife refuges. The 1997 Improvement Act prioritizes “the conservation of fish, wildlife and plants, and their habitats within the System” and seeks to “ensure that the biological integrity, diversity, and environmental health of the System are maintained for the benefit of present and future generations of Americans.”⁷⁹⁵ The laws governing national parks and wildlife refuges make clear the obligation to conserve fish and wildlife and its habitat.

The wildlife-habitat mantra is most often invoked in the context of USFS and BLM management.⁷⁹⁶ But the multiple-use mandates given to both agencies require that these lands be managed for fish and wildlife purposes, with no distinction made between wildlife and wildlife habitat.⁷⁹⁷ The multiple-use mandates provide USFS and BLM considerable discretion, but that does not mean that the agencies can arbitrarily opt out of managing fish and wildlife where laws or regulations require such management.

NFMA provides a more substantive and enforceable mandate for USFS: “[to] provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.”⁷⁹⁸ Land and Resource Management Plans, whether written pursuant to the 1982 or 2012 NFMA regulations, must ensure the viability of species in planning areas.⁷⁹⁹ The regulations differ in how the viability requirement is defined, but both regulations emphasize the importance of habitat or “ecological conditions” in meeting the diversity mandate.⁸⁰⁰ Yet the definitions of viability, in both sets of regulations, focus on the population of species (e.g., their distribution, persistence, resilience, etc.).⁸⁰¹

FLPMA provides BLM with no wildlife diversity mandate, and it possesses more discretion than other federal land agencies. But this discretion is limited by FLPMA and its regulations.⁸⁰² Multiple use is defined in the Act to include “wildlife and fish.”⁸⁰³ Though “habitat for fish and wildlife and domestic animals” is referenced in FLPMA as well, the language

⁷⁹³ See discussion *supra* Part II.B.2.a.

⁷⁹⁴ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁷⁹⁵ 16 U.S.C. § 668dd(a)(4) (2012).

⁷⁹⁶ See, e.g., *Kleppe*, 426 U.S. 529, 536–37 (1976) (invoking the wildlife mantra to challenge federal jurisdiction over unbranded and unclaimed horses and burros on public lands administered by USFS and BLM).

⁷⁹⁷ See, e.g., 16 U.S.C. § 1604(e)(1); FLPMA, 43 U.S.C. § 1702(c) (2012).

⁷⁹⁸ 16 U.S.C. § 1604(g)(3)(B).

⁷⁹⁹ 36 C.F.R. § 219.9(b) (2012); *id.* § 219.19 (1983).

⁸⁰⁰ *Id.* §§ 219.9(b), 219.19 (2012); *id.* § 219.19 (1983).

⁸⁰¹ *Id.* § 219.19 (2012); *id.* (1983).

⁸⁰² 43 U.S.C. § 1712(c).

⁸⁰³ 43 C.F.R. § 1601.0-5(i) (2016).

is embedded in a more inclusive section focused on the ecological and other values for which public lands must be managed.⁸⁰⁴ The Act also requires BLM's land use planning process to "give priority to the designation and protection of areas of critical environmental concern,"⁸⁰⁵ and "to protect and prevent irreparable damage" to the "fish and wildlife resources" found within these areas.⁸⁰⁶ Furthermore, whatever discretion BLM has regarding wildlife conservation becomes much less relevant once a species found on BLM lands is protected by the ESA.

2. *The Public Trust and National Interest in Federal Lands*

In addition to the statutory requirements summarized above, many of these federal land laws include trust-like language pertaining to the national interest in federal lands, non-impairment, and intergenerational responsibility that further clarifies the federal obligation to conserve wildlife. The NPS Organic Act, for example, requires the conservation of "scenery, natural and historic objects, and wild life" therein and also requires the provision for the enjoyment of the same "in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."⁸⁰⁷ The mission of the National Wildlife Refuge System, as provided by the Improvement Act, "is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans."⁸⁰⁸ In the Wilderness Act, Congress secured "for the American people of present and future generations the benefits of an enduring resource of wilderness."⁸⁰⁹ Section 101 of NEPA expresses the federal government's responsibility to use all practicable means to "fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."⁸¹⁰ Finally, the ESA includes similar language pertaining to the multiple values of species "to the Nation and its people" and the importance of "better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants."⁸¹¹

⁸⁰⁴ 43 U.S.C. § 1701(a)(8).

⁸⁰⁵ *Id.* § 1712(c)(3).

⁸⁰⁶ *Id.* § 1702(a).

⁸⁰⁷ 54 U.S.C. § 100101(a) (Supp. II 2015).

⁸⁰⁸ National Wildlife Refuge System Administration Act of 1966, 16 U.S.C. § 668dd(a)(2) (2012); see also Robert L. Fischman & Robert S. Adamcik, *Beyond Trust Species: The Conservation Potential of the National Wildlife Refuge System in the Wake of Climate Change*, 51 NAT. RESOURCES J. 1, 6 (2011) (analyzing FWS's "variable and amorphous application of 'trust' terminology and the doctrine that such terminology reflects").

⁸⁰⁹ 16 U.S.C. § 1131(a).

⁸¹⁰ NEPA, 42 U.S.C. § 4331(b)(1) (2012).

⁸¹¹ 16 U.S.C. § 1531(a); see also *Palila*, 471 F. Supp. 985, 994 (D. Haw. 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981), *aff'd*, 852 F.2d 1106 (9th Cir. 1988). According to the court: "It is also possible that Congress can assert a property interest in endangered species which is superior to that of the state. . . . The importance of preserving such a national resource may be of such magnitude as to rise to the level of a federal property interest." *Palila*, 471 F. Supp. at

While the multiple-use statutes of USFS and BLM do not specifically reference an intergenerational trust, it is implied in various provisions pertaining to the national interest in federal lands and the command to not impair them. MUSYA, for instance, requires USFS to manage multiple uses in a combination “that will best meet the needs of the American people . . . without impairment of the productivity of the land.”⁸¹² NFMA speaks to “the public interest” and serving “the national interest” in the renewable resources program.⁸¹³ And finally, FLPMA similarly recognizes “the national interest” in public lands and requires multiple-use management to “meet the present and future needs of the American people” as well as “long-term needs of future generations,” and to do so “without permanent impairment of the productivity of the land and the quality of the environment.”⁸¹⁴ The public trust is also acknowledged in Department of the Interior regulations on intergovernmental cooperation in fish and wildlife management:

The Secretary of the Interior reaffirms that fish and wildlife must be maintained for their ecological, cultural, educational, historical, aesthetic, scientific, recreational, economic, and social values to the people of the United States, and that these resources are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.⁸¹⁵

As the statutory language suggests, applying trust principles to lands as varied as those found in the federal system is challenging. It is one thing, for example, to find a trust duty for the national parks, but it becomes murkier when thinking of the routine multiple-use decisions that must be made by USFS and BLM, decisions that often involve the private use of public resources. But even here, there is an understanding by the courts that such private uses must be for “national and public purposes,”⁸¹⁶ and that anti-monopoly restrictions impose a constraint on Congress in making decisions about federal lands as a trust resource.⁸¹⁷ At least one prominent scholar places federal public lands “at the outer reaches of the public trust doctrine.”⁸¹⁸ This is in part because federal public land law is a field heavy

995 n.40. See generally Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 ENVTL. L. 605 (2004) (analyzing the wildlife trust doctrine).

⁸¹² 16 U.S.C. §§ 529, 531(a).

⁸¹³ *Id.* § 1600(2)–(3).

⁸¹⁴ 43 U.S.C. §§ 1701(a)(2), (a)(7), 1702(c) (2012).

⁸¹⁵ 43 C.F.R. § 24.1(b) (2016).

⁸¹⁶ *Light*, 220 U.S. 523, 537 (1911).

⁸¹⁷ See *Camfield*, 167 U.S. 518, 524 (1897) (“[The United States] would be recreant to its duties as trustee for the people . . . to permit any individual or private corporation to monopolize them for private gain . . .”); *United States v. Trinidad Coal & Coking Co.*, 137 U.S. 160, 170 (1890) (“[I]n making regulations for disposing of [lands], Congress took no thought of their pecuniary value, but, in the discharge of a high public duty and in the interest of the whole country, sought to develop the material resources of the United States . . .”).

⁸¹⁸ Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. DAVIS L. REV. 269, 273 (1980).

with statutes and regulations, leaving some to question the relevance of applying a common law-based trust doctrine,⁸¹⁹ and also because, in the past, Congress has not hesitated to deploy its Property Clause powers to privatize federal public lands and resources.⁸²⁰ But by the same token, when it appears Congress has chosen to dispose of federal property, the Court has demanded a clear expression of congressional intent.⁸²¹

The issue of a federal trust duty has received vigorous judicial and scholarly debate in recent years,⁸²² but the courts have nonetheless referenced a public trust duty in numerous federal land cases.⁸²³ It is fair to say that the federal public trust, like the Property Clause, "favors retention of federal land in national ownership (retention), national over state and local authority (nationalization), and environmental preservation (conservation)," as a matter of constitutional common law.⁸²⁴

Whether employed as an interpretive canon by the courts or a conservation tool by the federal agencies, the federal public trust provides a useful way of understanding the broad obligations of federal agencies to

⁸¹⁹ See *id.* at 276 ("The legislative matrix is sufficiently comprehensive that doubts can fairly be raised as to whether there is room for a broad, common law doctrine to operate.").

⁸²⁰ See *id.* (explaining that the government "sold or . . . transferred away" its public lands to allow settlement of the western United States and that "[n]o serious suggestion could be made that private title to some 1.4 billion acres is clouded due to the United States' inability to convey clear title"); *Light*, 220 U.S. at 537 (describing the federal public trust doctrine as applicable to "[a]ll the public lands of the nation [which] are held in trust for the people of the whole country" but also stating that Congress had sole power to dispose of those lands).

⁸²¹ See John D. Leshy, *A Property Clause for the Twenty-First Century*, 75 U. COLO. L. REV. 1101, 1110 (2004) ("[T]he Court demands that Congress express itself more clearly when it wants to dispose of federal lands than when it retains them."). Leshy places the *Light* opinion within the burgeoning conservation thrust of 20th century cases. See *id.* at 1120. Although the Court remarked that Congress, when exercising its rights incident to proprietorship and sovereignty, holds the power to "establish[] a forest reserve for what it decides to be national and public purposes . . . [or] disestablish a reserve," it in fact upheld federal authority to reserve and protect its public lands from destruction by unregulated grazing. *Light*, 220 U.S. at 537.

⁸²² Much of the recent debate stems from a misinterpretation of *PPL Montana, LLC v. Montana*, 565 U.S. 576 (2012). See, e.g., *Juliana v. United States*, 217 F. Supp. 3d 1224, 1256, 1258 (D. Or. 2016) ("[A] close reading of *PPL Montana* reveals that it says nothing about the viability of federal public trust claims."). For additional background, see Amicus Curiae Brief of Law Professors in Support of Granting Writ of Certiorari at 3-8, *Alec L. ex rel. Looz v. McCarthy*, 135 S. Ct. 774 (2014) (No. 14-496), 2014 WL 5841697, at *3-8 [hereinafter Amicus Curiae Brief] (arguing the lower court misapplied *PPL Montana*). See generally Hope M. Babcock, *Using the Federal Public Trust Doctrine to Fill Gaps in the Legal Systems Protecting Migrating Wildlife from the Effects of Climate Change*, 95 NEB. L. REV. 649 (2017) (arguing the legal basis for a federal version of the public trust doctrine); Michael C. Blumm & Lynn S. Schaffer, *The Federal Public Trust Doctrine: Misinterpreting Justice Kennedy and Illinois Central Railroad*, 45 ENVTL. L. 399, 408-09 (2015) (discussing Justice Kennedy's comments in *PPL Montana* regarding the public trust doctrine).

⁸²³ See Wilkinson, *supra* note 818, at 298 (identifying thirty-six court opinions describing "the inland public lands as being held in trust"); *Juliana*, 217 F. Supp. 3d at 1258-59 (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty).

⁸²⁴ See Leshy, *supra* note 821, at 1101 (reviewing Property Clause powers); *Juliana*, 217 F. Supp. 3d at 1260 ("[P]ublic trust rights both predated the Constitution and are secured by it.").

manage and conserve wildlife located on or integral to federal lands.⁸²⁵ We are not suggesting that the trust doctrine will provide a precise guide or formula that can be used by federal agencies to make complicated wildlife decisions. Rather, it will require that federal agencies explicitly consider their own trust obligations in decision-making processes and stop the practice of reflexively acquiescing to state claims of wildlife authority.

The famous “Mono Lake decision” by the California Supreme Court provides a constructive way of thinking about this obligation and what it means in practice.⁸²⁶ There, the court had to reconcile two different systems of legal thought—the prior appropriation doctrine and public trust doctrine of Western water law—that were on a “collision course.”⁸²⁷ Though the court did not dictate any “particular allocation” of water in the dispute, leaving that decision to the water management agencies, it did make clear that there is “an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible.”⁸²⁸ The public trust duty, said the court, “imposes a duty of continuing supervision over the taking and use of the appropriated water.”⁸²⁹ In the case, the court asked state agencies to integrate two different doctrines of law and corrected the State of California who “mistakenly thought itself powerless to protect” trust resources.⁸³⁰ Federal agencies similarly have statutory and trust obligations for federal lands and wildlife, and these responsibilities must be factored into their decision-making processes.

Another trust responsibility of relevance is that between the federal government and Indian tribes. While we cannot give this complicated issue full consideration, it is important to recognize yet another layer of trust responsibilities found on federal lands. The federal government has a unique trust responsibility to protect the rights, assets, and property of Indian tribes.⁸³¹ This trust responsibility extends to protecting those off-reservation

⁸²⁵ See Melissa K. Scanlan, *A Comparative Analysis of the Public Trust Doctrine for Managing Water in the United States and India*, in ROUTLEDGE HANDBOOK OF WATER LAW AND POLICY 23, 25 (Alistair Rieu-Clarke et al. eds., 2017) (describing the trust as a judicial presumption that the state cannot privatize or substantially impair trust resources without a clear statutory directives and findings); William D. Araiza, *The Public Trust Doctrine as an Interpretive Canon*, 45 U.C. DAVIS L. REV. 693, 738 (2012) (characterizing the public trust doctrine as “[a]n interpretive canon . . . that provides courts with a judicially manageable method of vindicating the fundamental principle of public purpose in government management of natural resources”).

⁸²⁶ *Nat'l Audubon Soc'y v. Superior Court of Alpine Cty.*, 658 P.2d 709, 711–12 (Cal. 1983).

⁸²⁷ *Id.* at 712.

⁸²⁸ *Id.* at 728, 732.

⁸²⁹ *Id.* at 728.

⁸³⁰ *Id.* at 732.

⁸³¹ “Though sovereign, Indian tribes are not foreign nations, but rather distinct political communities ‘that may more correctly perhaps be denominated domestic, dependent nations,’ whose ‘relations to the United States resemble that of a ward to his guardian.’” Martin Nie, *The Use of Co-Management and Protected Land-Use Designations to Protect Tribal Cultural Resources and Reserved Treaty Rights on Federal Lands*, 48 NAT. RESOURCES J. 585, 595 (2008) (quoting *Cherokee Nation v. Georgia*, 30 U.S. (5 Pet.) 1, 2 (1831)). “A less paternalistic way of thinking about this trust relationship” is cast in terms of property; “the federal government has a

use rights that were reserved by tribes through treaties.⁸³² Hundreds of treaties precede the creation of federal land agencies, and many of these contain provisions that reserved rights on what is now federally managed land.⁸³³ These off-reservation treaty rights often include "hunting and fishing rights, gathering rights, water rights, grazing rights, and subsistence rights."⁸³⁴ The trust responsibility to protect these rights is recognized by Congress, the Executive Branch, and the courts.⁸³⁵

3. The Ecological Fallacy of Separating Wildlife from Habitat

The "states manage wildlife, federal land agencies manage habitat" mantra is also problematic from a biological and wildlife management perspective. This is because it creates a reductionist and oversimplified dichotomy between wildlife and habitat. It is obvious that 1) land management decisions made by federal agencies impact fish and wildlife populations, and 2) the decisions made by state agencies about fish and wildlife populations impact federal land and resources. Consider, for example, the impact a federal oil and gas lease can have on a state-managed mule deer population, or a state introducing non-native mountain goats to a national forest and the impact this introduction will have to that forest's alpine environment. Now, imagine in the latter case, USFS acquiescing to the introduction of non-native mountain goats on the grounds that the agency does not have authority over wildlife management and that it simply manages habitat. In cases like this, the habitat mantra becomes an abdication of federal responsibility over wildlife and its habitat.

duty to prevent harm to another sovereign's property." *Id.* (citing Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 UTAH L. REV. 1471, 1503-04 (1994)).

⁸³² *Id.*

⁸³³ See *id.* at 585-86, 596 (discussing reserved treaty rights of Native Nations on federal lands and approaches for protecting such rights).

⁸³⁴ *Id.* at 597.

⁸³⁵ See Exec. Order 13,175, 3 C.F.R. § 304 (2000) ("The United States has a unique legal relationship with Indian tribal governments as set forth in the Constitution of the United States, treaties, statutes, Executive Orders, and court decisions. Since the formation of the Union, the United States has recognized Indian tribes as domestic dependent nations under its protection. The Federal Government has enacted numerous statutes and promulgated numerous regulations that establish and define a trust relationship with Indian tribes."); Order No. 3335, Sally Jewel, Sec'y of the Interior, Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries § 3 (Aug. 20, 2014) (providing background on the trust responsibility including a review of relevant statutes and case law). USFS "recognizes the Federal Government has certain trust responsibilities and a unique legal relationship with federally recognized Indian Tribes." 36 C.F.R. § 219.4(a)(2) (2016); see also U.S. FOREST SERV. HANDBOOK § 1509.13(11) (2016) (discussing consultation with Indian tribes); Joint Secretarial Order No. 3206, Sec'y of the Interior & Sec'y of Commerce, American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act § 1 (June 5, 1997), <https://perma.cc/U46L-UWXF> ("This Order further acknowledges the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship in dealing with tribes.").

The fields of wildlife biology and management recognize the complex interplay between wildlife and habitat. For example, state wildlife agencies often make clear in their educational and outreach materials that wildlife management *is* habitat management.⁸³⁶ And a popular text views habitat

as a concept that is related to a particular species, and sometimes even to a particular population, of plant or animal. Habitat, then, is an area with a combination of resources (like food, cover, water) and environmental conditions (temperature, precipitation, presence or absence of predators and competitors) that promotes occupancy by individuals of a given species (or population) and allows those individuals to survive and reproduce.⁸³⁷

What is wildlife? The authors propose a similarly inclusive definition that includes “the full array of all biota present in an ecosystem as well as their ecological functions.”⁸³⁸ From here, the text goes on to analyze the interconnections between wildlife and habitat, while noting the obvious: “That vegetation plays a central role in the life of many animals is self-evident.”⁸³⁹ The authors, as do others in the field, call for managing wildlife in this larger ecosystem context.⁸⁴⁰ In some ways, the call differs little from Aldo Leopold’s views of “thinking like a mountain” and protecting the integrity of biotic communities: “The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land.”⁸⁴¹

B. State Wildlife Governance

1. State Ownership and the Wildlife Trust

The common claim that “states own wildlife”—full stop—is incomplete, misleading, and needlessly deepens divisions between federal and state governments. The claim is especially dubious when states assert ownership as a basis to challenge federal authority over wildlife on federal lands. As

⁸³⁶ See, e.g., Mont. Fish, Wildlife & Parks, *Fish & Wildlife: Fish Habitat*, MONTANA.GOV, <https://perma.cc/5QWH-7TKS> (last visited Nov. 11, 2017) (“Habitat is the KEY to fish and wildlife management in Montana.”).

⁸³⁷ MICHAEL L. MORRISON ET AL., *WILDLIFE—HABITAT RELATIONSHIPS: CONCEPTS AND APPLICATIONS* 10 (3d ed. 2006).

⁸³⁸ *Id.* at 380.

⁸³⁹ *Id.* at 43.

⁸⁴⁰ *Id.* at 12; see, e.g., Michael A. Huston, *Introductory Essay: Critical Issues for Improving Predictions*, in *PREDICTING SPECIES OCCURRENCES: ISSUES OF ACCURACY AND SCALE* 7, 7 (J. Michael Scott et al. eds., 2002) (explaining that theories of “how certain processes are expected to produce particular ecological patterns” are important “for the management and conservation of natural resources, including endangered species and biodiversity”); BRENDA C. McCOMB, *WILDLIFE HABITAT MANAGEMENT: CONCEPTS AND APPLICATIONS IN FORESTRY* 7 (2d ed. 2016) (“[V]egetation management by forest-land managers is probably the greatest factor influencing the abundance and distribution of animals in our forests today.”).

⁸⁴¹ ALDO LEOPOLD, *A SAND COUNTY ALMANAC: WITH ESSAYS ON CONSERVATION FROM ROUND RIVER* 137–41, 239 (1953).

reviewed in Part III.A, the U.S. Supreme Court has rejected this argument time and again. "To put the claim of the State upon title is to lean upon a slender reed," ruled the Court in *Missouri v. Holland*.⁸⁴² Decades later, in *Hughes v. Oklahoma*, the Court called such claims a "19th-century legal fiction."⁸⁴³

The states are on firm ground when declaring a "sovereign ownership" of wildlife that must be managed in the public interest. However, a more accurate phrase is to say that states manage wildlife under a doctrine of "sovereign trusteeship."⁸⁴⁴ In Part II, we highlighted trust-like language found in state constitutions, statutes, and case law. The so-called "wildlife trust doctrine" is essentially a branch of the public trust doctrine. It requires governmental trustees to manage the corpus of the trust—in this case wildlife—in the public interest and for the benefit of present and future generations, who are the beneficiaries of the trust.⁸⁴⁵ But the development and application of the wildlife trust is limited when contrasted to other trust resources, such as navigable waterways, submerged lands, and public access.⁸⁴⁶

While rejecting claims of state ownership, the *Hughes* Court makes clear that there nevertheless remain "*legitimate state concerns* for conservation and protection of wild animals" and that the states are not "powerless to protect and conserve wild animal life within their borders."⁸⁴⁷ The *Kleppe* Court also acknowledged that "States have broad trustee and police powers over wild animals within their jurisdictions."⁸⁴⁸ Although it did not elaborate on these powers, the Court emphasized that they were nevertheless subject to the constitutional powers and supremacy of the federal government.⁸⁴⁹ Similarly, in *Baldwin v. Fish & Game Commission of Montana*, the Court remarked that "the State's control over wildlife is not exclusive and absolute in the face of federal regulation."⁸⁵⁰ In Part III.A, we

⁸⁴² 252 U.S. 416, 434 (1920).

⁸⁴³ 441 U.S. 322, 335 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁸⁴⁴ Mary Christina Wood, *The Tribal Property Right to Wildlife Capital (Part I): Applying Principles of Sovereignty to Protect Imperiled Wildlife Populations*, 37 IDAHO L. REV. 1, 59 (2000).

⁸⁴⁵ See *Juliana*, 217 F. Supp. 3d 1224, 1254 (D. Or. 2016) ("[B]asic trust principles . . . impose upon the trustee a fiduciary duty to 'protect the trust property against damage or destruction.' The trustee owes this duty equally to both current and future beneficiaries of the trust." (citation omitted)).

⁸⁴⁶ See, e.g., Frank, *supra* note 15, at 678 ("[T]here has been precious little development of public trust principles in the fish and wildlife context over the past three decades. . . . [T]he reported decisions that do exist seem reluctant to apply public trust principles vigorously to protect fish and wildlife resources."). But see Robin Kundis Craig, *A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust*, 37 ECOLOGY L.Q. 53, 84–86 (2010) (noting that California courts, for example, have applied the public trust doctrine to wildlife).

⁸⁴⁷ *Hughes*, 441 U.S. at 336, 338 (emphasis added).

⁸⁴⁸ *Kleppe*, 426 U.S. 529, 545 (1976).

⁸⁴⁹ *Id.*

⁸⁵⁰ *Baldwin*, 436 U.S. 371, 386 (1978) ("Nor does a State's control over its resources preclude the proper exercise of federal power."); see also *Otter v. Jewel*, 227 F. Supp. 3d 117, 124–26, (D.D.C. 2017) (holding that sovereign ownership of wildlife based on a state statute did not

reviewed other cases where the courts struck down state wildlife laws—and assertions of state ownership of wildlife—as being in violation of the U.S. Constitution, thus clarifying that state powers over wildlife on federal lands are qualified.

The problem is that states seem to most frequently reference ownership and a public trust in wildlife when declaring broad powers to manage it in opposition to federal (or tribal) interests. In other words, states often claim the powers of a trustee without the accompanying responsibilities.⁸⁵¹ The public trust in wildlife raises a number of related questions. What are the state's affirmative conservation duties under their trust obligations? What must they refrain from doing? Does the doctrine apply to just game species or to biological diversity more broadly?⁸⁵² Does it help resolve conflicts amongst species and if so how? Does the doctrine extend to the protection of wildlife habitat? How is the doctrine enforced and, in particular, do private citizens—the beneficiaries of the trust—have the ability to challenge state agencies to ensure protection of trust resources?⁸⁵³ How can a state exert its trust responsibilities for wildlife on federal lands when a state's trust responsibility is limited to the people of that state only, while federal land and its resources are to be managed for the benefit of all Americans? It is only when these and related questions are sufficiently answered by the states that the term “sovereign ownership” can be used meaningfully.⁸⁵⁴

To summarize, unqualified proclamations that states own wildlife and that the rights associated with ownership limit federal agencies from taking actions to conserve wildlife and its habitat must be challenged. We appreciate that the term “state ownership” is sometimes used as a shortcut to express the trust principles on which it is based and to characterize the state's substantial interest in conserving wildlife. But the term is too often used by the states as a way to challenge federal authority—as if “ownership”

mean that management of sage grouse on federal lands by the federal government produced an injury-in-fact for the purpose of state standing to challenge federal land management plans), *appeal filed sub nom.*, *Otter v. Zinke*, No. 17-5050 (D.C. Cir. Mar. 28, 2017).

⁸⁵¹ See Horner, *supra* note 14, at 28 (“[S]tates have been quick to assert their ‘rights’ with respect to public trust resources . . . Unfortunately, their corresponding ‘duties’ have not been as readily accepted.”).

⁸⁵² See, e.g., Jeremy T. Bruskotter et al., *Rescuing Wolves from Politics: Wildlife as a Public Trust Resource*, 333 SCIENCE 1828, 1828–29 (2011) (arguing that states should utilize the public trust doctrine to protect wildlife species in need of support); Edward A. Fitzgerald, *The Alaskan Wolf War: The Public Trust Doctrine Missing in Action*, 15 ANIMAL L. 193, 197 (2009) (“The public trust doctrine . . . imposes a fiduciary duty on state government to protect and preserve public resources. . . . [It] ‘demands fair procedures, decisions that are justified, and results that are consistent with protection and perpetuation of the resource.’”).

⁸⁵³ See *Ctr. for Biological Diversity, Inc. v. FPL Grp., Inc.*, 83 Cal. Rptr. 3d 588, 603 (Cal. Ct. App. 2008) (affirming that the public has standing to challenge the state's management of wildlife under the public trust doctrine).

⁸⁵⁴ Eric Freyfogle and Dale Goble summarize: “The problem with taking [wildlife] trust language literally is that there is no trust document that sets forth the precise terms of the trust.” FREYFOGLE & GOBLE, *supra* note 292, at 33. So far, they say, “courts have had little or no occasion to struggle with these issues” and “[t]he duties states have and the limits they face in managing wildlife remain largely undecided.” *Id.* at 34; accord Blumum & Paulsen, *supra* note 5, at 1471; Horner, *supra* note 14, at 27.

provides them with more clout than “trust responsibility”—and it does little to help solve conflict or find common ground with federal agencies.⁸⁵⁵

Further complicating matters is that the state’s wildlife trust duty, insofar as it is defined at all, is subject to the federal government’s statutory and trust obligations over federal lands. As we discussed above, courts have found a trust responsibility for federal lands and integral resources. Although its potential application and parameters remain ill-defined, the cases tend to reinforce and strengthen federal powers over public lands, not limit them.⁸⁵⁶ This is in stark contrast to cases addressing the state public trust doctrine, which tend to restrict legislative and executive actions that run counter to trust responsibilities.⁸⁵⁷ This is not to suggest, however, that the doctrine cannot be used to impose limits and obligations on federal agencies. The Redwood National Park litigation is the most well-known example.⁸⁵⁸ In a series of cases involving the Park, national park statutes and the public trust doctrine were invoked to require affirmative action be taken to protect park resources from external threats posed by logging.⁸⁵⁹ There was, according to the court, an obligation to act: “any discretion vested in the Secretary concerning time, place and specifics of the exercise of such

⁸⁵⁵ As summarized by the Tenth Circuit in the Wyoming National Elk Refuge dispute: “FWS’s apparent indifference to the State of Wyoming’s problem and the State’s insistence of a ‘sovereign right’ to manage wildlife on the [National Elk Refuge] do little to promote ‘cooperative federalism.’” *Wyoming*, 279 F.3d 1214, 1240 (10th Cir. 2002).

⁸⁵⁶ See *Juliana*, 217 F. Supp. 3d 1224, 1253, 1260 (D. Or. 2016) (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty, and finding that “plaintiffs’ public trust rights both predated the Constitution and are secured by it”); Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 J. LAND RESOURCES & ENVTL. L. 173, 175 (2004) (noting that the trust doctrine “supplements federal power rather than restricts it”); Wilkinson, *supra* note 818, at 284 (“[T]he trust concept was used to reach results in favor of the United States, that is, to create and reinforce federal powers.”). But see MICHAEL C. BLUMM & MARY CHRISTINA WOOD, *THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW* 305 (2d ed. 2015) (challenging the notion that the trust obligation does not impose a restraint on federal land management and noting that these early cases never tested the issue, as many of them centered on the federal government’s ability to protect federal lands from trespassers).

⁸⁵⁷ See *Ill. Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 452–54 (invalidating a transfer of state trust lands—submerged lands under Lake Michigan—to a private company); Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 VT. L. REV. 781, 784 (2010) (discussing how “the classic statement of the American public trust doctrine” provides limitations on the States’ ability to alienate trust resources).

⁸⁵⁸ See *Redwoods III*, 424 F. Supp. 172, 175 (N.D. Cal. 1976) (finding that the Department of the Interior had taken all the necessary steps required of it to protect Redwood National Park under the Redwood National Park Act, 16 U.S.C. §§ 79a–79j (2012), and therefore was discharged of its previous failure to perform duties required by law); *Redwoods II*, 398 F. Supp. 284, 287, 293–94 (N.D. Cal. 1975) (stating that there is a “general trust duty” to conserve and provide for enjoyment of “scenery and natural and historic objects and wildlife . . . in such manner and by such means as will leave them unimpaired”), modified, *Redwoods III*, 424 F. Supp. 172 (N.D. Cal. 1976); *Redwoods I*, 376 F. Supp. 90, 93, 95–96 (N.D. Cal. 1974) (finding that any discretion vested in the Secretary of Interior was subordinate to his obligations to protect the park under the public trust doctrine as “guardian of the people of [the] United States over the public lands” and the Redwood National Park Act).

⁸⁵⁹ *Redwoods III*, 424 F. Supp. at 172–73; *Redwoods II*, 398 F. Supp. at 285; *Redwoods I*, 376 F. Supp. at 93.

powers is subordinate to his paramount legal duty imposed, not only under his trust obligation but by the statute itself, to protect the park.⁸⁶⁰

In moving forward, then, there would be value in attempting to harmonize the multiple trust obligations found on federal lands. As a starting place, the federal government must respond to state assertions of ownership and a wildlife trust by making clear that it too has statutory and trust obligations over federal lands, and they may extend to the conservation of wildlife. In some cases, the implication may be that the federal interest in wildlife preempts that of the states. But, in other cases when there are no competing objectives, a more cooperative form of “co-trusteeship” is possible. Mary Christina Wood uses this term to characterize the multiple trust obligations—at the federal, state, and tribal levels—as they apply to the interjurisdictional nature of salmon conservation and resource management more generally.⁸⁶¹ This co-trustee approach provides one way of reframing what is too often an adversarial relationship between federal and state governments. As Wood explains, the co-trustee framework creates mutual rights to transboundary assets along with collective responsibilities for conserving the resource.⁸⁶²

2. Hunting and the North American Model of Wildlife Conservation

Several conflicts examined as part of this project are partially driven by the way in which wildlife is managed and funded at the state level. Many of the cases reviewed as part of this research involve federal agency actions that are perceived to be in conflict with the state’s interest in promoting and regulating fishing, hunting, and trapping. The Alaska cases provide the clearest examples, as the State of Alaska views actions by NPS and FWS to be in direct opposition to the state’s mandate to intensively manage wildlife population in order to maximize a sustained yield of prey species in order to achieve high levels of human harvest.⁸⁶³ The wolf management cases in Idaho

⁸⁶⁰ *Redwoods I*, 376 F. Supp. at 96.

⁸⁶¹ Mary Christina Wood, *Advancing the Sovereign Trust of Government to Safeguard the Environment for Present and Future Generations (Part I): Ecological Realism and the Need for a Paradigm Shift*, 39 ENVTL. L. 43, 84–85 (2009).

⁸⁶² *Id.* at 85. Wood calls the approach a “sovereign cotenancy” over shared assets. *Id.* “A cotenancy is a tenancy under more than one distinct title, but with unity of possession.” *Id.* She cites, among other cases, *Puget Sound Gillnetters Ass’n v. U.S. District Court for the Western District of Washington*, 573 F.2d 1123, 1126 (9th Cir. 1978), *vacated sub nom.*, *Washington v. Wash. State Commercial Passenger Fishing Vessel Ass’n*, 443 U.S. 658 (1979), where the Ninth Circuit “invoked the cotenancy model to describe shared sovereign rights to migrating salmon.” Wood, *supra* note 861, at 85 & n.226. The most referenced case pertaining to co-trusteeship is *United States v. 1.58 Acres of Land Situated in Boston, Suffolk, Massachusetts*, 523 F. Supp. 120, 123–24 (D. Mass. 1981). See Amicus Curiae Brief, *supra* note 822, at 7 (reviewing the co-trustee/cotenancy model and its application to wildlife and other resources); Wood, *supra* note 861, at 71 & n.149 (stating that the public trust doctrine is not only prevalent in litigation at state level but applies with equal force to the federal government).

⁸⁶³ See, e.g., *Alaska*, 591 F.2d 537, 539 (9th Cir. 1979) (discussing Alaska’s challenge to the Secretary of the Interior’s decision “to close . . . federal lands to [a state-run] wolf-kill program,” which had been “designed to relieve pressure upon the caribou herd”).

provide another example.⁸⁶⁴ In the Frank Church River of No Return Wilderness, the State of Idaho undertook actions to protect elk from wolves and did so in complete contravention of the Wilderness Act.⁸⁶⁵

In these cases, and others, those outside interests challenging federal agency action/inaction on state wildlife management express a deep mistrust in a state's willingness to protect nongame species and predators. Clearly, some interests prefer federal management, or continued protection under the ESA or federal land law, because they believe that most states prioritize the management of fish and game and the revenue it produces through their license-based funding systems.

This is one reason why it is important for the states to find a more secure and predictable stream of funding for nongame management. Increased funding for nongame species would build capacity at the state level and help harmonize federal-state responsibilities over wildlife on federal lands. It is also necessary to broaden the base of wildlife funding at the state level. Doing so would bring states closer to the principles of wildlife trust management. Jacobson and others get to the crux of the matter:

According to the [public trust doctrine], wildlife is owned by no one and held in trust for the benefit of all, but with the user pay-benefit model, those who both derive direct benefits from wildlife and fund wildlife conservation from user fees may believe they have the only legitimate voice in governance of public wildlife conservation and management. Further, this model logically encourages those who pay via licenses and permits for the privilege of using wildlife to expect greater benefits than those who do not pay. This is a potentially fatal, deeply rooted inconsistency between rhetoric and reality in wildlife management in the United States, given the core premise of the [public trust doctrine] that wildlife is a public resource and no single stakeholder group should benefit from wildlife management more than others.⁸⁶⁶

It is beyond the scope of this Article to comprehensively address the North American Model of Wildlife Conservation. But, we were surprised to find the Model referenced so often in the cases examined, as it is merely a set of principles and is not based in law or regulation.⁸⁶⁷ Its frequent invocation by AFWA and the states is problematic, from providing a

⁸⁶⁴ See, e.g., *Wilderness Watch*, 229 F. Supp. 3d 1170, 1174, 1182–83 (D. Idaho 2017) (finding that USFS's approval of the efforts made by the Idaho Department of Fish and Game's (IDFG) to collar elk violated NEPA and the Wilderness Act), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017); *Maughan v. Vilsack*, No. 4:14-CV-0007-EJL, 2014 WL 12605649, at *1–2 (D. Idaho July 25, 2014) (discussing plaintiffs' claim that a wolf trapping and hunting program conducted by IDFG in a wilderness area violated NFMA, NEPA, the Wilderness Act, and other federal laws).

⁸⁶⁵ *Wilderness Watch*, 229 F. Supp. 3d at 1174, 1182–83.

⁸⁶⁶ Cynthia A. Jacobson et al., *A Conservation Institution for the 21st Century: Implications for State Wildlife Agencies*, 74 J. WILDLIFE MGMT. 203, 205–06 (2010).

⁸⁶⁷ See *supra* notes 56–57 and accompanying text.

particularly narrow and hunting-centric view of conservation history to asserting the power and authority of the states to regulate wildlife.⁸⁶⁸

First, the Model is often used to emphasize the importance of hunting, hunter access, and the significance of license-based revenue for state wildlife agencies.⁸⁶⁹ This exacerbates the potential for intergovernmental conflict by displaying an institutional bias toward game species and hunters, primarily because of the role hunters play in funding state wildlife agencies. Instead of building bridges between federal and state governments, the Model is wielded to draw distinctions between federal and state priorities.

In addition, the Model further undermines the potential for cooperative federalism by failing to include a principle focused on habitat and the role played by federal lands in the conservation of wildlife. As detailed above, federal lands and the habitat they provide are increasingly significant to biodiversity.⁸⁷⁰ Any story of wildlife conservation failing to acknowledge the contribution of federal lands—and the laws and regulations governing them—is woefully incomplete.

Another problem is that while the Model has a principle regarding wildlife as an international resource, it includes no such principle related to intergovernmental cooperation within the United States.⁸⁷¹ This makes little sense because of the transboundary and interjurisdictional nature of wildlife conservation. Some proponents of the Model suggest that it “must be viewed as a dynamic set of principles that can grow and evolve” and that its “future rests to a high degree on the adaptability and application of its principles to contemporary wildlife conservation needs.”⁸⁷² If so, the Model must consider more seriously how states can cooperate, as co-trustees, with federal and tribal governments in the conservation of wildlife.

C. The Department of Interior's Policy Statement on Federal-State Relationships

In Part III.B.5.c, we reviewed the Interior Department's 1983 policy statement and regulations on federal-state relations in wildlife policy. Although the Policy appears in the Code of Federal Regulations “as a matter of convenience to the public,”⁸⁷³ it was not subject to the rulemaking

⁸⁶⁸ See, e.g., Brief for the Ass'n of Fish & Wildlife Agencies as Amicus Curiae in Support of Petitioners, *supra* note 8, at 10 (referencing the Model to assert, “States have legal authority to manage fish and wildlife within their borders, except for federally protected species”); see also discussion *supra* Part II.C (providing examples of the Model's role in various cases).

⁸⁶⁹ See, e.g., Kennedy Speech, *supra* note 767, at 1, 6 (invoking the Model, on behalf of the Wyoming Game and Fish Department and AFWA's State-Federal Relations Committee, to criticize management of federal wilderness areas because of restrictions on types of hunter use and access).

⁸⁷⁰ See *supra* notes 784–788 and accompanying text.

⁸⁷¹ ORGAN ET AL., *supra* note 31, at 19.

⁸⁷² *Id.* at 29.

⁸⁷³ Department of the Interior Fish and Wildlife Policy, State-Federal Relationships, 48 Fed. Reg. 11,642, 11,642 (Mar. 18, 1983) (to be codified at 43 C.F.R. pt. 24).

requirements of the Administrative Procedure Act⁸⁷⁴ (APA),⁸⁷⁵ and as such does not carry the force of law.⁸⁷⁶ Despite its lack of weight, the Policy—which is not a bona fide regulation—was referenced in several of the cases we examined as part of this research and is frequently cited by agency officials.⁸⁷⁷

Most of the provisions reiterate basic principles of federalism as applied to wildlife management on federal lands with references to the Property, Commerce, Treaty, and Supremacy Clauses of the U.S. Constitution.⁸⁷⁸ The Policy also provides that fish and wildlife “are held in public trust by the Federal and State governments for the benefit of present and future generations of Americans.”⁸⁷⁹ It makes clear that “Congress may choose to preempt State management of fish and wildlife on Federal lands,” but then asserts that Congress nonetheless “reaffirmed the basic responsibility and authority of the States to manage fish and resident wildlife on Federal lands.”⁸⁸⁰

The most plausible construction of this language is that the states manage wildlife (including regulating hunting, fishing, and trapping) up to the point where the federal government determines that state-regulated activities conflict with federal law and regulation. This construction comports with our review of the case law in Part III.A, which expresses the vast constitutional powers held by Congress to conserve wildlife on federal lands.

A separate provision of the Department of Interior’s Policy muddies the water, however, by purporting to “reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility, and to foster improved conservation of fish and wildlife.”⁸⁸¹ The word “primary” is not defined, and it is used in an inconsistent fashion throughout the Policy.⁸⁸² Moreover, it is not clear “where” (or when) states have such “primary” authority. In one section, the Policy refers to state wildlife authority as providing a “comprehensive backdrop applicable *in the absence of specific, overriding Federal law*.”⁸⁸³ When placed in context, however, it becomes clear that this provision is merely another type of savings clause, recognizing state authority and

⁸⁷⁴ 5 U.S.C. §§ 551–559, 701–706, 1305, 3105, 3344, 4301, 5335, 5372, 7521 (2012).

⁸⁷⁵ *Id.* § 553.

⁸⁷⁶ *Christensen*, 529 U.S. 576, 587 (2000).

⁸⁷⁷ See, e.g., Final Appropriate Refuge Uses Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 71 Fed. Reg. 36,408, 36,410 (June 26, 2006); N.M. Dep’t of Game & Fish v. U.S. Dep’t of the Interior, 854 F.3d 1236, 1243 (2017).

⁸⁷⁸ 43 C.F.R. § 24.3(a) (2016).

⁸⁷⁹ *Id.* § 24.1(b).

⁸⁸⁰ *Id.* § 24.3(a)–(b).

⁸⁸¹ *Id.* § 24.2(a).

⁸⁸² Compare *id.* (“This policy is intended to reaffirm the basic role of the States in fish and resident wildlife management, especially where States have primary authority and responsibility . . .”), with *id.* § 24.4(c) (“Congress in the Federal Land Policy and Management Act . . . reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands.”).

⁸⁸³ *Id.* § 24.1(a) (emphasis added).

responsibility where appropriate under existing law, and where appropriate to achieve the objective of "improved conservation of fish and wildlife."⁸⁸⁴

The Policy is more problematic with respect to lands managed by BLM, where it asserts, without citing any specific statutory provision, that FLPMA "explicitly recognized and reaffirmed the primary authority and responsibility of the States for management of fish and resident wildlife on such lands."⁸⁸⁵ The problem is that FLPMA did no such thing. The word "primary" is not used in the statute nor is it implied.⁸⁸⁶ And, the regulations cannot "reaffirm" a principle of federalism that does not exist today and did not exist at the time of FLPMA's enactment.⁸⁸⁷ Furthermore, as we discuss in Part III.B.5.c, FLPMA's savings clause does nothing to enlarge or diminish state responsibilities for wildlife management on federal lands, and it explicitly reserves to the Secretary of Interior the authority to prohibit hunting and fishing for reasons of public safety, administration, and compliance with applicable laws.⁸⁸⁸

The Department of Interior's Policy on federal-state relations, particularly for BLM lands, represents an erroneous interpretation of the law. In its entirety, as currently written, the Policy is internally inconsistent, easily misconstrued, and provides little practical guidance because it does not sort through the fundamental tensions involved in managing wildlife on federal lands. To the extent it attempts to provide guidance, it is confusing and, in some passages, plainly contrary to law.⁸⁸⁹ Although it is fair to say that states may manage wildlife on federal lands unless state management strategies or measures conflict with federal prerogatives, neither BLM nor

⁸⁸⁴ *Id.* § 24.2(a).

⁸⁸⁵ *Id.* § 24.4(c).

⁸⁸⁶ Confusing matters even further, in another section of the same provision, the Department of the Interior acknowledges its responsibility for multiple-use management as defined in FLPMA, "including fish and wildlife conservation." *Id.* (emphasis added).

⁸⁸⁷ Much of what eventually became FLPMA can be traced to the work of the Public Lands Law Review Commission whose recommendations were published as *One Third of the Nation's Land* in 1970. See generally PUB. LAND LAW REVIEW COMM'N, *supra* note 776. The Commission's chapter on fish and wildlife management demonstrates what was understood to be the balance of federal-state power prior to FLPMA's passage in 1976. Far from affirming the "primary authority" of the states to manage wildlife on federal lands, the Commission emphasized the extent of federal powers to preempt the states. *Id.* at 158. Referenced within their recommendations pertaining to fish and wildlife is a 1964 opinion by the Solicitor of the Interior stating that "regulation of the wildlife populations on federally owned land is an appropriate and necessary function of the Federal Government when the regulations are designed to protect and conserve the wildlife as well as the land," concluding that "this authority is superior to that of a state." *Id.* (quoting 71 Interior Dec. 469, 473, 476 (1964)).

⁸⁸⁸ FLPMA, 43 U.S.C. § 1732(b) (2012).

⁸⁸⁹ See APA, 5 U.S.C. § 706(2) (2012) (directing courts to set aside agency actions that are "not in accordance with law" or "contrary to constitutional right, power, privilege, or immunity"); *United States v. Mead Corp.*, 533 U.S. 218, 234–35 (2001) (finding that informal agency interpretations are not entitled to *Chevron* deference but only receive the level of deference "proportional to its 'power to persuade'" (quoting *Skidmore v. Swift & Co.*, 323 U.S. 134, 140 (1944))).

the Department of Interior has the authority to rewrite FLPMA,⁸⁹⁰ much less to redraw the constitutional boundaries of federal and state powers that were so clearly addressed in *Kleppe v. New Mexico*.⁸⁹¹ There, the Supreme Court explained why "the complete power" that Congress has over public lands necessarily includes the power to regulate and protect the wildlife living there."⁸⁹² Accordingly, we recommend that the Policy be corrected, this time using APA rulemaking procedures with adequate notice and meaningful opportunities for all interested stakeholders to comment.

D. Failure to Act: The APA, NEPA, and Beyond

As shown in Part III.A, the constitutional authority of federal land agencies to manage wildlife is well settled, and federal land laws and regulations provide the discretion and sometimes the obligation to conserve wildlife on federal lands. One of the most difficult contemporary questions concerns circumstances where federal agencies have refused to take action to protect wildlife on federal lands.

When states are involved, the general questions tend to be: 1) must the state ask the federal agency for permission to undertake its proposed use of federal land, and 2) if so, what if a state does not do so? The answer to the first question depends on whether the federal agency has a legal duty to act. Such duties may be found in the statutory authorities discussed in Part III.B or in regulations furthering the purposes of those authorities. It is important to distinguish those circumstances where the agency has a duty to act from those where the agency has the authority to act but action is discretionary. A failure to engage in a discretionary act is characterized by law as mere "inaction" while a failure to execute a mandatory duty is characterized as a judicially reviewable "failure to act."⁸⁹³ The distinction has legal significance with regard to the second question above.

As explained by the Supreme Court in *Norton v. Southern Utah Wilderness Alliance (SUWA)*,⁸⁹⁴ in order for courts "to avoid judicial entanglement in abstract policy disagreements" there must be a "discrete agency action" that an agency is required to take.⁸⁹⁵ There was no duty for BLM to act to prohibit motorized use in wilderness study areas in *SUWA* because the statutory provision at issue in FLPMA "is mandatory as to the object to be achieved, but it leaves BLM a great deal of discretion in deciding

⁸⁹⁰ See 43 U.S.C. §§ 1702(a), 1702(c) (defining the terms "areas of critical environmental concern" and "multiple use" in ways that limit federal land use).

⁸⁹¹ *Kleppe*, 426 U.S. 529, 539-41 (1976).

⁸⁹² *Id.* at 540-41 (emphasis added); see also *supra* notes 145-150 and accompanying text (discussing *Kleppe* in detail).

⁸⁹³ Under the APA, a reviewing court may "compel agency action unlawfully withheld." 5 U.S.C. § 706(1) (2012). "[A]gency action" is defined as "the whole or a part of an agency rule, order, license, sanction, relief, or the equivalent or denial thereof, or failure to act." *Id.* § 551(13) (emphasis added). For analysis, see generally Julie Lurman, *Subsistence at Risk: Failure to Act and NEPA Compliance in Post-ANILCA Alaska*, 36 ENVTL. L. 289 (2006).

⁸⁹⁴ 542 U.S. 55 (2004).

⁸⁹⁵ *Id.* at 66.

how to achieve it.⁸⁹⁶ Similarly, the Department of the Interior had no duty under FLPMA to intervene in the State of Alaska's aerial wolf control program on federal lands in *Defenders of Wildlife v. Andrus* because the statutory language was discretionary; thus, there was no judicially reviewable "failure to act."⁸⁹⁷

In addition to FLPMA, the plaintiffs in both *SUWA* and *Defenders of Wildlife* alleged violations of NEPA.⁸⁹⁸ The courts determined that where there was simply inaction, NEPA procedures were not required.⁸⁹⁹ Conversely, failure to act when there is a legal obligation to do so may trigger NEPA.⁹⁰⁰ While NEPA itself does not compel any particular federal action, a NEPA analysis is required whenever a federal action is otherwise compelled by law—whether the agency engages in that action or fails to do so.⁹⁰¹ Moreover, "[n]onfederal actors may . . . be enjoined under NEPA if their proposed action cannot proceed without the prior approval of a federal agency."⁹⁰²

As described in Part III.B, the federal agencies have, where necessary, determined through regulations the circumstances where permits or other approvals are required prior to the use and occupancy of federal lands. In general, failure by a federal agency to require the necessary approval represents a "failure to act" and may result in the non-permitted activity being enjoined.⁹⁰³

In *Maughan v. Vilsack*,⁹⁰⁴ a court declined to enjoin the State of Idaho from contracting to kill wolves in a national forest wilderness area.⁹⁰⁵ However, the court cautioned that its decision was only for the purposes of

⁸⁹⁶ *Id.* at 59–61, 66.

⁸⁹⁷ *Def. of Wildlife*, 627 F.2d 1238, 1239–40, 1249–50 (D.C. Cir. 1980) (citing 43 U.S.C. § 1732). Claimants also do not appear to be able to sue a state based on federal inaction. See *Wilderness Soc'y v. Kane County*, 632 F.3d 1162, 1169–71 (10th Cir. 2011) (explaining that environmental groups had no rights in federal lands that would give them standing to challenge defendant county's actions on those lands based on preemption under the Supremacy Clause of the U.S. Constitution).

⁸⁹⁸ *SUWA*, 542 U.S. at 61; *Def. of Wildlife*, 627 F.2d at 1240.

⁸⁹⁹ *SUWA*, 542 U.S. at 73; *Def. of Wildlife*, 627 F.2d at 1245, 1247.

⁹⁰⁰ See 40 C.F.R. § 1508.18 (2016) (defining "actions" subject to NEPA as including "circumstance[s] where the responsible officials fail to act and that failure to act is reviewable" under the APA or otherwise).

⁹⁰¹ *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350 (1989); see *Lurman*, *supra* note 893, at 294–95 (explaining that NEPA attaches "if action were mandated (under a separate statute) but that action was not taken . . . this is failure to act").

⁹⁰² *Fund for Animals, Inc. v. Lujan*, 962 F.2d 1391, 1397 (9th Cir. 1992).

⁹⁰³ See *id.* Such injunctions are not limited to NEPA violations. See *Karuk Tribe of Cal. v. U.S. Forest Serv.*, 681 F.3d 1006, 1016, 1030 (9th Cir. 2012) (holding that USFS's approval of Notices of Intent to mine constituted "agency action" under the ESA and thus required consultation); *Dubois v. U.S. Dep't of Agric.*, 102 F.3d 1273, 1283, 1299–1301 (1st Cir. 1996) (expansion of ski resort enjoined where USFS failed to require a National Pollutant Discharge Elimination System permit).

⁹⁰⁴ No. 4:14-CV-0007-EJL, 2014 WL 201702 (D. Idaho Jan. 17, 2014).

⁹⁰⁵ *Id.* at *1, *5 (accepting, for the purpose of the temporary restraining order and injunction analysis, the USFS's conclusion that "the activity is regulated by a State agency in a manner adequate to protect the lands and resources," which is one of the exceptions found in the USFS's special use permit regulations).

a temporary restraining order, and "USFS has not yet reached a determination regarding the [Idaho Fish and Game] program let alone concluded that a special use permit is required."⁹⁰⁶ Until that time, there was no federal action subject to NEPA.⁹⁰⁷ In *Wilderness Watch v. Vilsack*,⁹⁰⁸ the same court enjoined the use of data obtained by the State of Idaho under a special use permit to use helicopters in the same wilderness area.⁹⁰⁹ It concluded that the State "must obtain approval from [USFS] before undertaking [its] project in the [w]ilderness [a]rea," and "that any action taken by [Idaho] without [USFS] approval would be contrary to the Wilderness Act."⁹¹⁰

In *Friends of Columbia Gorge, Inc. v. Elicker*,⁹¹¹ the United States District Court for the District of Oregon construed the USFS special use permit regulations to apply to approval of a reintroduction plan that would use federal land to establish a population of mountain goats in the Columbia Gorge National Scenic Area.⁹¹² For this and other reasons, USFS was required to comply with NEPA.⁹¹³ In Utah, the state released mountain goats on land adjacent to the Manti-La Sal National Forest, which proceeded to occupy a research natural area on the national forest that was designated to protect plant species that would be vulnerable to trampling.⁹¹⁴ These species included three plant species listed as "sensitive" by USFS.⁹¹⁵ The United States District Court for the District of Utah held that "allowing" the mountain goats on national forest land was not a federal agency action, and that the same special use permit regulations did not require such permits

⁹⁰⁶ *Id.* at *5.

⁹⁰⁷ *See id.* at *6 (explaining that USFS's failure to require an EIS was not a final agency action).

⁹⁰⁸ 229 F. Supp. 3d 1170, 1183 (D. Idaho 2017), *amended by* No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹⁰⁹ *Id.* at 1177, 1183.

⁹¹⁰ *Id.* at 1182 (referencing Wilderness Act, 16 U.S.C. § 1133(c) (2012)). The injunction was based in part on a violation of NEPA. *Id.* In Part III.B.7.a.iii, *infra*, we assess other issues posed by this case, in particular, the Wilderness Act's requirement that USFS make a finding that the activity is "necessary to meet minimum requirements for the administration of the area" before issuing its approval. *But cf.* *WildEarth Guardians v. U.S. Forest Serv.*, No. 4:14-cv-00488-REB, 2017 WL 1217099, at *1 & n.2, *5-9 (D. Idaho Mar. 31, 2017) (Predator hunting "derbies" organized by private parties and occurring on national forest lands did not meet any of the regulatory criteria requiring a special use authorization, and did not have effects subject to NEPA. However, the court struck documents submitted by plaintiffs suggesting such permits had been issued by USFS for six other organized hunts. BLM was initially a defendant in this case but the parties reached an agreement to settle those claims, regarding different regulatory language, out of court.).

⁹¹¹ 598 F. Supp. 2d 1136 (D. Or. 2007), *vacated*, No. 05-CV-646-BR, 2011 WL 3205773 (D. Or. July 27, 2011).

⁹¹² *Id.* at 1153, 1159; *see also* 36 C.F.R. § 251.50 (2016) (describing USFS's special use permitting system).

⁹¹³ *Friends of Columbia Gorge*, 598 F. Supp. 2d at 1155.

⁹¹⁴ *Utah Native Plant Soc'y v. U.S. Forest Serv.*, No. 2:16-cv-56-PMW, 2017 WL 822098, at *1-2 (D. Utah Mar. 2, 2017), *appeal filed*, No. 17-4074 (10th Cir. May 4, 2017).

⁹¹⁵ *Id.* at *1.

"every time state-managed wildlife enters federal land."⁹¹⁶ These cases indicate that it is incumbent on the land managers to evaluate any state action against the regulatory criteria for permits so that they can properly authorize (or deny) the use and occupancy of federal lands.

As noted in Part III.B, federal agencies are encouraged to complete MOUs with the states for cooperative management of fish and wildlife resources. It is the purpose of these MOUs to clearly delineate the authorities of the parties and assign responsibilities among them, and this should include identification of actions that would require a permit. It is critical that the assignment of authorities reflect the legal principles described above. Moreover, the MOU process should not be used to relinquish federal authorities without recognizing that such decisions may constitute actions subject to federal procedures required by the ESA or NEPA.⁹¹⁷ The agencies should expect scrutiny of the assignment of blanket authority to states using MOUs.⁹¹⁸ For example, the relinquishment of federal authority to manipulate water levels in a national wildlife refuge was enjoined because it constituted a federal action subject to NEPA.⁹¹⁹ Similarly, an MOU that delegated authority to the state to assert federal reserved water rights in the Black Canyon of the Gunnison violated the federal agency's nondiscretionary duties to protect federal resources.⁹²⁰ Conversely, BLM's decision to relinquish management of elk feeding grounds to the State of Wyoming through an MOU rather than through land use permits was upheld in *Greater Yellowstone Coalition v. Tidwell*⁹²¹ because FLPMA authorized BLM to enter into such agreements, rendering a permit requirement superfluous.⁹²² The court also affirmed the applicability of NEPA to the MOU in lieu of the permit process.⁹²³

⁹¹⁶ *Id.* at *4, *9, *11. However, the court also indicated that USFS would have authority to remove the goats and would "need to take a position" after sufficient study. *Id.* at *7. USFS had earlier told the state it objected to the reintroduction. *Id.* at *1-2. The authority to remove wildlife was established in *Hunt*, 278 U.S. 96, 100 (1928), and *Kleppe*, 426 U.S. 529, 545-46 (1975).

⁹¹⁷ See *Defs. of Wildlife*, 627 F.2d 1238, 1244 (D.C. Cir. 1980) ("[E]xamples of federal 'permission' [requiring compliance with NEPA] were such concrete acts as decisions 'to issue a lease, approve a mining plan, issue a right-of-way permit, or take other action to allow private activity. . .'" (omission in original) (quoting *Kleppe*, 427 U.S. at 399)).

⁹¹⁸ See *Gallatin Wildlife Ass'n v. U.S. Forest Serv.*, No. CV-15-27-BU-BMM, 2016 WL 3282047, at *9-10 (D. Mont. June 14, 2016) (finding NEPA violations in an EIS for a Forest Plan where USFS failed to disclose MOUs with the State of Montana and grazing permittees that acknowledged that the state would allow permittees to kill bighorn sheep to prevent comingling with domestic sheep), *appeal filed*, No. 16-35665 (9th Cir. filed Aug. 19, 2016).

⁹¹⁹ *Bunch v. Hodel*, 642 F. Supp. 363, 365 (W.D. Tenn. 1985); see also *High Country Citizens' All.*, 448 F. Supp. 2d 1235, 1242-43, 1249 (D. Colo. 2006) (holding that the relinquishment of a federal reserved water right was an agency action subject to judicial review).

⁹²⁰ *High Country Citizens' All.*, 448 F. Supp. 2d at 1241-42, 1245, 1253 ("A permanent relinquishment of a water right with a 1933 priority date for such a scientifically, ecologically and historically important national park must be viewed as a major action requiring compliance with NEPA.").

⁹²¹ 572 F.3d 1115 (10th Cir. 2009).

⁹²² *Id.* at 1119, 1127-28.

⁹²³ *Id.* at 1128.

An important take-away point is that MOUs cannot be used to evade legal obligations.⁹²⁴ Neither can they change a regulatory requirement, as that can only be done through APA rulemaking, nor can MOUs be used to alter statutory provisions, as that power is reserved to Congress.⁹²⁵ As a subsidiary point, if a federal agency were to use an MOU to transfer authority to a state to undertake actions that would be subject to federal requirements, such as those required by the ESA or NEPA, those requirements would attach to the MOU decision itself because that decision would constitute "affirmative conduct" necessary before a nonfederal actor could proceed.⁹²⁶

E. The National Wilderness Preservation System

While all agencies have the authority to assert federal supremacy over the management of fish and wildlife on federal lands in order to fulfill their statutory mission, in federal wilderness areas the affirmative obligation to preserve wilderness character—including fish and wildlife species within wilderness areas—is mandated to the federal land-managing agency.⁹²⁷

Courts have pointed out, "the Wilderness Act is as close to an outcome-oriented piece of environmental legislation as exists. Unlike NEPA, ... the Wilderness Act emphasizes outcome (wilderness preservation) over procedure."⁹²⁸ That outcome, as detailed above in Part III.B.7, is one where an area's wilderness character is protected in full; meaning as far as possible, without human manipulation; where otherwise-prohibited uses are limited only to those necessary for the purpose of preserving that area's wilderness character; where all commercial uses are prohibited, except those commercial services necessary for realizing *wilderness* purposes; and where each federal agency recognizes that whatever the original reason for an area's designation, once it is also designated as wilderness, management must conform to the Wilderness Act. Moreover, where subsequent legislation mentions wildlife management, those provisions must be read in tandem with the Wilderness Act, keeping in mind "the elementary rule" of

⁹²⁴ See *id.* at 1125, 1128 (requiring compliance with NEPA when a federal agency enters into an MOU).

⁹²⁵ See, e.g., *High Country Citizens' All.*, 448 F. Supp. 2d at 1249, 1252 ("This Court finds that the effect of the [MOUs] was actually to remove the administration of the Black Canyon resources from the National Park Service in direct contravention of [federal law]."); *Greater Yellowstone Coal.*, 572 F.3d at 1127 (explaining that FLPMA requires BLM to "ensure the uses approved through cooperative agreements are in compliance with other statutes imposing limitations on the uses of federal land and the activities of federal agencies").

⁹²⁶ See *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 54-55 (D.D.C. 2003) (explaining that "whether the federal agency must undertake 'affirmative conduct' before the non-federal actor may act" is a factor in determining whether an action is a "major Federal action").

⁹²⁷ *Wilderness Watch*, 229 F. Supp. 3d 1170, 1181-82 (D. Idaho 2017) ("Congress made preservation of wilderness values 'the primary duty of [USFS], and it must guide all decisions as the first and foremost standard of review for any proposed action.'" (quoting *Greater Yellowstone Coal.*, CV-06-04-E-BLW, 2006 WL 3386731, at *6 (D. Idaho Nov. 21, 2006))), amended by No. 4:16-CV-012-BLW, 2017 WL 3749441 (D. Idaho Aug. 30, 2017).

⁹²⁸ *High Sierra Hikers Ass'n*, 436 F. Supp. 2d 1117, 1138 (E.D. Cal. 2006).

statutory construction that exceptions to the Act's overarching preservation mission are to be construed narrowly.⁹²⁹

We have reviewed dozens of agency-approved or state-proposed wildlife management actions in wilderness areas, and where errors in stewardship have been made we observed certain trends. It has long been noticed that the most common flaw in making a minimum requirements analysis or other evaluation document is that they are often "[w]ritten to support a pre-determined decision" where preserving wilderness character is not the default conclusion.⁹³⁰ But beyond that, we have observed a fundamental misunderstanding of many facets of the law and an apparent willingness to skirt legal obligations so as to accommodate more political desires. Two illustrative examples are analyzed below.

In 2007, FWS and the Arizona Game and Fish Department (AGFD) proposed to build two new wildlife waters in the Kofa Wilderness in Arizona, in addition to the sixty-five waters previously developed, to halt bighorn sheep population decline.⁹³¹ FWS authorized the construction as a project categorically excluded from detailed environmental analysis under NEPA.⁹³² It made a rudimentary minimum requirements analysis⁹³³ and approved the construction.⁹³⁴ The Ninth Circuit found that FWS had not provided a reasoned determination of necessity in employing the prohibited use of an installation.⁹³⁵ Its opinion created a litmus test for a minimum requirements analysis:

[A] *generic* finding of necessity does not suffice; the Service must make a finding that the structures are "necessary" to meet the "*minimum* requirements for the administration of the area" [T]he key question—whether water structures were necessary at all—remains entirely unanswered [T]he Service's own . . . [Investigative Report] identified many different actions [FWS could have taken] Importantly, in contrast to the creation of new structures within the wilderness, the Wilderness Act does not prohibit any of

⁹²⁹ *Spokane & Inland Empire R.R. Co. v. United States*, 241 U.S. 344, 350 (1916) ("[E]xceptions from a general policy which a law embodies should be strictly construed, that is, should be so interpreted as not to destroy the remedial processes intended to be accomplished by the enactment."); see *Wilderness Watch v. U.S. Forest Serv.*, 143 F. Supp. 2d 1186, 1206 (D. Mont. 2000); see also discussion *supra* Part III.B.7.b (discussing subsequently enacted, site-specific wilderness legislation).

⁹³⁰ WILDERNESS ADVISORY GRP., U.S. FOREST SERV., MINIMUM REQUIREMENTS ANALYSIS: FAQs AND COMMON ERRORS 16 (2015), <https://perma.cc/Q5MG-JNTV>.

⁹³¹ KOFA NAT'L WILDLIFE REFUGE & ARIZ. GAME & FISH DEP'T, INVESTIGATIVE REPORT AND RECOMMENDATIONS FOR THE KOFA BIGHORN SHEEP HERD 8–10, 23 (2007), <https://perma.cc/B362-GJUZ> [hereinafter KOFA INVESTIGATIVE REPORT]; U.S. FISH & WILDLIFE SERV., KOFA NATIONAL WILDLIFE REFUGE & WILDERNESS AND NEW WATER MOUNTAINS WILDERNESS INTERAGENCY MANAGEMENT PLAN AND ENVIRONMENTAL ASSESSMENT 43–44 (1996).

⁹³² KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., CATEGORICAL EXCLUSION: YAQUI AND MCPHERSON TANKS REDEVELOPMENT PROJECTS (2007), <https://perma.cc/6P7L-EJ46> [hereinafter REDEVELOPMENT CX].

⁹³³ *Id.*

⁹³⁴ See *Kofa*, 629 F.3d 1024, 1031 (9th Cir. 2010) (describing the minimal analysis and the construction process).

⁹³⁵ *Id.* at 1037.

those actions. . . . Yet nowhere in the record does the Service explain why those actions, alone or in combination, are insufficient to restore the population of bighorn sheep. . . . The documents as a whole demonstrate that the Service began with the assumption that water structures are necessary and reasoned from that starting point.⁹³⁶

Subsequently, FWS released a formal determination that concluded it was necessary to have built these two more wildlife waters in addition to the sixty-five already developed because the installations need to be no more than three miles apart for "[o]ptimal distribution of water, especially for lactating ewes."⁹³⁷

In the meantime, FWS authorized the killing of certain mountain lions in the Kofa Wilderness to limit predation on bighorns.⁹³⁸ The rationale was that "[a]lthough mountain lions are also a natural wildlife resource, . . . mountain lion predation is likely additive to other sources of mortality and sufficient to prevent [FWS] from attaining bighorn sheep population objectives."⁹³⁹ The explicit bighorn population objectives were "based on . . . the need to maintain a population large enough . . . to support regional and landscape level transplant programs," and to make it easier for hunters to locate "trophy rams."⁹⁴⁰ The minimum requirements analysis correctly identified the No Action alternative as the one that would best protect wilderness character.⁹⁴¹ However, the Preferred Alternative—the removal of "offending" lions—was chosen.⁹⁴² This choice, as with others made in this series of decisions, was based on supporting analyses that were fundamentally flawed.

One of the new tanks (Yaqui) is itself outside the wilderness, and only part of the catchment system is within the wilderness.⁹⁴³ The Yaqui could have been constructed without a catchment system, with water supplied by a tanker on the adjacent road outside the wilderness.⁹⁴⁴ As constructed, the Yaqui tank cannot have been the minimum necessary under any

⁹³⁶ *Id.* at 1037–38 (citation omitted). The court listed the options that should have been analyzed, including eliminating hunting, cancelling the transplant program, and killing predators. *Id.* at 1037.

⁹³⁷ KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., NECESSITY DETERMINATION: CONSTRUCTION OF THE MCPHERSON AND YAQUI WILDLIFE WATER CATCHMENTS 1, 4 (2014), <https://perma.cc/DR8D-G24N> [hereinafter NECESSITY DETERMINATION].

⁹³⁸ See KOFA NAT'L WILDLIFE REFUGE, U.S. FISH & WILDLIFE SERV., FINAL ENVIRONMENTAL ASSESSMENT: LIMITING MOUNTAIN LION PREDATION ON DESERT BIGHORN SHEEP ON THE KOFA NATIONAL WILDLIFE REFUGE 5 (2009), <https://perma.cc/22WH-ZAFU> [hereinafter LION EA] (analyzing various alternatives for limiting mountain lion predation on desert bighorn sheep, including the removal of certain mountain lions that have "killed two or more desert bighorn sheep within a six-month period").

⁹³⁹ *Id.*

⁹⁴⁰ *Id.* at 7, 10.

⁹⁴¹ *Id.* at 112–13.

⁹⁴² *Id.* at 104, 114.

⁹⁴³ REDEVELOPMENT CX, *supra* note 932, at 3.

⁹⁴⁴ See *id.* ("The Yaqui Tank Redevelopment Project is planned to take place immediately adjacent to the designated road that follows Moonshine Wash and as a result, is nearly all within the 200-foot-wide area that is outside of designated Wilderness.").

circumstance. Yet, FWS claims these two particular installations are among only twenty-four critical for bighorn survival in the Kofa National Wildlife Refuge.⁹⁴⁵ At the least, that would mean all the remaining wildlife water developments in the Kofa Wilderness fail the test of “necessity” by FWS’s own analysis. Therefore, these developments cannot be maintained and should be removed, since their presence manipulates the “community of life,” creates unnatural conditions in the desert environment, and violates the wilderness definition as “undeveloped Federal land retaining its primeval character and influence.”⁹⁴⁶

In addition, killing predators, while not explicitly prohibited by the Wilderness Act, is implicitly prohibited as an action that trammels “the earth and its community of life.”⁹⁴⁷ Perhaps in response to the vastly greater number of pictures of predators and mule deer than of bighorn sheep recorded at the guzzlers,⁹⁴⁸ FWS wrote: “Desert bighorn sheep will likely use the new water sources more frequently as they become familiar with the location of the waters.”⁹⁴⁹ There is no discussion of how the predators and mule deer became familiar with the locations so much faster than the sheep. To decrease predation on sheep, it would be more consistent with the area’s wilderness character to stop providing supplemental water for bighorn predators and their alternate prey that appear to be less well-adapted to the harsh desert environment of the Kofa Wilderness than desert bighorn sheep.⁹⁵⁰

In the end, these errors are dwarfed by the fundamental mistake of skewing management of the Kofa Wilderness to meet a population goal of 800 bighorns—“considered the carrying capacity of the refuge”—with the objective to re-establish them as a “transplant source herd.”⁹⁵¹ To do so, AGFD and FWS determined that they needed to provide water in all areas of suitable sheep habitat, including areas that were otherwise “unavailable” for sheep due to the absence of water sources.⁹⁵² Maximizing production is an

⁹⁴⁵ See KOFA INVESTIGATIVE REPORT, *supra* note 931, at 32 tbl.2 (listing twenty-four “[c]ritical bighorn sheep waters on the Kofa [National Wildlife Refuge],” including Yaqui and McPherson tanks).

⁹⁴⁶ Wilderness Act, 16 U.S.C. § 1131(c) (2012).

⁹⁴⁷ See KIW, *supra* note 636, at 7 (stating that the untrammelled quality of wilderness “is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness”); see also *supra* notes 638–641 and accompanying text (analyzing the untrammelled nature of wilderness).

⁹⁴⁸ Author Chris Barns, in analyzing the remote camera studies of the two new guzzlers, found that in the first year bighorn were seen utilizing the guzzlers only twice. The three top predators of bighorns (lions, bobcats, and coyotes) were documented at the installations over 500 times; mule deer were photographed over 800 times.

⁹⁴⁹ NECESSITY DETERMINATION, *supra* note 937, at 1.

⁹⁵⁰ See *id.* at 6 (describing how bighorn sheep can survive up to fifteen days without drinking water during the hot summer months); Bill Broyles & Tricia L. Cutler, *Effect of Surface Water on Desert Bighorn Sheep in the Cabeza Prieta National Wildlife Refuge, Southwestern Arizona*, 27 WILDLIFE SOC’Y BULL., 1082, 1085 (1999) (finding that the availability of perennial surface water did not affect bighorn populations on another desert wilderness refuge).

⁹⁵¹ KOFA INVESTIGATIVE REPORT, *supra* note 931, at 14, 19.

⁹⁵² *Id.* at 9.

agricultural model, not a wilderness model. In nature, not every nook and cranny is filled with a "desirable" species and devoid of "offending" animals. Although FWS claims that its objective is to "provid[e] the public with the opportunity to view wild sheep in their native habitat,"⁹⁵³ native habitat is not one with artificial water provided every three miles in an area cleansed of predators. Policy guidance from FWS is quite clear: "On wilderness areas within the Refuge System, we conserve fish, wildlife, and plants by preserving the wilderness environment."⁹⁵⁴ In the Kofa Wilderness, FWS has failed to do so by taking actions that degrade its untrammelled quality and that are not the minimum necessary, all for non-wilderness purposes.⁹⁵⁵

Sometimes federal agencies try to apply the law but are opposed not only by state agencies but by wilderness-oriented advocacy groups. In 2011, the Nevada Department of Wildlife (NDOW) requested a multi-year authorization from BLM's Ely and Southern Nevada District Offices for using helicopters to access wildlife water developments within designated wilderness areas.⁹⁵⁶ BLM failed to undertake any analysis to determine whether any water installations were necessary in the first place. However, in preparation for their draft Environmental Assessment (EA), BLM conducted a minimum requirements analysis on methods of access, concluding that helicopter access was necessary for fifteen of the twenty big game water developments but that the others could be accessed on foot or by horse.⁹⁵⁷ In the comment period following release of the draft EA, comments from an advocacy group supported helicopter access to all of the installations because it would be more economical for NDOW.⁹⁵⁸ In addition

⁹⁵³ NECESSITY DETERMINATION, *supra* note 937, at 2.

⁹⁵⁴ FWS WILDERNESS POLICY, *supra* note 437, § 2.16(A); *see also id.* § 2.16(B)(3) ("All decisions and actions to modify ecosystems, species population levels, or natural processes must be: (a) Required to respond to a human emergency, or (b) The minimum requirement for administering the area as wilderness and necessary to accomplish the purposes of the refuge, including Wilderness Act purposes. In addition, such decisions and actions must: (i) Maintain or restore the biological integrity, diversity, or environmental health of the wilderness area; or (ii) Be necessary for the recovery of threatened or endangered species." (emphasis added)).

⁹⁵⁵ Other agencies have engaged in similar actions based on similarly flawed analyses. *See, e.g.,* U.S. FOREST SERV., PRELIMINARY ENVIRONMENTAL ASSESSMENT FOR AUTHORIZATION OF HELICOPTER LANDINGS IN WILDERNESS 8–9, 16 & tbl.3 (2014) (authorizing up to 450 helicopter landings for capturing bighorn sheep despite almost half of the bighorn habitat being outside wilderness); NAT'L PARK SERV., ISLE ROYALE NATIONAL PARK: DRAFT ENVIRONMENTAL IMPACT STATEMENT TO ADDRESS THE PRESENCE OF WOLVES, at iv, vii (2016), <https://perma.cc/BD8G-CT4G> (identifying a Preferred Alternative that restocks the island with wolves, despite correctly analyzing the No Action Alternative as the one that best preserves wilderness character).

⁹⁵⁶ *See* BUREAU OF LAND MGMT., ENVIRONMENTAL ASSESSMENT: ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA 1–4 (2011), <https://perma.cc/NWH6-9S52>.

⁹⁵⁷ *Id.* app. A. Access to one of the wildlife waters was determined to be as little as 0.2 miles from the boundary on a closed road. *Id.*

⁹⁵⁸ *See* Shaaron Netherton, Friends of Nevada Wilderness, Comment to *Environmental Assessment: Issuance of Authorizations to Nevada Department of Wildlife for Wildlife Water Development Inspection, Maintenance and Repairs within BLM Wilderness Areas in Nevada* (Dec. 30, 2011) (on file with authors) [hereinafter Friends of Nevada Wilderness Comment] ("[I]n these times of extremely tight budgets . . . we believe it is critical that this EA should help

to prioritizing economics over preservation, the letter contained two other fundamental errors. First, it asserted that NDOW “is responsible for the maintenance of these large game guzzlers.”⁹⁵⁸ To the contrary, at some point after wilderness designation, BLM needed to determine whether each of the water installations is “necessary to meet minimum requirements for the administration of the area” as wilderness.⁹⁵⁹ If so, it is BLM’s responsibility to maintain them—though BLM may ask the state to undertake that responsibility—because preserving wilderness character is solely a federal responsibility.⁹⁶⁰ If not, no maintenance can be allowed, and eventually the installations should be removed to comply with the Wilderness Act.⁹⁶¹

Second, the letter claimed: “It is clear in both the Clark and Lincoln County legislation that Congress intended that helicopter use be allowed.”⁹⁶² However, Congress used the word “may” in the legislation, demonstrating its intent that helicopter use be considered, not that it be automatically approved.⁹⁶³ Senator Harry Reid specifically noted that while helicopter access may be needed for some monitoring and maintenance, “some guzzlers can be easily accessed after a short hike from a road.”⁹⁶⁴

In the end, BLM authorized NDOW helicopter access to all sites, referring to “[a]dditional information . . . obtained during the comment

facilitate cooperation between the BLM and [NDOW] on the issue of inspection and maintenance of wildlife water developments.”). This instance is not the only time this organization has urged BLM to prioritize nonconforming wildlife developments. See e-mail from Shaaron Netherton, Exec. Dir., Friends of Nev. Wilderness, to Neil Kornze, Bureau of Land Mgmt. (Apr. 1, 2014) (on file with authors) (asking that radio collars no longer be defined as an installation so sportsmen could put them on wildlife in wilderness).

⁹⁵⁸ Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁵⁹ See Wilderness Act, 16 U.S.C. § 1133(c) (2012) (requiring BLM to do a minimum requirements analysis).

⁹⁶⁰ See discussion *supra* Part III.B.7.

⁹⁶¹ See 16 U.S.C. § 1133(c) (permitting installations only where they are “necessary to meet the minimum requirements for the administration of the area” as wilderness).

⁹⁶² Friends of Nevada Wilderness Comment, *supra* note 958.

⁹⁶³ Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424, § 209(c), 118 Stat. 2403, 2412 (“Consistent with section 4(d)(1) of the Wilderness Act . . . the State may continue to use aircraft, including helicopters, to survey, capture, transplant, monitor, and provide water for wildlife populations”); Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282, § 208(c), 116 Stat. 1994, 2005 (similar); see also Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432, § 329(c), 120 Stat. 2922, 3036 (similar). Under the Wilderness Act, preexisting uses of aircraft are “subject to such restrictions as the Secretary . . . deems desirable.” 16 U.S.C. § 1133(d)(1). Those restrictions are set forth in agency policy: “BLM has discretion to either allow or prohibit the continuation of aircraft use where it has already been legally established prior to the designation of a wilderness area. Administrative use of aircraft is normally authorized under section 4(c) of the Wilderness Act, only where it is necessary to meet minimum requirements for the administration of the area for the purpose of the Wilderness Act.” BLM MANUAL, *supra* note 673, § 1.6(C)(2)(b).

⁹⁶⁴ Letter from Harry Reid, U.S. Senator, to Robert A. Abbey, Dir., Bureau of Land Mgmt. (May 27, 2010) (on file with authors).

period" in disregard of the Wilderness Act and BLM's own analysis.⁹⁶⁶ This result degrades wilderness character by allowing prohibited uses that were shown not to be the minimum necessary—due, in part, to a mistaken reading of the extra special language in designating legislation.

As we have shown, the Wilderness Act unequivocally expresses the federal obligation to assert authority over fish and wildlife to assure the interests of all Americans in the preservation of wilderness character. We are troubled by the cases discussed above, and others, that demonstrate a problematic tendency on the part of some federal land agencies to reflexively acquiesce to state interests when contrary to wilderness law. The federal agencies must renew their dedication to preserving wilderness character.

F. Intergovernmental Cooperation

The states and AFWA have repeatedly asserted that there are not enough opportunities for intergovernmental cooperation in wildlife management and that more opportunities need to be created.⁹⁶⁷ Wildlife conservation absolutely requires intergovernmental cooperation and transboundary thinking beyond political jurisdictions. One early example of such cooperation can be found in the Lacey Act,⁹⁶⁸ which, among other things, provides federal penalties for transporting in interstate commerce any wildlife taken in violation of state law.⁹⁶⁹ Another example is provided by the Pittman-Robertson and Dingell-Johnson Acts, discussed in Part II.B, as both provide significant sources of federal funding for state wildlife management.

There is real value in constructive relationships between federal and state agencies, and we strongly encourage their development. To that end, there are three central points to be made:

- 1) Multiple opportunities for intergovernmental cooperation already exist within federal decision-making processes, but they are not always fully utilized. For instance, the Sikes Act, ESA, FLPMA, NFMA, NWRSA, and several others contain such opportunities.
- 2) Intergovernmental cooperation must be a mutual and reciprocal obligation in order to live up to the name and to be as effective as possible. Therefore, there ought to be equal opportunity for federal entities to comment on and participate in state wildlife management decision-making processes, and that is not always the case.

⁹⁶⁶ BUREAU OF LAND MGMT., DECISION RECORD FOR THE ISSUANCE OF AUTHORIZATIONS TO NEVADA DEPARTMENT OF WILDLIFE FOR WILDLIFE WATER DEVELOPMENT INSPECTION, MAINTENANCE AND REPAIRS WITHIN BLM WILDERNESS AREAS IN NEVADA (2012), <https://perma.cc/7TMU-HPFG>.

⁹⁶⁷ See, e.g., AFWA TASK FORCE REPORT, *supra* note 56, at 22 (suggesting that the cooperative language found in the Sikes Act could be strengthened and extended to all land management agencies).

⁹⁶⁸ Lacey Act Amendments of 1981, 16 U.S.C. §§ 3371–3378 (2012).

⁹⁶⁹ *Id.* § 3373(a).

- 3) Intergovernmental cooperation cannot be a euphemism for the idea that either entity always gets what it wants. It ought to be, and generally is, an opportunity for informing agency decision making in meaningful ways. The law determines which level of government has the final decision-making authority.

1. Existing Opportunities for Intergovernmental Cooperation at the Federal Level

In Part III.B of this Article, it was noted that the authorizing statutes for the various land units already provide multiple opportunities for intergovernmental cooperation at the federal level. For instance, in the NWRSA and FLPMA's planning and land acquisition programs, substantive opportunities for intergovernmental cooperation are prescribed by statute.⁹⁷⁰ In addition to these opportunities for cooperation are those opportunities provided in other federal statutes and programs, such as NEPA, the Landscape Conservation Cooperative (LCC) network coordinated by FWS, the Joint Ventures program of FWS, and the State Wildlife Grants Program.⁹⁷¹

NEPA presents what is probably the best-known opportunity for intergovernmental cooperation. NEPA declares that it is the policy of the U.S. government to work "in cooperation with State and local governments" to pursue the "conditions under which man and nature can exist in productive harmony."⁹⁷² To carry out the policy of cooperation, NEPA requires the federal agency conducting an Environmental Impact Statement (EIS) to provide early notification to, and solicit the views of, any state entity which may be significantly impacted.⁹⁷³ Any disagreements about

⁹⁷⁰ See, e.g., National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. § 668dd(e)(3) (directing FWS to consult with "adjoining Federal, State, local, and private landowners and affected State conservation agencies" when preparing comprehensive conservation plans); FLPMA, 43 U.S.C. § 1701(a)(2) (2012) ("[T]he national interest will be best realized if the public lands and their resources are periodically and systematically inventoried and their present and future use is projected through a land use planning process coordinated with other Federal and State planning efforts.").

⁹⁷¹ For a review of these and other programs, see Vicky J. Meretsky et al., *A State-Based National Network for Effective Wildlife Conservation*, 62 *BIOSCIENCE* 970, 970–72 (2012) (describing collaborative conservation programs, including the Joint Ventures program and LCC network). See also NEPA, 42 U.S.C. § 4331(a) (2012) ("[I]t is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures . . . in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans."). See generally LANDSCAPE CONSERVATION COOPS., NETWORK STRATEGIC PLAN (2014), <https://perma.cc/4NGE-VU6W> (describing the strategic plan for the LCC network); *Joint Ventures Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/NGY8-AADQ> (last modified Nov. 12, 2015) (providing an overview of the Joint Ventures program); *State Wildlife Grant Program—Overview*, U.S. FISH & WILDLIFE SERV., <https://perma.cc/LKZ9-4QAT> (last updated July 20, 2016) (providing an overview of the State Wildlife Grant Program).

⁹⁷² 42 U.S.C. § 4331(a).

⁹⁷³ *Id.* § 4332(D)(iv).

impacts between federal and state agencies must be enumerated within the EIS.⁹⁷⁴ States may also obtain official cooperating agency status, which requires the lead NEPA agency to “[u]se the environmental analysis and proposals of cooperating agencies with jurisdiction by law or special expertise, to the maximum extent possible consistent with its responsibility as lead agency.”⁹⁷⁵ This provides state governments with much greater access to the federal decision-making processes than the general public enjoys.

One example of successful cooperation wrought by NEPA is the EIS process that was initiated following the *Wyoming v. United States* case about the National Elk Refuge.⁹⁷⁶ In the aftermath of that decision FWS and NPS (which manages neighboring Grand Teton National Park) embarked on a joint-EIS process to develop a plan to guide the management of bison and elk across that federal landscape.⁹⁷⁷ Because of the intergovernmental integration and cooperation made possible by that process, the state chose to incorporate some of the recommendations from the EIS in their own Bison Brucellosis Management Action Plan in 2008.⁹⁷⁸

In an even more focused attempt to encourage integrated management, the LCC program was developed in 2010 in an attempt to facilitate collaboration between all levels of government, including federal, state, local, and tribal governments, as well as interested nongovernmental organizations, in order to “tackle large-scale and long-term conservation challenges.”⁹⁷⁹ There are twenty-two LCCs in the network.⁹⁸⁰ Each is self-directed by a voluntary steering committee, though the whole enterprise is coordinated through FWS.⁹⁸¹ The goals of the LCC program are to develop “science-based information about the implications of climate change and other stressors . . . ; [d]evelop shared, landscape-level conservation objectives and . . . strategies . . . ; [f]acilitate [scientific exchange]; [m]onitor and evaluate the effectiveness of LCC . . . strategies . . . ; [and d]evelop . . . linkages” between LCCs.⁹⁸² A 2015 National Academy of Sciences review concluded that the LCC program provided a framework for achieving landscape-level cooperation and “recognized the LCCs’ ability to create opportunities for identifying common conservation goals and leveraging

⁹⁷⁴ *Id.*

⁹⁷⁵ 40 C.F.R. § 1501.6(2) (2016).

⁹⁷⁶ See *supra* notes 151–154 and accompanying text.

⁹⁷⁷ U.S. FISH & WILDLIFE SERV. & NAT’L PARK SERV., FINAL BISON AND ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT 3 (2007), <https://perma.cc/7VUM-BETP>.

⁹⁷⁸ WYO. GAME & FISH DEP’T, JACKSON BISON HERD (B101) BRUCELLOSIS MANAGEMENT ACTION PLAN 8 (2008), <https://perma.cc/293Y-WM6F>.

⁹⁷⁹ *Beyond Boundaries*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/RT6U-R5QN> (last visited Nov. 11, 2017); see Order No. 3289, Ken Salazar, Sec’y of the Interior, Addressing the Impacts of Climate Change on America’s Water, Land, and Other Natural and Cultural Resources 3 (Feb. 22, 2010), <https://perma.cc/T4WQ-LKGL>.

⁹⁸⁰ LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 20.

⁹⁸¹ *Id.*; *Organizational Structure*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/C49A-TNXU> (last visited Nov. 11, 2017); *Landscape Conservation Cooperative Staff*, LANDSCAPE CONSERVATION COOPERATIVE NETWORK, <https://perma.cc/E3PU-ZAGA> (last visited Nov. 11, 2017).

⁹⁸² LANDSCAPE CONSERVATION COOPS., *supra* note 971, at 3.

efforts of diverse partners at a much greater scale than any one entity could achieve alone.⁹⁸³

Unfortunately, simply because cooperative processes are in place—through NEPA and many other statutes—does not always ensure that the federal agencies apply them in a way designed to elicit true state and local government cooperation. Bryan and others document several instances where federal processes are merely used as hoops to jump through rather than opportunities for true collaboration.⁹⁸⁴ Federal agencies will need to improve internal culture and education to ensure existing opportunities for collaboration are as successful as possible.

Furthermore, even when state and local governments take advantage of opportunities to participate in federal processes, their intention is not always true cooperation. Bryan and others write:

From the local government perspective, a guarantee of early and meaningful involvement in the federal land planning process is an important factor in determining whether to participate at all. . . . On the federal side, agencies desire local government participants who are well-informed about the federal planning process, do not use the process for political grand-standing, and reciprocate by including federal planners in local land use planning.⁹⁸⁵

For instance, there has been a movement recently among local governments to try to use the coordination clauses in FLPMA and NFMA to force federal agencies to conform their actions to the wishes of local interests.⁹⁸⁶ However, this is not a reasonable interpretation of the statutes, as was demonstrated in Part III.B of this Article. Both laws temper the coordination clauses with additional language that emphasizes that even though coordination is a worthy goal, it cannot come at the expense of federal agencies meeting their statutory obligations.⁹⁸⁷ Local and state governments

⁹⁸³ Press Release, Landscape Conservation Coop. Network, National Academy of Sciences Releases Its Review of the Landscape Conservation Cooperatives (Dec. 3, 2015), <https://perma.cc/PQV9-UYJJ>.

⁹⁸⁴ See Michelle Bryan et al., *Cause for Rebellion? Examining How Federal Land Management Agencies & Local Governments Collaborate on Land Use Planning*, GEO. WASH. J. ENERGY & ENVTL. L., Spring 2015, at 1, 14–16. (“[C]ollaboration must be genuine and not perfunctory to truly be successful in the long term. . . .”).

⁹⁸⁵ *Id.* at 2.

⁹⁸⁶ Joshua Zaffos, *Counties Use a ‘Coordination’ Clause to Fight the Feds*, HIGH COUNTRY NEWS (May 11, 2015), <https://perma.cc/G7TP-62FR>.

⁹⁸⁷ See NFMA, 16 U.S.C. § 1604(e) (2012) (requiring land and resource management plans to comply with the agency’s multiple use and sustained yield mandate); FLPMA, 43 U.S.C. § 1712(c)(9) (2012) (“The Secretary shall . . . [coordinate] to the extent consistent with the laws governing the administration of the public lands. . . .”). Even the Public Lands Council, an interest group which represents cattle and sheep producers who hold public grazing permits, has recognized that this is a disingenuous reading:

Unfortunately, some local governments have taken the BLM consistency requirement to mean that by simply handing the BLM their land use plan, the BLM will be forced to comply with it. Not only is this incorrect, it undermines the ongoing negotiation and information sharing process that is at the core of coordination. Experienced

must work to improve their own use of federal processes and to get involved knowledgably with the intention of being good partners.

2. Opportunities to Cooperate at the State Level

If states are truly looking for meaningful cooperation between federal and state entities regarding wildlife management, then significant opportunities for federal input in state decision making must exist as well. State and local governments regulate the uses of private and state lands that are adjacent to federal lands, and that may cause spill-over effects onto federal lands.⁹⁸⁸ For example, the National Parks Conservation Association (NPCA) recently complained that the proposed Greater Yellowstone grizzly bear delisting plan “[f]ails to provide [NPS] a formal seat at the table to work with state agencies on the management of park bears that occasionally move beyond park borders.”⁹⁸⁹ Without formal mechanisms to promote and institutionalize intergovernmental cooperation, those issues will rarely be considered. Federal law, regulation, and policy encourage intergovernmental cooperation, but there does not appear to be a similar emphasis found in state law and regulation. Again, cooperation, to be effective, must be a two-way street.

For example, when it comes to local land use decisions that have obvious impacts on wildlife, there is rarely an opportunity for federal involvement in the decision making. One exception is Oregon, where “local governments are specifically instructed to collaborate with federal agencies in areas such as natural resources, estuaries, and coastal shorelands.”⁹⁹⁰ Oregon might serve as an example of how other states could modify laws and regulations to encourage such cooperation. “[W]estern states could do much to advance the issue of local-federal land use planning by simply noting, in nonadversarial language, the importance of that issue in their enabling legislation.”⁹⁹¹ For true cooperation to be successful, local, state, and federal governments must work as partners.⁹⁹² To that end, states should create similar opportunities for federal agencies to engage in state and local decision making.

coordinators recognize that the BLM has no obligation to adhere to any local plan or policy that is inconsistent with federal laws and regulations.

PUB. LANDS COUNCIL, A BEGINNER'S GUIDE TO COORDINATION 10 (2012), <https://perma.cc/YW3C-B3CE>; see *About PLC*, PUB. LANDS COUNCIL, <https://perma.cc/manage/create> (last visited Nov. 11, 2017).

⁹⁸⁸ See Bryan et al., *supra* note 984, at 1–5 (providing an overview of local and state land use planning).

⁹⁸⁹ Stephanie Adams, *Iconic Grizzlies Deserve a More Thoughtful Plan*, BOZEMAN DAILY CITRON (Oct. 15, 2016), <https://perma.cc/W6MN-6NGP>.

⁹⁹⁰ Bryan et al., *supra* note 984, at 4.

⁹⁹¹ *Id.* at 5.

⁹⁹² *Id.* at 2.

3. Cooperation Does Not Equal Federal Acquiescence

In none of the cooperation sections reviewed in Part III.B does the statute in question *require* the federal government to follow state preferences. And in all cases, the statutes do not *permit* the federal agency to relinquish its statutory obligations, even in the face of state dissent. Cooperation under these federal statutes is an opportunity for other levels of government to have privileged access to the decision-making process, to ensure that concerns are considered, and available data is exchanged.

Agencies should absolutely determine if it is possible to meet the needs of other governmental entities, but they cannot be expected to jettison their own statutory or constitutional obligations to reach that goal. For instance, in Alaska, where the state determined that the requirements of ANILCA conflicted with the state constitution, the resolution was that the state could not be forced to implement that statute.⁹⁹³ Likewise, if a federal agency determines that a state's request conflicts with its own legal mandates, it too must refuse to acquiesce to them.⁹⁹⁴ However, in the absence of legal conflicts, we encourage state and federal entities to seriously consider, and if possible accommodate, the interests of other governmental entities.

"[W]ildlife move across eco-regions . . . but management approaches change across arbitrary boundaries."⁹⁹⁵ It is crucial, therefore, that all levels of government cooperate and coordinate their efforts as much as is possible given the legal framework in which they operate. As the court in *Wyoming* stated: "Wildlife management policies affecting the interests of multiple sovereigns demand a high degree of intergovernmental cooperation."⁹⁹⁶ A structure for such cooperation is still largely absent from state processes, and while such a structure is already embedded in federal programs, federal agencies could still improve its implementation in order to better fulfill its intent.

V. CONCLUSION

This is a tumultuous time to be writing about public lands, federalism, and wildlife. Each has been impacted by the deep ideological fissures, polarization, and partisanship characterizing modern American politics. Of course, there has always been a tension between federal and state interests in the management of federal lands and resources. Some of the earliest and most precedential disputes in the field initially revolved around wildlife management and the respective powers of federal and state governments. Slowly, over time, the courts answered these questions and made clear the extensive powers of the federal government to manage public lands and the wildlife thereon. These include *Missouri v. Holland* (1920), *Hunt v. United States* (1928), *Kleppe v. New Mexico* (1976), *Hughes v. Oklahoma* (1979),

⁹⁹³ *McDowell*, 785 P.2d 1, 3, 9 (Alaska 1989).

⁹⁹⁴ See discussion *supra* Part III.A.4.

⁹⁹⁵ Bryan et al., *supra* note 984, at 2 (omission in original).

⁹⁹⁶ *Wyoming*, 279 F.3d 1214, 1218 (10th Cir. 2002).

and dozens of other cases at all levels of the judicial system. A consistent pattern of primary federal authority emerges from these cases, but even where the Supreme Court corrected itself in overturning *Geer v. Connecticut*, it did so carefully and constructively, finding in favor of the federal government and interstate commerce but also recognizing the "legitimate state concerns for conservation and protection of wild animals."⁹⁹⁷

A tension between federal and state interests is embedded in federal land and resources law. In each of the statutes reviewed in Part III.B, Congress required these lands and resources to be managed in the national interest and recognized that federal authority is superior to that of the states. At the same time, Congress appreciated the historical and important position of the states in managing wildlife, and these statutes accordingly provide them a meaningful role to play in federal lands planning and management.

While the law is clear, the politics of wildlife management is not. In 1981, George Coggins and Michael Ward reviewed the law of wildlife management on federal lands and concluded that the "jurisdictional imbroglio is more political than legal."⁹⁹⁸ Nothing has changed in this regard. As discussed in Part II, some state interests continue to insist on their "sovereign rights" to manage wildlife on federal lands, notwithstanding the decisions made by the courts and Congress over the years. On the other hand are federal land agencies that are often in self-denial about their responsibilities for wildlife management and conservation. Too often adopting an overly narrow view of their responsibilities, we found federal land agencies applying their authorities in an inconsistent fashion, to the dismay of the states and those outside interests willing to challenge them.

The most unfortunate consequence of the federal-state conflicts reviewed here is that they draw attention away from the practice of wildlife conservation. A more productive way to proceed in the future is by working more constructively within the carefully crafted legal framework provided by the U.S. Constitution and federal land law rather than against it, and by embracing the conservation obligations that are inherent in federal lands and wildlife trust management.

⁹⁹⁷ *Hughes*, 441 U.S. 322, 335-36 (1979), *overruling Geer*, 161 U.S. 519 (1896).

⁹⁹⁸ George Cameron Coggins & Michael E. Ward, *The Law of Wildlife Management on the Federal Public Lands*, 60 OR. L. REV. 59, 60, 84 (1981). Coggins and Ward note that, in creating the "delicate allocation of management jurisdiction" in federal land law, "Congress has been extremely solicitous of state sensibilities" and that "[s]ome members of Congress applaud . . . the federal self-denial." *Id.* at 75, 83-84. They conclude that "[t]he main legislative theory seems to be on the order of 'let's just muddle through as best we can and let the courts handle the hard cases.'" *Id.* at 84-85.

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PERSPECTIVE

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WILDLIFE HEALTH AND PUBLIC TRUST RESPONSIBILITIES FOR WILDLIFE RESOURCES

Daniel J. Decker,¹ Krysten Schuler,² Ann B. Forstchen,³ Margaret A. Wild,⁴ and William F. Siemer^{5,6}

¹ Human Dimensions Research Unit, Department of Natural Resources, 101 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

² Animal Health Diagnostic Center, Cornell University College of Veterinary Medicine, 240 Farrier Road, Ithaca, New York 14853, USA

³ Division of Habitat and Species Conservation, Florida Fish and Wildlife Conservation Commission, St. Petersburg, Florida 33701, USA

⁴ National Park Service, Wildlife Health Branch, Biological Resources Division, 1201 Oakridge Drive, Suite 200, Fort Collins, Colorado 80525, USA

⁵ Human Dimensions Research Unit, Department of Natural Resources, G18 Fernow Hall, Cornell University, Ithaca, New York 14853, USA

⁶ Corresponding author (email: wfs1@cornell.edu)

ABSTRACT: A significant development in wildlife management is the mounting concern of wildlife professionals and the public about wildlife health and diseases. Concurrently, the wildlife profession is reexamining implications of managing wildlife populations as a public trust and the concomitant obligation to ensure the quality (i.e., health) and sustainability of wildlife. It is an opportune time to emphasize the importance of wildlife health, specifically to advocate for comprehensive and consistent integration of wildlife health in wildlife management. We summarize application of public trust ideas in wildlife population management in the US. We argue that wildlife health is essential to fulfilling public trust administration responsibilities with respect to wildlife, due to the central responsibility of trustees for ensuring the well-being of wildlife species (i.e., the core resources of the trust). Because both health of wildlife and risk perceptions regarding threats posed by wildlife disease to humans and domestic animals are issues of growing concern, managing wildlife disease and risk communication vis-à-vis wildlife health is critical to wildlife trust administration. We conclude that wildlife health professionals play a critical role in protecting the wildlife trust and that current conditions provide opportunities for important contributions by wildlife health professionals in wildlife management.

Key words: Public trust, risk communication, wildlife health, wildlife trust administration.

INTRODUCTION

In light of the attention currently being paid to wildlife diseases, it seems evident that wildlife health would be a vitally important aspect of wildlife population management (Buttke et al. 2015), but this was not always the case. For most of the 20th century, disease normally was not considered to be significant in wildlife management because it was believed that disease did not have population-level effects. This conventional perspective has been nullified (Wobeser 2006), and mounting examples to the contrary have emerged: white-nose syndrome in bats, chytrid fungus in amphibians, chronic wasting disease in cervids, mycoplasmal conjunctivitis in songbirds, West Nile virus in corvids, viral hemorrhagic septicemia in fish, etc. Most wildlife managers now realize that wildlife

diseases demand specific consideration. This situation undoubtedly will continue given the trends in many of the main drivers of the disease surge: climate change, increasing human population encroachment into natural areas, global travel, and introduction of exotic animals, contaminants, and pathogens into native habitats in the US (Binder et al. 1999; Daszak and Cunningham 2000; Jones et al. 2008, 2013).

Although disease is a large component of wildlife health management activity, the concept of wildlife health we use herein is broader, consistent with that proposed by Craig Stephen (2014, pp. 429–430):

A modern definition of wildlife health should emphasize that 1) health is the result of interacting biologic, social, and environmental determinants that interact to affect capacity to cope with change; 2)

health cannot be measured solely by what is absent but rather by characteristics of the animals and their ecosystem that affect their vulnerability and resilience; and 3) wildlife health is not a biologic state but rather a dynamic social construct based on human expectations and knowledge.

This definition reflects a sociocultural-ecological-systems perspective increasingly embraced in contemporary wildlife resource^a management.

Here we describe the role of wildlife health management from the standpoint of fulfilling public trust responsibilities of government. We assert that condition or health of wildlife matters fundamentally in wildlife trust administration. Trust administration responsibilities arise from the legal understanding that wildlife are a valued public resource to be managed by government for the benefit of the general public. The public entrusts protection and management of wildlife resources to state and federal agencies (Organ et al. 2014). Wildlife health and mitigation of wildlife disease are part of the administration of this public trust and deserve attention from the responsible agencies (Decker et al. in press). Our underlying premise is that wildlife health professionals should be cognizant of the argument for wildlife health being essential in wildlife trust administration. It is an opportune time to articulate the role of wildlife health in wildlife management because of the salience of wildlife health and disease^b in the public mind and professional wildlife managers' conservation agenda.

We briefly summarize current thinking about public trust ideas for wildlife management in the US (e.g., Public Trust Doctrine). We then share a definition of wildlife

management that emphasizes a focus on benefits and consequences associated with human-wildlife coexistence (Riley et al. 2002; Decker et al. 2012a, 2013b, 2014). We assert that both health of wildlife and risk perceptions of humans regarding threats posed by wildlife disease to themselves, their families, and domestic animals are issues of growing concern for conservation. We argue that managing risk communication vis-à-vis wildlife health and wildlife disease is a critical aspect of administration of wildlife as a public trust resource. We conclude that current attention to public trust obligations of wildlife agencies provides an opportunity to communicate the state of health of wildlife and their ecosystems as an essential component of conservation and the pivotal role of wildlife health professionals in wildlife management.

MAJOR CONSIDERATIONS

Public trust thinking—The foundation of wildlife management

Society's expression of the fundamental value of natural resources such as wildlife is reflected in common law, referred to as the Public Trust Doctrine (Sax 1970). According to prevailing interpretations of this legal doctrine (e.g., Horner 2000; Batcheller et al. 2010), wildlife in the US are managed by state (primarily) and federal governments as public trust resources for the benefit of current and future generations (Organ and Batcheller 2009). State and federal laws further clarify trust responsibilities of government for wildlife resources (Musgrave and Stein 1993; Bean and Rowland 1997).

The wildlife management community (public and private practitioners, academics, and wildlife agencies) in the US has been examining what it means to manage wildlife as a public trust resource in the 21st century; agencies have been reaffirming their commitments and obligations (Batcheller et al. 2010; Decker et al. 2013a). The attention to public trust thinking (i.e., longstanding ideas about public ownership of natural resources that include but are broader than those normally articulated as the Public Trust Doctrine; Hare

^a The concept of *wildlife resources* includes habitat as well as the wildlife species using that habitat.

^b Although we emphasize wildlife health, we do not mean to imply that all aspects of disease are deleterious; the value of natural disease in population, multispecies, and ecosystems dynamics and the importance of disease in ecological and evolutionary processes have been well established (Vander Wal et al. 2014). Understanding and protecting these processes when natural are also a responsibility of wildlife management.

and Blossey 2014) is important during this time when transformation of state wildlife agencies from a focus on a narrow set of stakeholder interests to more inclusive public interests has been encouraged (Jacobson and Decker 2008; Jacobson et al. 2010; AFWA 2016). Public trust thinking can have a steadying effect as wildlife agencies deal with the uncertainties associated with change; that is, specific agency objectives and processes may be adjusted, but the higher-order purposes of conservation and deeper philosophy of the government-citizen relationship expressed in public trust thinking endure. Principles for governance of wildlife based on public trust thinking and norms of good governance have been proposed recently with the thought that these principles can guide agencies, their partners, specific stakeholders, and citizen beneficiaries in general to effect wildlife management consistent with public trust ideals (Decker et al. 2016).

Principles of trusteeship (e.g., Organ et al. 2014) and descriptions of the roles of various participants in the administration of public wildlife resources (Smith 2011) have emphasized that a responsibility of special concern to trust administrators is assurance of intergenerational fairness (i.e., keeping options open for future generations). Scott (1999) asserts that the Public Trust Doctrine obligates the present generation to regularly review current scientific knowledge in relation to threats to or enhancement of “natural capital” for future generations. We interpret this as the mandate to protect and enhance wildlife populations (including their health) and the complex environments in which they live.

Attention to the condition of the wildlife resources within the public wildlife trust was recently highlighted by Organ et al. (2014). They articulate three key functions that public wildlife managers fulfill under Public Trust Doctrine: sustaining trust assets, developing trust assets, and distributing trust benefits. For the first function, “sustaining trust assets—protective custody,” Organ et al. (2014, p. 411) assert the following:

At minimum, the core function of wildlife trust administration is protection of the

corpus of the trust (i.e., the wildlife resource). One reason for the centrality of this function is that in the absence of a resource of value, there is no need for a trust. Protection of the corpus in wildlife conservation does not simply involve being an attentive custodian of the trust for the current generation of citizens; an intergenerational responsibility in perpetuity is expected. Emerging from this situation, discussions about wildlife trust administration usually refer to applying the precautionary principle (Kriebel et al. 2001). As we have alluded to previously, functionally this results in risk aversion. This means risks need to be identified, better yet anticipated, so trust managers can mitigate negative effects to the extent possible and adjust and bound beneficiaries’ expectations of benefits they will receive.

In the context of wildlife health and disease management, this suggests that risk to the wildlife resource be minimized and protective measures taken even if some cause-and-effect relationships impacting health are not fully understood.

Wildlife management defined

The scope of wildlife management in the US has evolved with respect to the breadth of species managed, the diversity of stakeholder interests served, the enormity of the threats compared to the opportunities for conservation, and the magnitude of positive and negative impacts experienced by human communities interacting with wildlife. One contemporary definition of wildlife management reflects public trust thinking by adopting the position that wildlife management is motivated by society’s desire for valued outcomes or benefits that can be produced from managing public wildlife resources (Decker et al. 2012a). Expectations for such outcomes give rise to management typically aimed at 1) sustaining biodiversity and related ecological services, 2) providing renewable use and enjoyment of wildlife, and 3) minimizing negative consequences of human-

wildlife interactions on both humans and wildlife (Decker et al. in press).

Human experiences with wildlife arise from many kinds of interactions between people and wildlife and among people because of wildlife. Experiences with wildlife can be of many kinds (direct or vicarious), vary in intensity and duration, and occur across different scales (temporal, geospatial, jurisdictional) and at multiple levels (local, regional, statewide, multi-state, continental, etc.). Outcomes or effects of wildlife experiences can be positive or negative and may take many forms (e.g., economic benefits or costs, threats to or enhancement of human health and safety, ecological services provided by wildlife and their habitats, and physical, mental, and social benefits produced by recreational enjoyment of wildlife). From this perspective, wildlife management can be defined as the guidance of decision-making processes and implementation of practices that influence interactions between people, wildlife, and wildlife habitats, and among people about wildlife, to benefit wildlife and add value to people's lives (adapted from Decker et al. 2012a).

This definition of wildlife management is consistent with the Public Trust Doctrine, whereby wildlife management agencies are expected to deliver benefits for society, that is, to produce impacts valued by the public (Decker et al. 2014). Although tradeoffs producing winners and losers are often inevitable in wildlife management, in aggregate, management actions are expected to result in higher net positive outcomes for society than would occur in the absence of management intervention. Consequently, in practice this is operationalized as two broad categories of actions: those that create positive effects (e.g., improving health of wildlife populations) and those that reduce or eliminate negative effects (e.g., avoid anthropogenic disease transmission to unaffected populations of wildlife). Thus, wildlife managers attempt to enhance, regulate, or prohibit various experiences that people might have with wildlife for the purpose of influencing the nature and magnitude of positive and negative outcomes. Depending on the

need, management actions are aimed at individual wild animals, wildlife populations, wildlife habitats, domestic animals, and people. Accordingly, wildlife management programs often focus on protection or manipulation of wildlife populations and habitats, as well as on regulation of wildlife use (e.g., hunting, trapping) and other human-wildlife interactions (e.g., feeding or viewing wildlife). However, wildlife management is evolving to include a broader array of activities, including increasing efforts to improve wildlife health.

Wildlife health and disease management in a public trust context

Wildlife health and disease management is an important aspect of responsible public wildlife trust administration because wildlife disease and poor wildlife health can increase mortality and decrease reproduction, thereby diminishing wildlife managers' effectiveness in sustaining or restoring wildlife resources. When poor wildlife health impedes fulfillment of public trust responsibilities to current and future generations, wildlife managers typically address two challenges: 1) *health risks* posed to wildlife populations or humans and domestic animals and 2) *public perceptions of risks* posed to wildlife, humans, and domestic animals. Addressing public risk perceptions can be just as consequential for wildlife trust administration as addressing direct effects of disease on wildlife populations. For example, if people cease participation in wildlife-dependent recreation out of excessive concern about risks of contracting disease from wildlife, the benefits of the public wildlife resource are lessened. Even decisions about whether or not and how to manage wildlife risks are affected by risk perceptions. For example, conflict over management actions taken to manage risk of brucellosis transfer from bison (*Bison bison*) to livestock can be rooted in differences in risk perception between stakeholders (Bidwell 2009).

Management for wildlife health therefore contributes in at least two ways to wildlife resource management as a public trust activity: 1) preserving the quality and quantity

of the trust assets (wildlife resources) for future generations (keeping options open for future benefits) and 2) delivering benefits from trust management, including reduction of negative impacts associated with wildlife (perceived or real risk of disease transmission).

These elements of public trust administration are consistent with the core philosophy of animal health professionals. The philosophical connectivity of wildlife health to wildlife conservation is made explicit in the strategic plan of the American Association of Wildlife Veterinarians, which identifies objectives that include enhancing the contribution of veterinary medicine to the welfare of the wildlife resource, promoting animal management and preventative medicine as it relates to free-ranging species, and recognizing disease syndromes in their broadest sense as potentially influenced by habitat conditions (AAWV 2007). This ideology, encompassing the well-being of populations and communities, is in the tradition of “One Health” (Zinsstag et al. 2011) rather than the traditional role of providing individualized health care to domestic animals.

Many state and federal agencies, the entities primarily responsible for wildlife trust administration, have added wildlife health expertise to their staff. Most have access to wildlife veterinarians and have established relationships with veterinary diagnostic laboratories (Siemer et al. 2012). These agencies are incorporating wildlife health and disease more explicitly in their scope of effort. For example, the Florida Fish and Wildlife Conservation Commission (FWC) has a mission that reflects public trust thinking: “managing fish and wildlife resources for their long-term well-being and the benefit of people” (FWC 2016, p. 1). Some FWC activities include surveillance, detection, and monitoring of disease and other factors that impact wildlife health (e.g., water quality and quantity, habitat changes, harmful algal blooms), as well as an understanding of disease impacts on wildlife populations and potential subsequent impacts on ecosystem health and public health. The National Park Service, with its

mission to preserve natural and cultural resources unimpaired for current and future generations, approaches wildlife health differently through its Wildlife Health Program. The National Park Service does not specifically manage for the health of individual species but instead seeks to maintain healthy ecosystems (National Park Service 2006). Consistent with the future generational outlook of public trust administration, both of these wildlife health programs are concerned about the long-term impacts of introduced pathogens and nonnative species on native wildlife populations and ecosystems.

Managing wildlife health can be the most cost-effective method to prevent disease outbreaks, aligning with expectations for efficient use of funding for wildlife trust administration. Eradicating an already-invaded pathogen of wildlife is likely infeasible and extremely costly (Wobeser 2002; Horan and Fenichel 2007). For instance, multiple agencies in Wisconsin together spent over \$32 million during the first five years of the chronic wasting disease (CWD) outbreak in that state’s wild white-tailed deer (*Odocoileus virginianus*) herd with the Wisconsin Department of Natural Resources contributing 83% of these funds (Stuiber et al. 2006). The response to this single outbreak in an isolated portion of the state caused redirection of limited financial and personnel resources from other wildlife and environmental programs. Despite these efforts, CWD increased in prevalence and geographic distribution (WDNR 2016), and opposition to further CWD management grew (Vaske et al. 2004).

Broad recognition of wildlife health concerns and public expectations of wildlife management: Risk perception and communication

Growing concern about effects of wildlife health and disease in wildlife conservation is not limited to conservation insiders. Wildlife disease is a well-established category of concern in wildlife management (Riley et al. 2002) and has become more prevalent in studies of human-wildlife interactions. Generally, concern deepens as perceived risks to self, significant others, and domestic animals

heighten. Studies documenting such concern have been conducted with different kinds of stakeholders (e.g., hunters, farmers, urban residents) in a variety of disease transmission contexts (Dorn and Mertig 2005; Vaske et al. 2009; Vaske 2010).

Thus, wildlife disease presents two different, serious challenges to management of wildlife as public trust resources. The most obvious is the direct effect of diseases on wildlife populations. Disease outbreaks strain efforts to maintain the quality and sustainability of the basic trust assets: wildlife populations and habitats. The second challenge, the effects of risk perception among members of the public, may be less obvious. Social amplification of risk (Kasperson and Kasperson 1996) can occur as individuals, organizations, and government agencies communicate with the public about disease issues that affect livestock production and wildlife-related recreation or tourism (Bidwell 2009). Social amplification of risk, per se, is not a bad thing. In the event of a true risk, amplification (replication or expanding the range of the message) is important. Over-inflated risk perceptions, however, can lead to exaggerated public concerns and over-reaction and therefore have potential to interfere with wildlife trust administration.

Public perception of wildlife health is affected by first-hand observations and second-hand reports of wildlife condition. Observation of sick animals and massive die-offs sway public perception and often elicit a visceral response followed by increased public expectations of "it's the wildlife agency's responsibility to keep wildlife alive and healthy." In some cases, such as very small populations (e.g., endangered species or isolated populations), health concerns are of a genetic nature, with some of the manifestations of genetic problems quite visible to the public (e.g., the kinked tail of the Florida panther [*Puma concolor coryi*]; Hedrick 1995; Land and Lacy 2000).

Exaggerated risk perceptions about wildlife health and wildlife disease, especially when they involve zoonotic agents, can diminish public receipt of benefits of wildlife by decreasing enjoyment of wildlife presence in

the environment. If the public benefits of wildlife diminish, then essentially the value of the wildlife trust diminishes, which is antithetical to expectations of wildlife trust administration. Examples abound. Hunter reluctance to handle and consume deer in areas where CWD has been detected (Gigliotti 2004; Brown et al. 2006) could markedly reduce benefits derived from hunting, especially as prevalence of infected animals increases (Vaske 2010). A 2004 survey revealed that a majority of respondents from states with high incidence of reported cases of Lyme disease had reduced their use of wooded and grassy areas as a means to reduce their exposure to tick bites (Herrington 2004); parents restricting opportunities for their children to experience the outdoors because of perceived risks of wildlife-associated disease obviates benefits of wildlife inhabiting nearby natural areas and may reduce families' appreciation of such areas. Family concerns about exposure of beloved companion animals to Lyme disease or other wildlife-associated diseases may have similar effects. Concerns about spread of disease from wildlife to other domesticated animals, for example, farmer concerns about transmission of bovine tuberculosis from elk (*Cervus elaphus*) in a national park to adjacent livestock (Brook and McLachlan 2006), also augurs poorly for strong public support of wildlife conservation. Some wildlife professionals have speculated that the cumulative effect of risk perceptions could be lack of support for conservation (e.g., resistance to habitat preservation adjacent to human residential areas; intolerance of wildlife in human neighborhoods; opposition to restoration of species known to be associated with diseases of concern) and intolerance of wildlife (Decker et al. 2012b). These responses deplete the yield of current benefits from public wildlife resources and fundamentally threaten the sustainability of such resources, which in turn threatens options for future generations.

Communication challenges

When wildlife disease is considered a major risk by the public, and negative impacts

manifest as outlined earlier, wildlife managers will often find that the usual tools for influencing size and distribution of a wildlife population are inappropriate, insufficient, or unacceptable. Furthermore, misguided public calls for reducing negative impacts by depleting the wildlife resource may be contradictory to public trust administration obligations (e.g., to future generations). Often the response of wildlife management agencies to inflated risk perceptions among lay people has been to simply provide the public with more information. Such responses are based on a cognitive deficit (or knowledge gap) model (Hansen et al. 2003). A cognitive deficit approach assumes that giving people information about an issue will lead to increases in knowledge, leading to change in attitudes and beliefs, which in turn will motivate behavior changes desired by the communicator. Unfortunately, research and practical experience across a range of issues demonstrate that mere exposure to facts is unlikely to cause much societal change in beliefs, attitudes, and behaviors (Stern 1999; Kollmuss and Agyman 2002; Brown 2009). To be effective, risk communication strategies need to consider the dynamic system of social, psychological, and situational factors that can mediate attitude, belief, and behavior change (Hansen et al. 2003).

Moreover, communication about wildlife health and disease is difficult from the perspective of maintaining public support for wildlife conservation (Decker et al. 2010, 2011, 2012b; Evensen et al. 2012). For example, if people need to modify behaviors to reduce risk associated with wildlife disease, how do wildlife managers inform and motivate them in a way that results in protective behaviors but avoids public backlash against wildlife? It seems timely to be expanding wildlife health professionals' roles in educating and working with human health professionals on coordinated public communication, particularly when the message may be coming primarily from the public health arena.

The complicated nature of zoonotic and some nonzoonotic disease events in wildlife can make communicating with the public challenging (Rickard et al. 2013). These

situations require concise communication strategies and familiarity with effective social messaging, yet agency capacity for dealing with risk communication about wildlife diseases is limited (Siemer et al. 2012). Fortunately, communication researchers (e.g., Roh et al. 2015, Lu et al. 2016) recently have shown that carefully crafted messages regarding wildlife disease can increase conservation intent and avoid negative reaction to wildlife disease risk communication. Message testing may be required to accomplish this positive outcome, but the potential to obviate backlash against conservation of wildlife and their habitats argues strongly in favor of the investment. Therefore, effective risk communication is a valuable tool for discharging public trust responsibility and should be in the wildlife resource manager's toolkit.

CONCLUSIONS

Wildlife health professionals can play important, often pivotal, roles in wildlife management, conservation, and public health messaging concerning zoonotic diseases in wildlife. The confluence of several trends may together set the course for wildlife health considerations in wildlife management for decades to come. Those trends are 1) broadening concept of wildlife health to be more than absence of disease, 2) activism among wildlife health professionals to become more mainstream in wildlife management, 3) incidence of novel pathogens causing unprecedented mortality and threatening persistence of numerous wildlife species, 4) emergence of zoonotic disease originating in wildlife populations, 5) rising public expectations that wildlife management will include attention to wildlife-associated disease, 6) growing concern about decline in wildlife-focused/nature-based outdoor activity, and 7) revival of public trust thinking in state and federal wildlife management agencies.

Some things must change to take advantage of what wildlife health professionals can bring to public wildlife trust administration. For example, historically most wildlife health

activities were reactive rather than proactive. However, it is generally easier to prevent new diseases than control or eradicate existing ones. To protect wildlife assets effectively, we need to focus effort on avoiding potential health risks of all kinds rather than on mitigating them reactively (often at great expense and with poor results). Traditional human and domestic animal disease solutions, such as vaccination and biosecurity, are costly and often not practical for wildlife (Wobeser 2002). Attempts to control or eradicate disease through culling require careful analysis to ensure that the response is not more harmful to the wildlife resource than is the disease and thus contrary to public trust obligations. Conversely, redirecting energies to wildlife and ecosystem health and disease prevention is consistent with effective wildlife trust administration. Ironically, however, the exertions of wildlife health professionals to participate more fully in mainstream wildlife management have not emerged from a prevention perspective. They are fueled by wildlife conservationists' and public wildlife managers' concern about the increasing rate of zoonotic disease and their growing recognition that public perceptions of wildlife health and disease are adversely affecting people's behavior and creating expectations for management attention that may not be beneficial to wildlife or humans.

The paradigm shift from fixing wildlife disease to producing wildlife health is in an early stage. This change is occurring simultaneously with attentiveness of wildlife agencies to public trust principles (Decker et al. 2016), where preserving the integrity of the core assets of the wildlife trust and production of multiple benefits from it are imperatives. This confluence presents an opportunity for wildlife health professionals to provide expertise and guidance that will firmly embed wildlife health as a key component of sound wildlife trust administration and an imperative in wildlife management.

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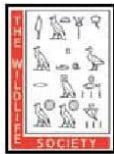
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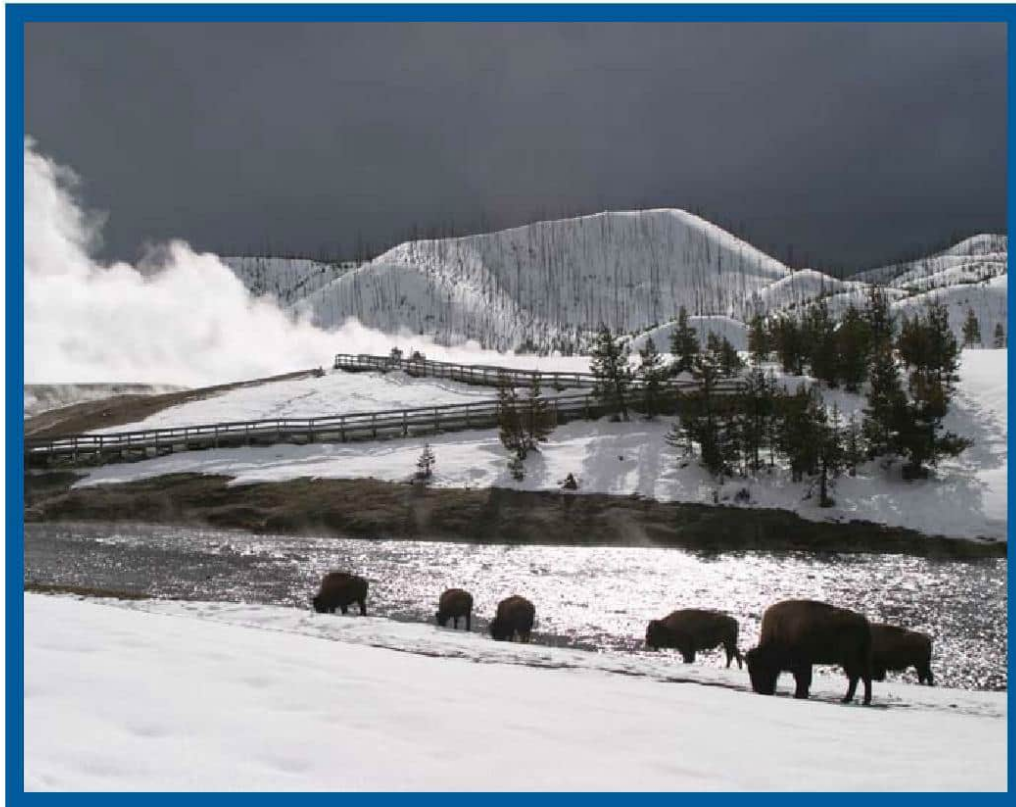
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Attachment 8



The Wildlife Society



The Public Trust Doctrine

Implications for Wildlife Management and
Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

Technical Review 10-01
September 2010

“Defenders of the short-sighted men who in their greed and selfishness will, if permitted, rob our country of half its charm by their reckless extermination of all useful and beautiful wild things sometimes seek to champion them by saying that “the game belongs to the people.” So it does; and not merely to the people now alive, but to the unborn people. The “greatest good for the greatest number” applies to the number within the womb of time, compared to which those now alive form but an insignificant fraction. Our duty to the whole, including the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose, and method.”

Theodore Roosevelt (1916)

Armed for a hunt, Theodore Roosevelt
makes ready to ride, circa 1900.



Credit: Underwood and Underwood/Library of Congress

The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada

Technical Review 10-01
September 2010

The Wildlife Society
Association of Fish and Wildlife Agencies
Western Association of Fish and Wildlife Agencies
Wildlife Management Institute

Technical Review Committee on the Public Trust Doctrine

Gordon R. Batcheller (Chair)

New York State Division of Fish, Wildlife
and Marine Resources
625 Broadway
Albany, NY 12233-4754

M. Carol Bamberg

General Counsel
Association of Fish and Wildlife Agencies
444 North Capitol Street, N.W.
Suite 725
Washington, D.C. 20001

Laura Bies

The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

Thomas Decker

Vermont Fish and Wildlife Department
103 South Main Street
Waterbury, VT 05671-0501

Steven Dyke

North Dakota Game and Fish Department
100 N. Bismarck Expressway
Bismarck, ND 58501-5095



The Wildlife Society
5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814

David Guynn

Department of Forestry and Natural Resources
260 Lehotsky Hall
Clemson University
Clemson, SC 29634-0317

Michael McEnroe

North Dakota Chapter of The Wildlife Society
7455 Brook Loop
Bismarck, ND 58503

Michael O'Brien

Nova Scotia Department of Natural Resources
136 Exhibition Street
Kentville, NS B4N 4E5

John F. Organ *

U.S. Fish and Wildlife Service
300 Westgate Center Drive
Hadley, MA 01035-9589

Shawn J. Riley

Department of Fisheries and Wildlife
2D Natural Resources Building
Michigan State University
East Lansing, MI 48824

Gary Roehm

18425 Lost Knife Circle #203
Gaithersburg, MD 20886

* The findings and conclusions in this article are those of the author and do not necessarily represent the views of the U.S. Fish and Wildlife Service.

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Front cover illustration: Bison roam the winter snows near Midway Geyser Basin in Yellowstone National Park

Cover photo courtesy of Stephen Hoerold/iStockphoto

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Foreword

Presidents of The Wildlife Society (TWS) occasionally appoint *ad hoc* committees to study and report on selected conservation issues. The reports ordinarily appear as technical reviews or position statements. Technical reviews present technical information and the views of the appointed committee members, but not necessarily the views of their employers.

This technical review focuses on the legal underpinnings and application of the Public Trust Doctrine as it pertains to wildlife management in the United States and Canada. The review was a collaborative effort by TWS, the Association of Fish and Wildlife Agencies (AFWA), the Western Association of Fish and Wildlife Agencies (WAFWA), and the Wildlife Management Institute (WMI).

Acknowledgments

In July 2006, the North Dakota Game and Fish Department hosted the annual meeting of the Western Association of Fish and Wildlife Agencies in Bismarck, North Dakota. The two-day plenary session, "Keeping the Public's Wildlife Public," focused on the Public Trust Doctrine and the implications for the North American Model of Wildlife Conservation. WAFWA subsequently adopted a resolution in 2006 agreeing to develop a strategic plan for strengthening the Public Trust Doctrine among member states and provinces, and to facilitate a comprehensive review of the status of the Doctrine in cooperation with AFWA, TWS, and WMI. In March 2007, a memorandum of understanding was signed by the cooperating entities to develop this technical review.

The Committee expresses its sincere appreciation and recognition to the North Dakota Game and Fish Department and WAFWA for serving as the catalyst to begin the work of evaluating the status of the Public Trust Doctrine in the U.S. and Canada. The Committee also expresses its gratitude to AFWA, TWS, and WMI for their support and encouragement. In particular, the Committee appreciates the legal resources provided by TWS and AFWA necessary to the completion of this technical review.

Meeting facilities and logistic support were kindly provided by Michigan State University, the U.S. Fish and Wildlife Service in Bismarck, and the North Dakota Game and Fish Department.

The Committee appreciates the support and constructive review by members of TWS Council, and particularly by members of the Technical Review subcommittee—John McDonald, Thomas Ryder, Bruce Thompson, and Don Yasuda—who provided oversight of the work of the Committee.

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SYNOPSIS

The Public Trust Doctrine (PTD), with its origin in Roman civil law, is an essential element of North American wildlife law. The Doctrine establishes a trustee relationship of government to hold and manage wildlife, fish, and waterways for the benefit of the resources and the public. Fundamental to the concept is the notion that natural resources are deemed universally important in the lives of people, and that the public should have an opportunity to access these resources for purposes that traditionally include fishing, hunting, trapping, and travel routes (e.g., the use of rivers for navigation and commerce).

The PTD is also recognized as an essential foundation of what has been termed the "North American Model of Wildlife Conservation" (the Model; Geist 1995). This model is viewed as an important construct of law, policy, program framework, and scientific investigation that has led to the protection, conservation, and restoration of wildlife populations in the U.S. and Canada (Geist *et al.* 2001). The underpinnings of the PTD and the future relevance and successful application of the Model may be at risk due to recent changes in society, government policies, and case law (Organ and Mahoney 2006).

Several significant threats have been identified that directly or indirectly erode or challenge the PTD in North America (e.g., Geist and Organ 2004). These threats undermine existing state, provincial, and federal laws, as well as governmental policies and programs. Moreover, they inhibit sound conservation practices for fish and wildlife resources. Approaches to wildlife conservation that for many decades have afforded protection and ensured the sustainability and conservation of wildlife populations are dependent on the legal underpinnings of the PTD. The degree and magnitude of the threats are not universal, though the following issues have been recognized as significant challenges: inappropriately claiming ownership of wildlife as private property; unregulated commercial sale of live wildlife; prohibitions on access to and use of wildlife; personal liability issues; and a value system oriented toward animal rights (Organ and

THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION

The North American Model of Wildlife Conservation has seven distinctive components (Geist *et al.*, 2001):

1. Wildlife as a public trust resource.
2. Elimination of markets for wildlife.
3. Allocation of wildlife by law.
4. Wildlife can only be killed for a legitimate purpose.
5. Wildlife is considered an international resource.
6. Science is the proper tool for discharge of wildlife policy.
7. Democracy of hunting.

Mahoney 2006, Organ and Batcheller 2009). These threats in various ways are potentially harmful to the long-standing tenet that wildlife is a public trust resource.

Concerns regarding these threats and their overall effects led to this technical review, which includes an assessment of the current status of state and provincial statutes and case law related to the PTD. This review examines the benefits of the PTD and also outlines the role of government agencies and their stakeholders in maintaining public trust resources and the rights, privileges, and benefits that the PTD bestows upon the public. Recommendations are set forth with the objective of enhancing the PTD. Securing the PTD is seen as a significant action relevant to the continued protection, conservation, and public use of wildlife resources in North America.

INTRODUCTION

Wildlife professionals have used the Model to describe the system of conservation and natural resource management that has developed over the past two centuries in the U.S. and Canada

(Geist 1995). The PTD—as it relates to water resources, submerged lands, and by extension to fish, wildlife, and other natural resources—provides the cornerstone upon which the highly successful Model was built.

In support of the Model, the North Dakota Chapter of TWS requested that TWS adopt the seven principles of the Model as a basis for guiding and providing input on wildlife management policy, work to enshrine the Model into international treaty law between Canada and the U.S., develop education and information strategies in support of the Model, and seek the support of other conservation organizations to pursue similar actions.

Following the 2006 WAFWA annual conference in North Dakota, a resolution was adopted to encourage the development of a strategic plan to strengthen application of the PTD among member states and provinces and to facilitate a legal analysis, in cooperation with AFWA, WMI, and TWS, of the current status of the Doctrine in member states and provinces.

In March 2007, TWS approved a position statement on the Model, as well as a proposal to prepare a technical review of the PTD in collaboration with WAFWA, AFWA, and WMI. The purpose of this technical review was to: (1) synthesize and interpret existing materials on the PTD as it relates to wildlife management and conservation; (2) review the status and scope of state and provincial legislation as it relates to the PTD; and, (3) identify components that should be included in state or provincial statute, state or provincial wildlife agency charter, or other authorizations and executive proclamations to ensure a legally defensible PTD. Questions that guided the technical review committee focused on legal “ownership” of wildlife, origins of state or provincial laws addressing issues of wildlife management and conservation, clarity of agency authority to manage wildlife, legal tenets that provide evidence the PTD is in place, variability among laws or protection among jurisdictions or among various wildlife species, and competing agency authorities (i.e., among state wildlife and agriculture departments, or between state and federal agencies).

AN OVERVIEW OF THE PUBLIC TRUST DOCTRINE

The Trust Defined and Why it Matters

Simply defined, a trust is a collection of assets committed or entrusted to one to be managed or cared for in the interest of another. The party to whom the trust assets are committed is commonly referred to as the trustee, whereas the party for whom the assets are being managed is referred to as the beneficiary of the trust. Accordingly, the PTD holds that publicly owned wildlife resources are entrusted to the government (as trustee of these resources) to be managed on behalf of the public, the beneficiaries. Consequently, governmental institutions do not own trust resources; rather, they are owned by the public and are entrusted in the care of government to be safeguarded for the public's long-term benefit.

The PTD has been described by some as the cornerstone of the Model (Geist *et al.* 2001, Geist and Organ 2004, and Prukop and Regan 2005). This viewpoint holds that the PTD establishes the core principles central to the Model—the notion that wildlife is a public resource, managed for the common good, and held in custodianship by a cadre of trained professionals who serve as trustees (Brulle 2000) and are held accountable by the beneficiaries, the public.

Alternative models have developed in other countries and are frequently based on privately owned fish, wildlife, and habitat managed for personal or corporate gain. In such cases, the general public may receive little or no apparent benefit from wildlife resources. A number of undesirable outcomes may result from a system of wildlife management not anchored on a PTD foundation including:

- (a) a diminished connection or indifference toward wildlife resources stemming from a disassociation with nature, which means wildlife may become irrelevant to the general public thereby reducing public support for conservation.
- (b) wildlife resources that are viewed as an artifact of the past, separated from modern life, to be seen and appreciated yet

FISHERIES AND THE PUBLIC TRUST DOCTRINE

Navigation, access to public water, and indeed the privilege to fish (*Martin v. Waddell*, 1842) have all been a part of the Public Trust Doctrine. Fisheries conservation and wildlife conservation are intertwined institutionally throughout North America. The technical review committee chose to focus on wildlife conservation and exclude specific reference to fisheries for a number of reasons:

- Fisheries conservation and wildlife conservation arose from different origins.
- Historically, wildlife conservation is largely attuned to restoration, while fisheries conservation is primarily attuned to propagation.
- Commercial harvest is integral to fisheries conservation, while its elimination has been a cornerstone of wildlife conservation.
- Institutionally, federal (U.S.) fisheries oversight is split between the Interior and Commerce Departments, while federal trust authority for wildlife is primarily contained within the Department of Interior.

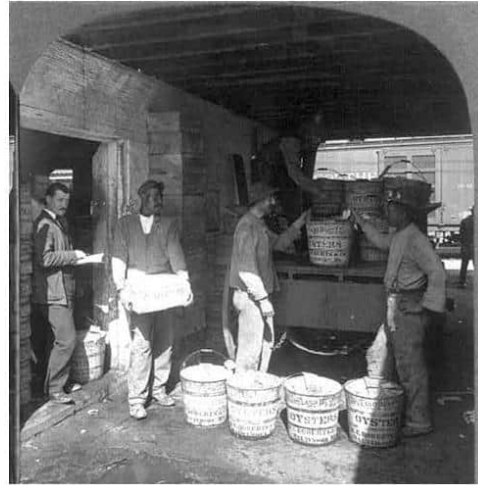
These and other factors cloud the linkage between wildlife and fisheries and the resultant 'noise' would hinder addressing public trust applications for both within the same document.

with a lack of understanding and acceptance of sustainable use, and

- (c) wildlife resources viewed as a liability or threat to be minimized to the extent possible rather than an asset to be conserved and managed for the benefit of current and future generations.

History of the Public Trust Doctrine

The roots of the PTD can be traced to early Greek and Roman civil law. By the sixth century Roman civil law, The Justinian Institutes,



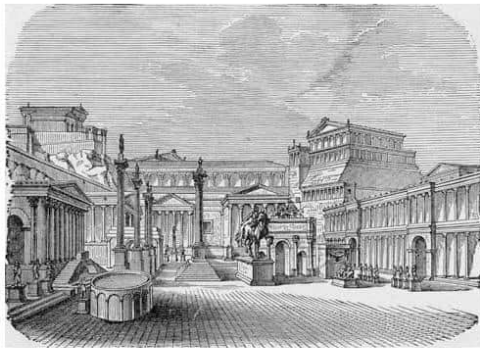
Credit: Library of Congress

Workers in Baltimore prepare oysters for shipping in 1905. Oyster harvest was at the center of the 1842 U.S. Supreme Court decision in *Martin v. Waddell*, which established a central tenet of the Public Trust Doctrine—public ownership of public resources.

the legal texts of the time, stated: *"By the law of nature these things are common to all mankind: the air, running water, the sea, and consequently the shores of the sea"* (Koehl 2006). Thus, common property could be owned by no one, affording all citizens access to it. Roman civil law was reaffirmed by the English Magna Carta in 1215 AD, and redefined by English common law in 1641. English disfavor for "ownerless property" caused them to express the Roman concept in a less assertive way by assigning ownership of common property to the king, not for his private use, but as a trustee of these properties for the benefit of the people (Horner 2000, Henquinet and Dobson 2006, Organ 2006). In earlier times this arrangement resulted in the dispersion of privileges taken or allowed by royalty (Blumm and Ritchie 2005). Regarding waters, this introduced the concept of common easements for public navigation and fishing with an understanding that the Crown owned submerged lands and shorelines in trust for the people (Henquinet and Dobson 2006).

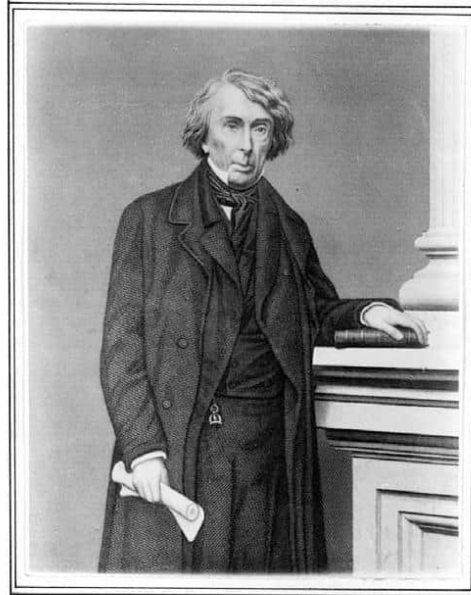
In the U.S., English common law was applied to the 13 colonies, and eventually redefined and assigned to the states by the courts following America's independence (Henquinet and Dobson 2006). In doing so the American courts abolished the English system of royal prerogatives and reestablished or restored and strengthened the full public trust concept (Blumm and Ritchie 2005). In 1821 the New Jersey Supreme Court, in deciding *Arnold v. Mundy*, corrected England's diversions from Roman civil law, which were only partially restored by the Magna Carta, by stating that the ownership of water and underlying lands transferred to New Jersey's citizens upon statehood, thus returning public trust law closer to the original Roman concept (Henquinet and Dobson 2006).

The first federal court decision affirming the PTD occurred in 1842 when the U.S. Supreme Court in *Martin v. Waddell* found that the public held a common right to fish in navigable and tidal waters of New Jersey because they and their underlying lands were owned by the state for the common use by the people. Subsequent court findings reaffirmed such public ownership including cases addressing the Equal Footings Doctrine (*Shively v. Bowlby* 1894), which described rights of states newly admitted into the Union (Henquinet and Dobson 2006).



Credit: Eon Images

The Roman Forum still stands as a symbol of the empire that established the broad principles of a "public trust" nearly two millennia ago, ensuring public access to common property.



Credit: Library of Congress

In 1842, U.S. Supreme Court Chief Justice Roger B. Taney cited the Magna Carta in *Martin v. Waddell*, the ruling that established the basis for the Public Trust Doctrine in the United States.

Traditional public interests protected by the PTD were navigation, commerce, and fishing. Subsequent court cases mainly addressed these three interests during the 20th Century. However, *Geer v. Connecticut* (1896) included "wild fowling" within a state's trustee responsibilities. Although partially reversed in *Hughes v. Oklahoma* (1979), state statutes and state courts continue to assert state trusteeship of wildlife. Recent case law has markedly expanded the application of the Doctrine. For example, the California Supreme Court in *Marks v. Whitney* (1971) opined that considering the changing needs of the public, a state is not bound to protect just the traditional interests addressed by early case law. Rather, that court found that ecological protection was a public interest afforded oversight by the Doctrine (Henquinet and Dobson 2006). Other recent case law has expanded the relevance of the Doctrine to

include such diverse topics as wildlife habitat; the open seas; environmental protection from development, pollution, and invasive species; recreational activities such as swimming, parks, and historic monuments; public health; bathing; flood prevention; aesthetic values such as open and scenic beauty; diversion of water for domestic, industrial, and agricultural purposes; religious and cultural interests; and even the electromagnetic spectrum (Cottriel 1996, Steneljem 2005, Henquinet and Dobson 2006, Organ 2006, and Simmons 2007).

In Canada, as a part of the British Commonwealth of which the reigning British monarch is the symbolic head of state, common or public property is referred to as assets of the "Crown." Most of the provincial statutes relating to public lands and wildlife describe ownership as "vested in His/Her Majesty in the right of the Province," which in modern times implies held in trust for the benefit of the people. For example, the Nova Scotia Wildlife Act states the following in reference to ownership of wildlife: "... the property in all wildlife situate within the Province, while in a state of nature, is hereby declared to be vested in Her Majesty in right of the Province and no person shall acquire any right or property therein otherwise than in accordance with this Act and the regulations."

In contrast, after review of the basis and application of the PTD in Canada, Henquinet and Dobson (2006) concluded that only a rudimentary PTD, related to the public's right to navigate and fish in navigable waters, existed in Canada. Those authors indicated few instances of case law in Canada that dealt with public trust issues, and virtually no articulation of a PTD.

The Yukon and Northwest Territories have incorporated the concept of public trust into statutes related to natural resources. Section 6 of the Northwest Territories Environmental Rights Act (1990) states the need "to protect the integrity, biological diversity, and productivity of the ecosystems in the Northwest Territories" and the "right to protect the environment and the public trust." The Environment Act of the Yukon, passed in 1991, recognizes that the government is a "trustee of the public trust to

protect the natural environment from actual or likely impairment." At this time the concept of public trust established in these statutes has not been tested in court.

Although Canadian courts obviously are not bound by U.S. case law, it may be considered in their deliberations. Koehl (2006) summarized recent favorable comments in regard to the principle of the PTD in a judgment by the Supreme Court of Canada. The reference to the PTD was particularly interesting in that previous Canadian references were in cases dealing with water resources and the cited case dealt with forests (damage caused by a fire negligently started by a logging company). The author suggested that discussion of the PTD in the case allowed for optimism that Canada's courts may expand application to other natural resources. Until there is a broader acceptance of a doctrinal concept in Canada similar to the PTD applied in the U.S., the actions of natural resource managers will be driven more by a desire to implement "wise policy" to protect the public interest than by a legal obligation imposed by a public trust.

Collectively, case law and history illustrate the flexibility of the PTD to meet the contemporary needs of the public. The PTD is neither inflexible nor static (Steneljem 2005). Flexibility is considered one of the strengths of the Doctrine, and is a prerequisite of its continued effectiveness for future generations (Annear 2002, Steneljem 2005, Henquinet and Dobson 2006). Sax (1970) described capability to respond to contemporary concerns as one of the three factors the PTD must achieve to remain effective. The other two factors he cited include the general public's understanding that it describes a legal right, and that it be enforceable against the government. For a more complete discussion of the history of the PTD, refer to Sax (1970), Cottriel (1996), Horner (2000), Grant (2001), Blumm and Ritchie (2005), Henquinet and Dobson (2006), Organ (2006), and Simmons (2007).

Relationship to the North American Model

Maintaining the elements of the PTD must be ensured to maintain the integrity of the Model



Credit: SUNY-ESF Archives / Franklin Moon Library

As governor of New York in 1928, Franklin Delano Roosevelt visits the New York College of Forestry, where a cadre of wildlife scientists gained training to protect forest resources for future generations.

(Geist and Organ 2004). Pioneer conservationists developed the model of conservation practiced on the North American continent during the 19th and early 20th centuries. This Model is globally and historically unique and thus far has demonstrated success in contributing to the conservation of wildlife in the U.S. and Canada. The Model evolved in response to the continental demise of once abundant wildlife resources due to unregulated economic markets that placed value only on harvested wildlife. It asserts that wildlife is a public resource, and therefore should be managed by governmental trustees as a public trust for the benefit of all people.

If the public's ownership of wildlife, or the value they place in it, is compromised, the Model could be jeopardized. Threats to the PTD (e.g., inappropriate or unsustainable commercialization and privatization of wildlife) exist and are increasing. If these threats prevail, the trust (wildlife populations or their habitats, water quantity and quality) could become mismanaged, or the public may lose access to these resources resulting in their value to the public becoming diminished. Lack of awareness and understanding of the benefits and responsibilities of the Doctrine leading to social and legal indifference by the trustee (government) or the

beneficiary (the public itself) could therefore create grave consequences for conservation.

Other threats (e.g., animal-rights values) claim a social or moral consciousness asserting that non-human animals are sentient (have the ability to suffer) and therefore, like humans, may not be owned. This concept is in direct conflict with the central premise of the PTD, which holds that wild animals are a publicly owned resource that can be renewably and sustainably managed.

The Role of the Trustee

Within a trust relationship the trustee manages assets that belong to others. The trustee therefore must be accountable to the beneficiaries of the trust. The PTD requires accountability of government for its actions in managing publicly owned assets. The public, as beneficiary of the trust, has legal rights to enforce accountability upon its government, typically through litigation and less commonly via elections or ballot initiatives.

These critical elements of the Doctrine were made clear in 1892 by the landmark U.S. Supreme Court case *Illinois Central Railroad Co. v. Illinois*. The court supported the Illinois Legislature in rescinding a prior grant by the

THE ROLE OF FEDERAL AGENCIES IN THE PUBLIC TRUST DOCTRINE

Federal natural resource agencies, including the U.S. Fish and Wildlife Service, National Park Service, U.S. Forest Service, Bureau of Land Management, Canadian Wildlife Service, Parks Canada, and others have public trust roles and responsibilities. The U.S. Constitution provides for the federal government to act as trustee when wildlife interests come under the purview of any of three clauses: the Property Clause, the Commerce Clause, or the Supremacy Clause (Bean and Rowland 1997). The Migratory Bird Treaty Act and Endangered Species Act are grounded in the Supremacy Clause (federal treaty-making power), and the Lacey Act is grounded in the Commerce Clause. However, the charge to this technical review committee was to assess the adequacy and variability of state- and provincial-based legal authorities and to develop recommendations for strengthening the PTD at this level. Therefore, we do not address federal implications in this paper.

state to the railroad of submerged land in Lake Michigan along virtually the entire shoreline of Chicago. The court, in acknowledging the public ownership of submerged lands in navigable waters and the state's role in holding these lands in trust for the public, found that the state was not empowered to relinquish the trust's assets. Such a grant would have substantially impaired the public's rights and exceeded the state's authority as trustee of the land (Sax 1970, Horner 2000, Henquinet and Dobson 2006, Simmons 2007).

This important case had several meaningful contributions to the development of the PTD. It expanded the application of the Doctrine to navigable waters not influenced by tides, and it clearly defined the role and responsibility of the governmental trustee. The court found the state could no more abdicate its trust over property than it could its police powers in the administration of government and the preservation of the peace (Sax 1970, Horner 2000, Stenehjem 2005).

The Role of the Beneficiaries

The public is the beneficiary of the trust for whom assets are managed. Trustee accountability for those assets is necessary for the PTD to be effective, and will be best served with an informed and engaged public. Public input into decision-making processes will help assure trustee understanding of and responsiveness to contemporary needs, as well as public understanding of competing demands on trust resources. Courts in California, Connecticut, Indiana, and Minnesota have explicitly granted the public legal standing under the PTD, albeit without explicitly referencing wildlife resources. (Case law that addresses wildlife in the context of the PTD are summarized beginning on page 21.)

THREATS TO THE PUBLIC TRUST DOCTRINE

Privatization and commercialization of wildlife

There is widespread and frequent use of the terms "privatization" and "commercialization" when discussing fish and wildlife resources. They often mean distinctly different things to some people, whereas others have difficulty distinguishing the difference among the two. Therefore, it is helpful to offer an important distinction to help frame this discussion.

In some states and provinces it is lawful to own domesticated native or exotic animals whose ancestry is of a recent wild origin (e.g., game farms that propagate elk, white-tailed deer, upland game birds, falconry, alligator farms, and fur farms). Management practices that characterize these operations include genetic husbandry (e.g., raising game species with "trophy" antlers and the sale of genetic material to game farms), marketing meat and parts (e.g., antlers), and hunts within fenced enclosures. The legal status of captive animals held under these conditions varies among state and provincial agencies, including whether they remain "trust resources" or private property. This raises an important legal question: Is a wild animal enclosed within a large fenced area and ostensibly "free roaming" the property of the private landowner or part of the public trust? Is there a distinction between the status of a wild animal

that happens to be enclosed by a fence, and an animal deliberately placed within an enclosure? These are central legal issues associated with the PTD and wildlife conservation in North America, but they have not yet been conclusively addressed in case law.

Although the captive wildlife industry is regulated to varying degrees by state agricultural or wildlife agencies, there are several potential problems, including the transmission of diseases to free-ranging populations (Lanka *et al.* 1990; Demarais *et al.* 2002). Some states now require double-fencing or other assurances that captive animals may not escape to the wild, but a uniform approach has not been adopted. Captive operations can have problems with animals escaping into the wild, wild animals entering private enclosures, or both (Fischer and Davidson 2005). This lack of separation among captive and wild individuals has serious negative ramifications to the general health and well-being of wild populations, particularly with respect to maintaining genetic purity and spreading disease (Geist 1995; Demarais *et al.* 2002).

In those instances where wild animals are found and reported inside high fenced op-

erations, the animal is frequently euthanized as most regulatory entities will not allow its release to the wild because of disease concerns. In some instances the operator may release the animal back into the wild without reporting it to avoid attention by the regulating agency, or may simply illegally incorporate the animal into its business venture. In each of these instances, the wildlife ceases to belong to the public. With the confirmation of chronic wasting disease in 16 states and two provinces (Chronic Wasting Disease Alliance 2009), many wildlife jurisdictions require or advocate for the use of double perimeter fences to avoid nose to nose contact among wild ungulate populations on the outside and captive populations inside. Where states or provinces assign primary regulatory jurisdiction to their agricultural agencies, their respective wildlife agencies may not have sufficient authority to initiate safeguards and protective measures on the captive wildlife industry to protect free-ranging wildlife maintained in the public trust (Lien 2002).

Generally, commercialization places monetary value on wildlife and their parts, and as a result provides an incentive or reward for their use. Placing monetary value on dead or live wildlife has the potential to threaten the public ownership of wildlife resources by raising the incentive for privatization. This may apply to the illegal trafficking of live wildlife by collectors (e.g., the exotic pet trade), or the illegal sale of wildlife parts (e.g., migratory bird feathers, sturgeon roe). Illegal taking of wildlife is a theft from the public trust thus violating the PTD. The Lacey Act (1900) was adopted by the U.S. Congress in response to the threat to wildlife populations caused by commercial exploitation—primarily the millinery trade's unregulated and unsustainable demand for the feathers of herons, egrets, and other water birds.

It is widely recognized that the unregulated commercial use of wildlife is often unsustainable. However, in most jurisdictions some commercialization of wildlife is allowed under highly regulated legal regimes. In North America it is generally accepted that wildlife belongs to the public until it is lawfully taken, at which point it becomes the private property of the tak-



Credit: North Dakota Game and Fish Department

A fenced enclosure on a game farm near Turtle Lake, North Dakota prevents white-tailed deer from leaving the owner's property. Keeping deer and other wildlife captive can lead to disease transmission and, on a broader scale, threatens a key tenet of the Public Trust Doctrine: that wildlife should not be privately owned and should be accessible to all.



Credit New York State Department of Environmental Conservation

Fur traders scout pelts at an auction in Herkimer County, New York—part of the legal market for wildlife products. Lawful trapping, guided by oversight from wildlife professionals, is consistent with the North American Model of Wildlife Conservation.

er. “Lawfully taken” is a critical distinction in the legal analysis, as are other regulations that may apply. Once deemed private property, the disposal of dead wildlife and its parts is subject to the regulation of the appropriate jurisdiction. For example, it is common for the non-edible parts of lawfully taken, non-migratory wildlife species to be legally sold, traded, or bartered. The sale of heads, hides, horns, or antlers of lawfully taken wildlife is legal in many states and provinces. Trapping is an important wildlife management tool in most of North America, and the pelts of furbearing animals lawfully taken during regulated trapping seasons are an important form of legal commerce. However, most jurisdictions do not allow the sale of legally taken live game species or edible portions of legally taken game. There is also growing recognition that some taxa, such as reptiles, are heavily exploited for commercial reasons and additional regulation of commercial activities is needed.

In some cases there may be little distinction between privatization of wildlife and its commercialization. Commerce in captive (privately owned) wildlife species may threaten the public trust in several ways. The markets created from this industry may provide incentive to some people to illegally exploit those markets with publicly owned wildlife or their parts. These

incentives can promote unethical practices or even illegal harvest of wildlife to supply the markets created by the commerce associated with privately-owned wildlife. Moreover, the commercialization and privatization of wildlife contradicts the very premise of a “public” resource and would render the PTD and the Model moot.

Access to Wildlife

Although there are differences among states and provinces, the public is having an increasingly difficult time gaining entry to hunt or trap on private property or reach tracts of public land (Responsive Management/National Shooting Sports Foundation 2008). Recently the sporting press recognized the issue of private land access to public land, and in one article suggested purchasing “gateway properties” that border public land to gain nearly “exclusive access” (Howlett 2008). The amounts of fees being paid vary widely and depend on the type and duration of the hunt. This is particularly disconcerting because a large segment of the hunting public either cannot afford additional user fees or is philosophically opposed to paying a trespass or access fee to hunt (Duda *et al.* 1998). As a result, some members of the public unable or unwilling to pay access or trespass fees have become solely dependent on public lands. Others may stop hunting due to the frustration of not having a place to hunt or because of overcrowding on public land. If the hunting public becomes disenchanted with either the quality of the hunt or having to pay too high a price to hunt, they may quit hunting (Responsive Management/National Shooting Sports Foundation 2008), and consequently could also stop supporting wildlife conservation efforts. Over time, access for other uses of wildlife (e.g., observation) may also be compromised. Collectively and cumulatively, the loss of access to wildlife for a diversity of uses is likely to erode support for public custodianship of wildlife resources, a central premise of the PTD.

The relationship between public access and private property can extend to public lands where private ownership patterns may legally preclude

access to public lands. "Gateway properties" that occur at the boundaries of public lands can legally preclude access to public lands. In some cases these private properties may entirely surround public lands. Checkerboard land patterns of alternating sections (square miles) of public and private lands may legally limit access to very large expanses of public land. Public access agreements to these areas, negotiated between the private landowner and state or federal fish and wildlife agencies, are often the most effective means to provide public access to wildlife occurring on these lands. Concern by private landowners for mistreatment of their private lands by the public and the cost associated with acceptable access agreements may provide barriers to public access that are often unsolvable. Private ownership patterns that reduce or eliminate reasonable access to public lands may also render wildlife inaccessible to a majority of people.

In several states, guides and outfitters are increasingly using bait to lure big game animals from public land (e.g., national wildlife refuges, national grasslands, national parks, and state wildlife management areas) to private lands managed for fee hunting. This practice redistributes or stockpiles public wildlife to areas that are not open to public hunting or inaccessible to hunters not willing to pay to hunt on private land. In an impact similar to fencing, these actions jeopardize the democracy of hunting, a central tenet to the Model (for a review of these issues see Dunkley and Cattet 2003; Ermer et al. 2005).

Public Indifference

The strength of the PTD is the value that the public assigns to the trust's assets. If the public grows indifferent to wildlife, or worse, adopts a negative perspective, the Doctrine will have greatly diminished value. Historically, this has tended to occur in situations where wildlife resources were owned by an aristocracy and public access was prohibited (Manning 1993). In this context, where the general public had no ownership of wildlife or a right to make use of it, citizens were indifferent to its protection. In extreme cases they coveted wildlife as

just another possession of the privileged class, resulting in widespread poaching (Geist 1985). Changing perspectives may occur to some degree as the general public finds wildlife of little value to them if they are precluded from its use by high cost or lack of access. Should the management of the trust's assets disenfranchise people, their interest in conserving these assets may wane. As they sense less personal ownership or value, less utility or inequitable access to their assets, their proprietorship may decrease.

Public antipathy towards wildlife may increase when people experience property damage (e.g., deer-vehicle collisions, crop depredation) or the competition it creates for their livelihood (e.g., wildlife depredations on crops or forage). Still others may fear wildlife as a danger to their personal safety (e.g., hazards from bears, wolves, cougars, or coyotes). Another component leading to negative opinions toward wildlife and trustees is opportunity for participation (or lack thereof) in wildlife management decisions. When those decisions are viewed as being made mostly by agencies in consultation with limited constituents (e.g., farmers and hunters), the remainder of the stakeholders (usually a majority) may feel disenfranchised. If the beneficiaries of the trust cease to value the trust assets, the trust becomes vulnerable to those who wish to take it from



Credit: Eric Nuse/Vermont Fish and Wildlife Department

For these hunters in Vermont, and for many outdoor enthusiasts, a successful hunt is one way to feel a sense of value about wildlife and other public trust resources.

them. Indifference by the public for their wildlife resources makes the trust's assets valueless, eliminating the need for trusteeship. Therefore, the trustee has an important role in ensuring that the beneficiaries' interest in the trust's assets is maintained.

Lack of Understanding of Natural Systems

Dissociation of people from nature has been identified as a growing trend with potentially profound implications for how future generations of North Americans may value wildlife (Louv 2008; Shepard 1982). For example, the estimated number of "avid wildlife observers" declined 16 percent between 1991 and 2006 (11,927,000 vs. 9,970,000 avid participants, respectively) and they are growing older (USFWS 2009). Similarly, the number of "wildlife watchers" also declined over this same period, dropping from 76,111,000 in 1991 to 71,132,000 in 2006, a 7 percent decline.

The extent to which these trends may mitigate the growing dissociation from nature is unknown. We know little about the attitudes, values, and knowledge of wildlife-watchers (avid or casual), or to what extent they are aware of their rights under the public trust and whether trustee actions fulfill their interests. Of potential risk is a waning of interest in and awareness of local populations of wildlife to the point where advocacy for their conservation and protection of their habitats is minimal. Participation in consumptive activities may continue to decline, and opposition to those activities may increase, threatening the primary funding base for management of all trust wildlife, not just game species (Organ and Fritzell 2000). In addition to threats to funding, foundational elements of the public trust could be threatened with increasing social antipathy toward consumptive uses of wildlife. Sax (1970) stressed that a fundamental responsibility of trustees is to maintain trust resources for particular uses, including traditional uses and natural uses peculiar to a resource. Harvest (i.e., angling, hunting, trapping) has been suggested as an example of a traditional and natural use (Organ and Batcheller 2009).

Interagency Disputes over Jurisdiction

Conflicting missions and values between different state agencies may complicate the conservation and management of wildlife, and consequently threaten the fulfillment of public trust obligations. Legislative mandates that transfer a portion of wildlife management responsibilities (e.g., predator and other wildlife conflict management, game and fur farming, wildlife disease management, and human health protection) from state/provincial wildlife agencies to the state/provincial/federal agricultural, health or other departments or municipal governments may threaten the PTD depending on how these agencies manage the public trust resources. For example, predators managed solely by a state agricultural agency to reduce damage to livestock may not have the necessary conservation protections afforded with management by a fish and wildlife agency charged with providing conservation benefits to a broad array of stakeholders.

In 1996, Colorado enacted a law defining "depredating animal" and giving the Colorado Department of Agriculture "exclusive jurisdiction over the control of depredating animals," including game species, for the express purpose of reducing economic losses to agriculture. However, under existing statutes, the Colorado Division continues to be liable for damage claims resulting from damage caused by wildlife. Moreover, an agricultural agency may not value scientifically-based management of these resources if the sole focus is on the protection of agricultural interests. In situations where certain wildlife management responsibilities have been fully or partially legislatively re-assigned, the resulting management may not be in the best interest of the beneficiaries, or may advantage a particular segment to the detriment of the greater public trust. In such situations, the Doctrine may be compromised.

Animal Rights

Animal rights is a philosophical movement, with specific views on the relationship of humans to other forms of animal life. A basic tenet

of animal rights philosophy is that animals, including wildlife, are sentient and therefore should not be viewed as property. According to Gary L. Francione (Francione 1996), "...animal rights theory is not 'utopian'; it contains a nascent blueprint for the incremental eradication of the property status of animals." Public trust law is based on the premise that certain things are public property (Sax 1970). If the animal rights philosophy was to become law (whether adopted by legislative bodies or by referenda), wildlife would no longer be property, and would therefore fall out of the public trust.

CURRENT STATUS OF THE PUBLIC TRUST DOCTRINE IN STATE AND PROVINCIAL LAW

An analysis of each jurisdiction's statutory and constitutional law provides a measure of the strength of the PTD in the U.S. and Canada. The following parameters were evaluated to provide an assessment of the status of the PTD in North America:

1. **Inclusive definition of fish and wildlife.** Does the jurisdiction have a clear and inclusive definition of fish and wildlife that provides for adequate identification and protection of the trust resources? Inclusiveness means that the definition should address the status of vertebrates and invertebrates living in a wild state and in captivity, and address all life stages of those species.
2. **Clear statement of public ownership of wildlife.** Is it clear that fish and wildlife are owned by the public or by the people of the state or province, or in some cases by the state or province itself? This statement of ownership should include all fish and wildlife in the jurisdiction; resident or migratory, native or introduced. Ideally this statement will make clear that the governments manage fish and wildlife in trust for the people.
3. **A clear delegation of management responsibility to the trustees for the beneficiaries.** Is the responsibility of the trustees to manage fish and wildlife for the

RULES AND REGULATIONS NOT ANALYZED

Our review of the status of the Public Trust Doctrine in the United States relied on a review of state constitutions, statutory law, and case laws. Administrative rules and regulations were not included. Rules and regulations are promulgated by agencies, under statutory authority. While they have the force of law, rules and regulations are more likely to change frequently and thus are not an ideal vehicle for jurisdictions to use to codify the PTD. Because of this, and also due to the chance that any review of rules and regulations would be outdated before it could be published, our review of the current status of the PTD of the states and provinces did not include administrative rules and regulations.

public clearly and completely delegated to one or more governmental agencies, or to an individual within an agency, with the legal authority to manage fish and wildlife in the jurisdiction for the benefit of the public?

4. **A mission and purpose of the trustees that serves the interest of the beneficiaries.** The mission and purpose of the agency must serve the interests of all of the beneficiaries. The trustee cannot manage trust assets in an inequitable manner nor can it gift assets for private benefit. For example, if a public asset such as predators were assigned to a state or provincial agency as trustee, and the agency's role is described as managing predator populations in a self-sustaining manner for the benefit of future generations, the purpose of the PTD would be served. On the contrary, the purpose of the PTD would not be served if the purpose of the agency is described solely as preventing economic impact to agricultural producers.
5. **Accountability for the trustees' actions, decisions, and policies.** There should be a clear mechanism to evaluate the performance of trustees, and for public beneficiaries to hold them accountable for their actions. The actions of the trustees are

Criteria	States					Provinces				
	Constitution		Statute		Not Found	Constitution		Statute		Not Found
	+	-	+	-		+	-	+	-	
Inclusive definition of wildlife	0	0	38	10	2	0	0	13	0	0
Clear statement of public ownership of wildlife	1	0	38	3	10	0	0	7	0	6
Clear delegation of management responsibility	2	0	48	0	0	0	0	13	0	0
Mission and purpose appropriate to PTD	2	0	44	4	0	0	0	7	0	6
Accountability of trustees	2	1	38	11	0	0	0	13	0	0

Table 1: Number of States or Provinces meeting Public Trust Doctrine criteria through constitutional or statutory language (entities where criteria are addressed in both documents are counted twice). **Language is rated either satisfactory (+) or deficient (-).**

transparent and clearly described, thereby facilitating evaluation and accounting. Examples of accountability mechanisms include requirements for public participation and the full disclosure of accomplishments and failures.

Each jurisdiction's wildlife legislation and its constitutional provisions were examined with these five factors in mind to determine whether or not wildlife had been recognized as a public trust resource in the state or province. Each state and province's legislative and constitutional provisions were evaluated using the five criteria (see Table 1).

Jurisdictional case laws and their inclusion of wildlife are another component of determining the strength of the PTD. In addition to the summary of case law that follows, a table was developed to better distill how wildlife, and the PTD in general, have been treated in each state (see Table 2).

In Canada the PTD has not taken root in statutory or case law on the same level as in the

U.S. Although each province has adopted an inclusive definition of wildlife, not every province has created a clear statement of public ownership of wildlife. Seven of the provinces do have language that vests some type of public ownership over wildlife. As described in the following summary of PTD case law, Canada has almost no case law dealing with the PTD, therefore the provinces were not included in the case law analysis.

Findings: Public Trust Doctrine and Wildlife Legal Summary

In the U.S., the PTD in its traditional form is firmly rooted in statutory and case law. The PTD has traditionally been used to protect the public's right to use navigable waterways and to protect each jurisdiction's sovereign ownership of those waterways to hold in trust for the public's use. In recent times, a movement has taken place in both statutory and case law to extend the PTD to other natural resources. Some of these resources include beaches, parks, and

Criteria	Yes	No	Not Treated
PTD Recognized as valid legal doctrine	41	1	8
PTD discussed in relation to wildlife	15	3	32
PTD extended to resources other than navigable waterways	21	6	23
Court grants standing under PTD	4	6	40

Table 2: Number of States addressing the Public Trust Doctrine in State case law.

wildlife habitat areas apart from wildlife itself. Case law has been slow to recognize extension of the Doctrine, whereas statutory law has quickly evolved to place more natural resources within the realm of PTD protection.

Few states have case law recognizing wildlife as a public trust resource. Many states and provinces have already adopted statutes that either explicitly or implicitly confer upon wildlife status as a public trust resource. Indeed, bringing wildlife into the PTD through statutory measures appears to be the best way to accomplish the goal of extending the Doctrine in this area.

State Statutes

State statutory law is the main legal vehicle for giving public trust status to wildlife. In many states, the statutory provisions do this in an indirect manner through implicit trust language. For example, New Hampshire's statute states that: "It shall be the policy of the state to maintain and manage [wildlife] resources for future generations" (N.H. Rev. Stat. §212-B:2). While not a direct statement identifying wildlife as a trust resource, the language definitely has the aim of preserving wildlife for the public interest. Similarly, North Carolina's statute reads: "The enjoyment of the wildlife resources of the State belongs to all of the people of the state" (N.C. Gen. Stat. §113-133.1).

Georgia has strong statutory language, explicitly granting wildlife public trust resource status. The statute provides that: "Wildlife is held in trust by the state for the benefit of its citizens and shall not be reduced to private ownership except as specifically provided for in this title" (Ga. Code §27-1-3). Ohio and West Virginia have similar statutes, with Ohio holding title to all wild animals "in trust for the benefit of all the people" (Ohio Rev. Code §1531.02), and West Virginia holding title to all wild animals "as trustee for the people" (W. Va. Code §20-2-3). These three states provide clear statutory language that identifies wildlife as a public trust resource.

Kentucky has broad language, both in protection of wildlife and in furtherance of the public interest. The statute provides that state policy is "to protect and conserve the wildlife of the Commonwealth to insure a permanent and continued supply of the wildlife resources of this state for the purpose of furnishing sport and recreation for the present and future residents of this state" (Key. Rev. Stat. §150.015). This language serves the dual purpose of protecting wildlife while coincidentally insuring that the public will still enjoy the right to engage in activities such as hunting and fishing.

As of early 2010, 33 states have adopted the Wildlife Violator Compact, which includes in Sec. 11: "The participating states find that wildlife resources are managed in trust by the respective states for the benefit of all their residents and visitors." This language implies the existence of the PTD in those states, which is important because many states that did not previously have strong implicit or explicit trust language in their statutes have adopted the Compact. (Eight other states are currently considering adoption of the Compact.)

Clear "ownership" language pertaining to wildlife is important to firmly establish wildlife as a public trust resource. Forty-one states currently claim some type of ownership of their wildlife. The language varies between claiming ownership by the state and ownership by the people of the state. While the distinction may seem superfluous because of our states' republican form of government, a statute that places ownership in the "people" is a stronger indication that wildlife is a public trust resource. An example is North Carolina: "The marine and estuarine and wildlife resources of the State belong to the people of the State as a whole...The enjoyment of the wildlife resources of the State belongs to all of the people of the State" (N.C. Gen. Stat. §113-133.1). This type of language better imbues the purpose of confirming wildlife to be a public trust resource rather than language that merely states, for example, that: "All wildlife found in this state is the property of the state." Language clearly placing ownership of wildlife in the people residing in a state is important because of the

need to establish standing to enforce the PTD in individuals, rather than state governmental agencies.

Case Law

Nearly every state recognizes some form of the PTD in its common (case) law, however few states specifically address wildlife in case law. Typically, it is in the traditional form of state sovereignty over the navigable waterways of the state. Any extension of the Doctrine appears to have encompassed a limited number of resources such as beach access and parkland. Most cases that discuss the PTD relate it to the right of commerce and fishing in the state's navigable waterways.

Few states have case law that explicitly discusses the PTD in relation to wildlife, and even fewer discuss it in terms that may extend the PTD to wildlife itself. In Alaska, the case of *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988) spelled out perhaps the clearest recognition of wildlife as a trust resource by relying on the state's Constitution. The court in *Owsichuk* held that a common use clause in the Constitution of Alaska was intended to engraft certain trust principles, guaranteeing public access to the fish, wildlife, and water resources of the state.

In Illinois, *Wade v. Kramer* (1984) made it clear that it was "undoubtedly true that the State has a type of guardianship or trust over wildlife in the state." This ruling came well before Illinois had adopted the Wildlife Violator Compact. Because the ruling came before the Compact was adopted, it is clear that common law in Illinois fully recognizes wildlife as a trust resource.

A recent case from California involving the impacts of wind farms on bird mortality (*Center for Biological Diversity v. FPL Group, Inc.*) included an explanation of how wildlife falls under the umbrella of the Public Trust Doctrine by citing a California Supreme Court case stating that public trust duties for birds and wildlife are primarily derived from statute (*Environmental Protection and Information Center v. California Dept. of Forestry & Fire Protection*). Common law recognition of wildlife as a public

trust resource is important in states where it is not statutorily recognized, as was the case in Illinois before it adopted the Wildlife Violator Compact. When the PTD is codified through the state's statutes, however, common law recognition becomes less important. Once adopted by statute in a state, the only course for the state's courts to take would be to overturn the statute if found invalid or to modify its meaning through judicial interpretation.

State Constitutions

Inclusion in a state's constitution provides a strong foundation for the PTD. However, few states have constitutional provisions clearly articulating the PTD.

Alaska's Constitution, Article 8, §3, states that: "Wherever occurring in their natural state, fish, wildlife, and waters are reserved to the people for common use." This was held to mean that the state "intended to engraft certain trust principles guaranteeing access to the fish, wildlife, and water resources of the state," according to the Alaska Supreme Court in *Owsichuk v. State of Alaska, Guide and Licensing Control Board* (1988). Louisiana's Constitution sets out the requirement that the state is "to protect,



Credit: © 2005 David Monniaux/Wikimedia Commons

Policymakers at the California State Legislature and at other state legislatures around the nation can pass laws regulating sustainable use of natural resources and other key elements of the Public Trust Doctrine.

conserve, and replenish all natural resources, including the wildlife and fish of the state, for the benefit of its people."

A constitutional provision is a legally robust means to establish wildlife as a public trust resource, though changing a state constitution is obviously a long and difficult process. Also, amending a state constitution is not ironclad as problems of enforceability and standing could arise if challenged in court.

Canada

Just over half of the provinces and territories have incorporated language on the public ownership of wildlife in their statutes. Nonetheless, this is an indication of the intent to treat wildlife as a public trust resource. Case law is at this point non-existent as to any explicit mention of the "public trust." The case of *Green v. Ontario* (1973) purports to apply a statutory form of the PTD, but it is nothing like the common law PTD that has developed in the U.S. Certainly there are no cases that compel provinces or territories to hold certain natural resources in "trust" for the people. The rights of the citizens in Canada that could be analogous to the rights enjoyed in the U.S. under the PTD are the right to navigate and fish. However, the Canadian Parliament retains the primary authority to modify these rights.

Need for Stronger Statutes

The PTD is both a common law principle, primarily associated with waters and their resources (e.g., commercially valuable fish species), and one based on statutes defining public trust duties and responsibilities. In the United States, the PTD in its traditional form is firmly established in both state common law and statutory law. However, the extension of the PTD to specifically cover wildlife is not well-established. In Canada, the legal underpinnings of the PTD, especially as it applies to wildlife, are even weaker, resting mainly on provincial codifications of wildlife ownership. A model

broad-based statutory framework that could be put in place throughout the states and provinces would have to address some key issues.

First, three conditions must be met for the PTD to be an effective tool: (1) it must contain some concept of a legal right in the general public; (2) it must be enforceable against the trustee (government); and (3) it must be capable of interpretation consistent with contemporary concerns (Smith 1980).

Second, any model statutory language must be carefully drafted to avoid the PTD being used negatively to eliminate the traditional recreational/sporting benefit of wildlife. As noted earlier, traditional and natural uses peculiar to a resource must be provided for as part of the public trust (Sax 1970), and hunting has been identified as such a use (Organ and Batcheller 2009). Additionally, funding for management of wildlife as a trust resource comes primarily from consumptive user fees. Keeping these issues in mind while using language from existing statutes, a successful model statutory framework could be developed to extend the PTD to wildlife as a public trust resource in each state and province.

THE BENEFITS OF STRENGTHENING THE PUBLIC TRUST DOCTRINE

The PTD is a long-time cornerstone of the most successful model of wildlife management and it has fostered the public's interest in conserving wildlife resources in North America. With few exceptions, however, it rarely is supported by state or provincial constitutional law, and inconsistently by statute. This presents a degree of insecurity to its consistent application, now and in the future.

The PTD is largely supported in case law but with less clarity than statutory law. Case law often is less precise and subject to greater, often inconsistent, interpretation. Courts of equal authority, representing different jurisdictions, may arrive at opposite conclusions.

Statutory and constitutional law is made by elected representatives of the people (e.g.,

Congress, Parliament, and Legislatures) or by the direct will of the people (i.e., ballot initiative or referendum), but case law, by design, lacks a public participation component.

As case law regarding the PTD continues to evolve and its scope of application continues to expand, new interpretations will be created that may revise current understanding, making current “protections” afforded by the Doctrine potentially uncertain in the future. Managing diverse public assets may cause conflicts for the trustees and the beneficiaries. For example, property protection through flood control may cause conflict with environmental quality or the welfare of fish and wildlife. In such situations, trustees may have to assume the authority to decide preference of one over another. These decisions likely are to be challenged through litigation. Courts eventually may redefine the Doctrine by assigning priority of trust assets for use by competing interests. Current uses may be viewed by some as privileges rather than rights. In turn, privileges may be viewed as increasingly unacceptable uses of public trust assets as has emerged in the case of commercial fishing versus the survival of fish stocks (Henquinet and Dobson 2006).



Credit: New York State Archives

Surrounded by their harvest of rabbit and deer, two hunters pose for the New York State Conservation Commission, circa 1920. A strong Public Trust Doctrine can help ensure that public agencies remain the stewards of natural resources.

The benefits of strengthening the PTD for the benefit of wildlife resources are clear. Codifying the Doctrine in statute, or amending state constitutions to include it may secure its future, clarify its purpose, and ensure that its principles are more consistently applied and less subject to interpretation.

RECOMMENDATIONS

The following recommendations are intended to help trustees of the public's wildlife ensure that the PTD extends to wildlife and the public's access to wildlife in their state or province and continues to do so in the future. They also serve to inform key stakeholders and other beneficiaries of key strategies for strengthening the PTD.

Statutory Changes

State and provincial wildlife agencies should review their constitutional or statutory authorities that address the principles of the PTD, and where absent or inadequate, strengthen their authority with new legislation. Although amending the state or provincial constitution to include the Doctrine would provide the strongest legal protection, we recognized that changing a constitution is a long and difficult process. Therefore, we recommend that states and provinces enshrine the PTD as it applies to wildlife in state/provincial law. In particular, those states that have adopted the Wildlife Violator Compact, which implicitly recognizes the PTD, should move to formally codify the PTD in their states.

We offer language containing several key elements to provide guidance to states and provinces seeking to protect the PTD.

Model Statutory language:

1. The state declares that wildlife is held in trust by the state for the benefit of its citizens:
 - a) to protect and conserve the wildlife of this state or province;

- b) to ensure the permanent and continued abundance of the wildlife resources of this state or province;
 - c) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - d) to ensure that wildlife resources will not be reduced to private ownership except as specifically provided for in law.
2. Individuals have an equitable right of access to wildlife as a public trust resource:
- a) to ensure a permanent and continued abundance of wildlife resources of this state or province;
 - b) to provide for the sustainable use and enjoyment of wildlife for present and future residents of this state or province; and
 - c) to ensure that wildlife resources will not be reduced to private ownership, except as specifically provided in law.

This language makes it clear that wildlife is held in trust for the people of the state or province, will not be squandered or mismanaged by the state or province as trustee, and allows for balance between conservation and recreation. The language also prohibits government from transferring wildlife resources to private ownership, except as provided by law. The "except as specifically provided for in this title" language gives jurisdictions some leeway to provide for preserve and management areas.

Administrative Law (Rules and Regulations)

While administrative rules were not summarized and included in this review, these rules and regulations promulgated by agencies or regulatory boards have the force of law. These rules (along with administrative policy and standard operating procedures) are an important instrument to further codify and provide consistent and frequent reinforcement of public trust Doctrine tenets related to wildlife resources. These rules (and challenges to them) also represent a venue by which future case law will be established, potentially strengthening the Public Trust Doctrine.

Outreach and Education

Increased awareness of the PTD and its importance among the public, and wildlife professionals and wildlife students in particular, can be facilitated through fostering educational opportunities. The Western Association of Fish and Wildlife Agencies is developing an outreach plan to explain the PTD and the Model to a target audience including high school students (T. Gray, 2009, pers. comm., Arizona Game and Fish Department). When completed, piloted, and finalized, this curriculum will also be available for adoption by other state agencies. Additionally, the Conservation Leaders for Tomorrow program (www.clft.org) features a lesson on the North American Model, including the PTD. The Wildlife Society and state agencies should further promote outreach efforts on the Model and the PTD.

CONCLUSIONS

The Public Trust Doctrine is a crucial element of the Model. Geist and Organ (2004) identified emerging threats that challenge the PTD in North America, thereby jeopardizing the legal underpinnings for wildlife conservation. In particular, a trend towards the commercialization and privatization of wildlife challenges the notion of trust species held in custodianship by competent authorities (both state, federal, and provincial agencies) for broad public benefits. A corollary to this threat is the loss of public access to wildlife via highly controlled land access systems managed by private individuals.

Central to protecting the PTD is assuring that legal institutions are in place within each competent authority to clearly establish the PTD's applicability to wildlife. While a number of jurisdictions address the notion of public ownership of wildlife (and the associated trust responsibilities of those jurisdictions), the need for a broad-based statutory framework was confirmed as needed to unequivocally bring wildlife conservation programs within the PTD framework. To this end, model statutory authority is offered as a template to strengthen the PTD throughout North America.

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The Wildlife Society

5410 Grosvenor Lane, Suite 200
Bethesda, MD 20814-2144
301-897-9770
301-530-2471 Fax
TWS@wildlife.org



Association of Fish and Wildlife Agencies

444 North Capitol Street, NW
Suite 725
Washington, DC 20001
202-624-7890
202-624-7891 Fax
info@fishwildlife.org



Western Association of Fish and Wildlife Agencies

522 Notre Dame Court
Cheyenne, WY 82009
307-638-1470
307-638-1470 Fax
larry.kruckenberg@wgf.state.wy.us



Wildlife Management Institute

1440 Upper Bermudian Road
Gardners, PA 17324
717-677-4480
swilliams@wildlifemgt.org

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Comments WGFD Feedground Mgt Plan_09_09_2023

September 7, 2023

Wyoming Game and Fish Department
5400 Bishop Blvd.
Cheyenne, Wy 82006



Re: Draft Wyoming Elk Feedgrounds Management Plan

Submitted To: wgf-elkfeedgroundinfo@wyo.gov

Elk Feedgrounds Steering Team:

These comments on the Draft Plan are submitted on behalf of Yellowstone to Uintas Connection. We are a 501c3 organization (NGO) dedicated to protecting and restoring wildlife habitats and migration corridors in and connecting to the Greater Yellowstone Ecosystem. We are headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming. We also participated as Kiesha's Preserve, which is also an NGO representing our wildlife preserve and land ownership interests in the GYE.

We have been engaged in the stakeholder process and meetings. We previously submitted comments and engaged in email communication with members of WGFD regarding our concerns. We are part of the NGO stakeholder group. We are hereby incorporating by reference the detailed comments provided by [Mr. Lloyd Dorsey](#) and the [Gallatin Wildlife Association](#). There is no need for us to repeat their excellent analyses.

In our prior [comments](#), which were jointly submitted by several NGOs, we provided an analysis of the management situation, including the science relating to elk populations, their history and distribution, land ownership factors, management in other states that either do not feed or have phased out feeding, and diseases. We provided recommendations, including:

1. Phase out feedgrounds over five years.
2. Protect carnivores and scavengers for their role in helping to maintain healthy big game herds.
3. The Plan should call for protection of migration corridors and restoration of migratory behavior where feedgrounds have disrupted those.
4. Identify and commit to strategies that maintain or improve the quality and productivity of elk winter ranges.
5. Reserve forage on public lands for wildlife, de-emphasize vegetation treatments and adjust livestock grazing and intensity on public lands so adequate forage is available to support elk herd objectives.

We summarized elements of a phase out plan to include:

1. Evaluate summer and winter forage on elk parturition and winter range for the period of occupancy to determine the population size that can be supported.
2. Evaluate integrity and habitat capability of migration corridors to allow movement and provide adequate forage during migrations.
3. Adjust elk objectives to maintain elk herds within the capacity of natural habitats that can sustain them on a long-term basis.
4. Identify funding sources for regulation fencing around winter livestock feeding areas and haystacks.
5. Adjust livestock grazing (stocking rates, timing and duration of grazing, pasture rest and rotation plans) in parturition and wintering areas on public land to ensure sufficient forage is present to support elk herds at objective numbers.
6. Identify funding for voluntary retirement of public lands grazing permits in important habitat areas for elk, mule deer, and moose.
7. Controlled hunting is used to reduce elk numbers to meet herd objectives that are aligned with available habitat and forage.
8. Commitment to reduce elk feeding seasons to zero over five years.
9. Identify strategies to encourage elk to resume natural migratory patterns.

During this stakeholder process, WGFD has emphasized the need for a “publicly supported” plan. Unfortunately, we are concerned that the process has not been designed to address this purpose. Two groups, the guide-outfitters, and ranchers, are the dominant entities this plan appears to be designed to appease to the exclusion of science, facts, and true wildlife interests. At the August 30, 2023 meeting in Pinedale a guide outfitter threatened a “firestorm” if there was any consideration of a phase-out. WGFD depends on revenues from hunting licenses. Apparently, the outfitters are interested in continuing the largesse of huge guide fees for killing elk at a rate double that of areas where there are no feedgrounds. The feedgrounds have created a semi-domestic elk situation where these elevated and artificial hunting success rates are made possible.

Likewise, the livestock industry is in control of this situation where they are paid for depredation or damage to hay crops by elk, yet they cut and harvest the hay and graze the valleys to the bone after their cattle come off the National Forest. So, where are elk and other animals to find forage except these stored crops and livestock feeding areas? Mr. Dorsey, in his comments, used an example of this control from the stakeholder meeting in Jackson. “It was never more apparent how intimidated the Department is by the livestock industry as during the July 23 public meeting when 2 cattle ranchers (including one who said he no longer owns cows) took over the meeting, time and again browbeating the Department for their ‘stupid’ plan. They claimed that elk can’t or won’t migrate, ‘don’t go to the mountains anymore’, and are only

‘in the river bottom.’ One rancher said this plan would destroy cattle ranching. The Department Regional Supervisors apologized repeatedly to the ranchers and said they didn’t intend the plan to harm livestock interests and told them, ‘we’ll fix it.’”

It is clear where this process is headed. The State Livestock Board has the final say on any plan and several members of the State Wildlife Commission are ranchers, so clearly WGFD is placed in a position to placate the livestock industry as well as the guide-outfitters. WGFD should be free to use science to address this issue in a valid phase-out and setting of population objectives within the carrying capacity of the habitat but are prevented from doing so by these powerful interests. Perhaps the State Wildlife Commission and Livestock Board will relent and allow WGFD to pursue a valid process as we have outlined above in our Recommendations.

The plan did not conduct the analysis we requested, an analysis that would have provided the necessary facts to design an effective solution for naturally and free ranging elk herds as well as other big game animals, or for that matter, protecting predators and scavengers. We believe the collection of data and evaluation of habitat quality would provide the basis for determining the current and potential carrying capacity for elk, mule deer and moose. The public was given no set of options, no phase-out plan. The process was a top-down driven exercise in deflecting hard decisions for years or decades as diseases will likely accelerate. Without this analysis and a phase-out plan, our organization cannot support the current Draft Plan.

The 2004 WEST report¹ provided some guidance in addressing the capacity issue without reducing elk numbers, increasing damage to private property, or increasing brucellosis risk to livestock. Their analysis considered:

1. The average number of elk at each feedground,
2. the duration of feeding,
3. the amount of potential native range on public land within 5 miles,
4. potential damage to private property without the feedground, and
5. the potential of brucellosis transmission.

Our view is that determining the current carrying capacity for elk range is critical in setting elk population objectives and developing information that informs the process so that it is data based, rather than political.

¹ WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

Our Current Forage Assessment Example

Over the past two years, we have been assessing the amount of forage and the levels of livestock use on the Bridger-Teton NF allotments in the Upper Green River area. These studies are in the Elk Ridge, Fisherman Creek, and Upper Green allotments.² They can be downloaded at the link provided to learn the details and methodology.

Figure 1 illustrates these allotments and their proximity to the elk feedgrounds. Note the five-mile buffer as described in the WEST report. Figure 2 shows the elk feedgrounds, elk parturition areas, allotments, and allotment status (active, vacant, or closed) on the Bridger Teton NF.

In our study, we clipped and weighed grazed and ungrazed paired plots which gave us an accurate estimate of use by livestock as well as the current production of forage. The purpose of the study was to obtain accurate determinations of utilization to compare with the data collected by the Forest Service, Sublette County Conservation District, and Permittees (SCCD).

Assessment of Current Production: The Elk Ridge Allotments were vacated from livestock grazing in 2016 and have not been grazed by livestock since. We were interested in determining how current production of herbaceous vegetation (forage) would compare with site potential. We found these sites were producing less than 25% of potential after five years' rest. The dominant bunchgrass which should be present was absent. According to the NRCS Ecological Site Descriptions, it should comprise a significant portion of forage production. In the actively grazed Upper Green allotment our ungrazed plots were producing less than 40% of potential. Bluebunch wheatgrass was also absent there.

Assessment of Utilization: Our measurement of paired plots in the Upper Green and Fisherman Creek allotments found 73.1% upland utilization and 75.5% riparian utilization. This is much greater than the 50% utilization standard provided in the 2019 Upper Green Record of Decision³ or the 25% recommended⁴ by range science. See our report for references and details.

² Carter, J. and Ratner, J. 2023. Surveys of Upper Green, Fisherman Creek, and Elk Ridge Allotment Complexes. Western Watersheds Project and Yellowstone to Uintas Connection.

<https://app.box.com/s/3duxx7o4fml2aqnmqkwpg00ayy6hkxpd>

³ Bridger Teton National Forest. 2019. Record of Decision Upper Green River Area Rangeland Project. Pinedale Ranger District. <https://www.fs.usda.gov/project/?project=3049>

⁴ Carter, J. 2013. Utilization, Rest and Grazing Systems – A Review. Yellowstone to Uintas Connection. <https://app.box.com/s/ngw6723dx52quxw2rd8u>

The SCCD, Forest Service and Permittee (SCCD) joint monitoring of the Upper Green allotment in 2020 found an average of 9% utilization using stubble height of Idaho fescue, an increaser, as a key species. We calculated that forage production would need to be greater than 5,000 lb/acre to result in this low level of utilization. This is over three times the current level of production claimed by the BTNF in the Upper Green FEIS. The SCCD green line results in 2020 were 11.7" average height for ungrazed sedges and 9.4" for grazed sedges. This is approximately 8% utilization for the riparian areas. SCCD data was collected in dense willow stands where the sedges are protected from grazing.

Study Summary: According to our understanding of range science and plant physiology, the lowered production in these allotments is due to lack of rest, turning in livestock a month earlier than actual range ready time of mid- to late July, underestimating the forage consumption by cattle, over allocating forage to livestock, failing to collect forage production data, and failure to adjust stocking rates. Incorporating range science, representative, and accurate monitoring into management would result in a major reduction in season and numbers. We estimated that would be 31% of the current stocking rate. We proposed a data validation study to compare methods, key areas, and determine forage production and are awaiting a response from the BTNF, SCCD and Permittees.

The Draft Plan (p12) states, "The Commission recognizes the importance of supplying supplemental feed to elk at existing State feedgrounds and the NER and recognizes that without such feeding, the elk populations would have to be decreased to levels that could be supported by the limited native range forage." But, nowhere in the Draft Plan or in our stakeholder meetings has anyone addressed the elephant (or cow) in the room. That is that livestock, particularly cattle, are severely depleting the available forage base that could support wildlife.

Throughout, the plan emphasizes reducing damage to private property, i.e. elk foraging on private property or haystacks. While haystacks can be protected by fencing, the remaining area is depleted of forage by the harvest of hay and then by livestock coming off the Forest or BLM and eating what is left before it snows. There is little to nothing left for wildlife other than stored hay crops. One has to ask, when are the ranchers going to step up and provide forage?

There is another comparison one can make. Take the Upper Green allotments in which over 8,000 cow/calf pairs of cattle are grazed from June to October. Current forage consumption for today's cow and calf is approximately 50 pounds of air-dry forage per day.⁵ This is based on a 1,200 pound cow and 400 pound calf consuming 3% of body weight per day. An average elk runs about 400 lbs. This approximation is based on the Rocky Mountain Elk Foundation weight

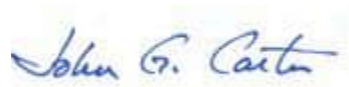
⁵ Carter, J. 2016. Updating the Animal Unit Month. Yellowstone to Uintas Connection.
<https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

for cow elk of 500 pounds⁶, assuming the calves would bring the average down. If they consume the same 3% of body weight, this means that each cow/calf pair of cattle are consuming forage equivalent to about 4 elk. Extrapolating, this means the 8,000 cow/calf pairs of cattle grazing in the Upper Green allotments are equivalent to or displacing four times that, or 32,000 elk.

Regardless of the math, these figures point out an extraordinary fact. That there should be sufficient forage to support wildlife if livestock weren't consuming nearly all of it and it illustrates that the Forest Service, in particular, could easily support the numbers of elk that are being fed at feedgrounds if livestock use were controlled, rest was incorporated to restore production and stocking rates reduced.

These are the sad facts of our situation. Since the WGFD works with the Forest Service, BLM and Private landowners, there should be a study implemented to actually measure the amount of forage available for wildlife in the migration corridors, crucial ranges, parturition ranges and then set a scientifically defensible elk objective. If hunters want a higher number, then they need to come up with a funding plan to incentivize private landowners to provide what is needed.

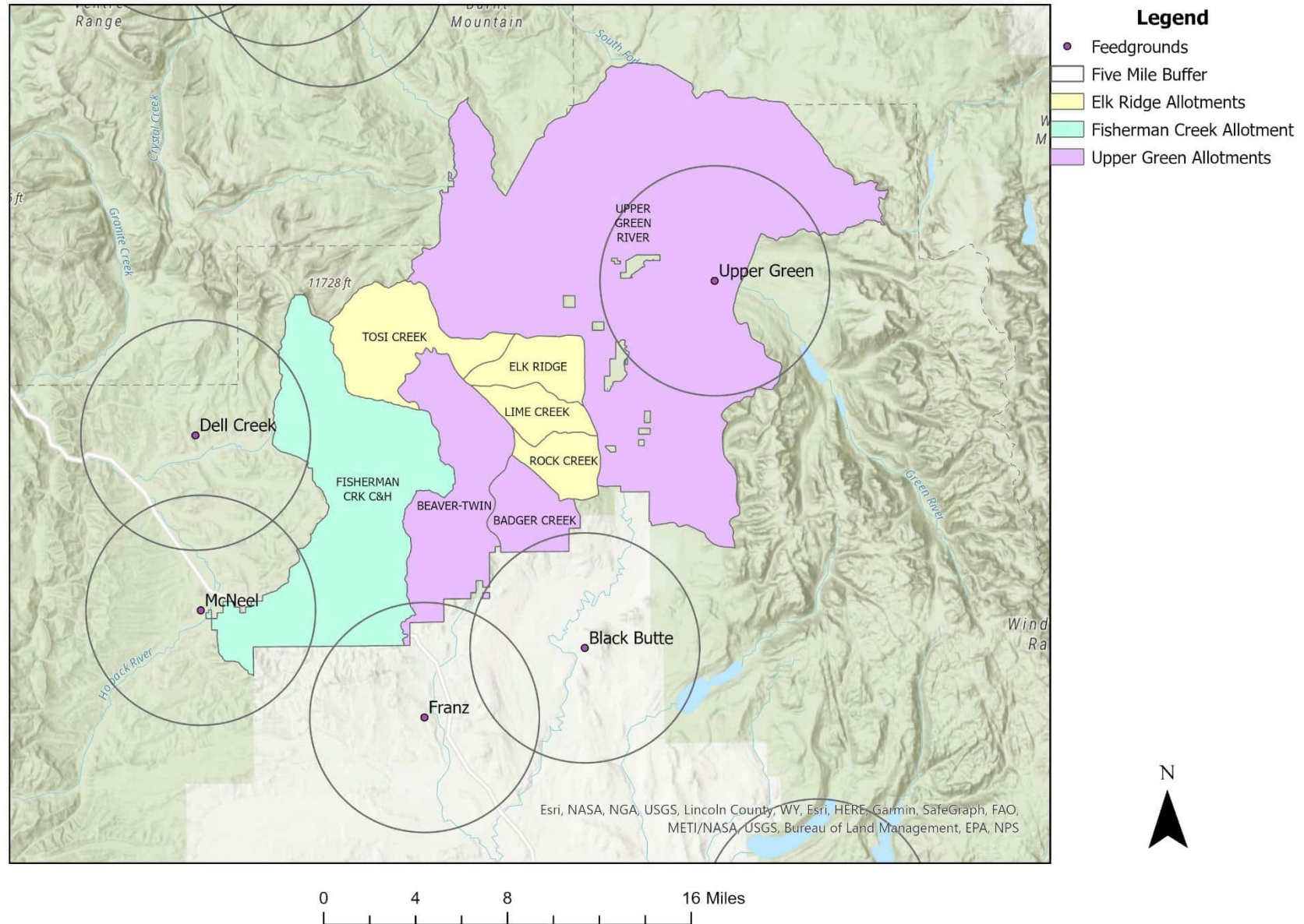
Sincerely,

A handwritten signature in blue ink that reads "John G. Carter". The signature is fluid and cursive, with the first name "John" being the most prominent.

John Carter
Yellowstone to Uintas Connection
Kiesha's Preserve
PO Box 464
Bondurant, Wy 82922

⁶ <https://www.rmef.org/elk-facts/>

Figure 1. Elk Feedgrounds with Five Mile Buffers, and Allotments



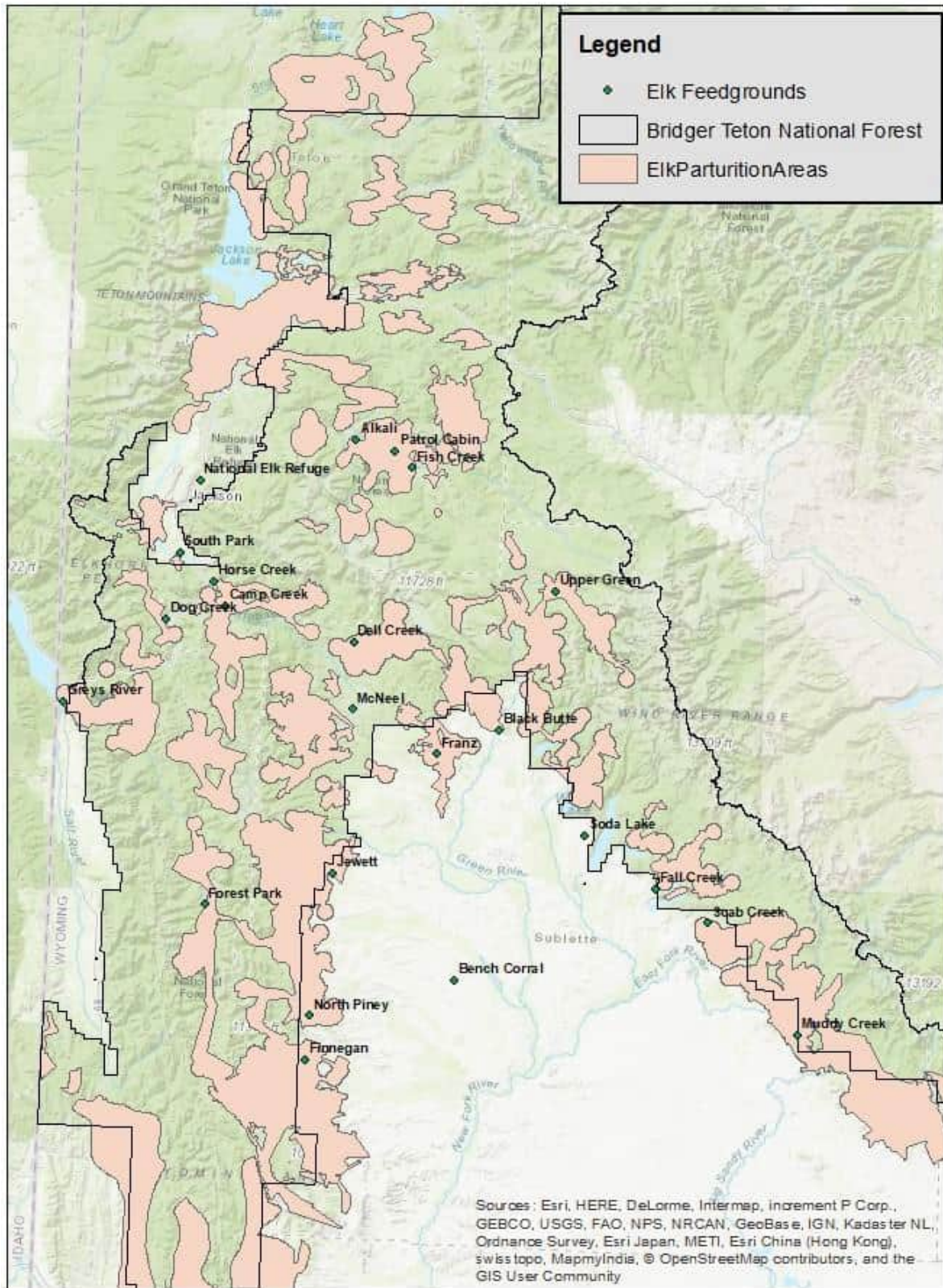


Figure 2. Location of Elk Feedgrounds and Parturition Areas

Comment DEIS_09_15_2024

January 15, 2024

Chad Hudson
Forest Supervisor
Bridger Teton National Forest
P.O. Box 1888
Jackson, WY 83001



Re: Dell Creek & Forest Park Elk Feedgrounds: Long-Term Special Use Permits – Draft
Environmental Impact Statement

Dear Mr. Hudson:

Alliance for the Wild Rockies, Native Ecosystems Council, and Yellowstone to Uintas Connection have submitted scoping and other comments to the BTNF on these special use permits. In addition, Yellowstone to Uintas Connection is a Stakeholder in the ongoing development of the [State of Wyoming Elk Feedgrounds Management Plan](#). We have participated in meetings and submitted comments on the development of this plan and incorporate those herein. These comments are summarized below and attached at the end. Based on the science, our position is that all FGs on the BTNF should be terminated upon permit expiration or phased out within 3 years, whichever occurs first.

Summary of Past Comments

1. Comments (10/22/2021) for Dell Creek Special Use Permit. (Attached). The inability of the Forest Service to decide on the closing or phasing out feedgrounds (FGs) will result in many years of process while the status quo continues. Closing Dell Creek FG would be beneficial in reducing disease. Extending the permit is counter to the goal of re-establishing migration routes. The comments reviewed studies relating to FG impact on migration, history, shortening the feeding season resulted in elk following migration and seasonal range use similar to unfed elk. This would also reduce disease transmission. A brucellosis study gave residence times for the contamination in soil, vegetation and tissue that remained viable for 43 days in April, and 26 days in May. While the percent of elk testing positive for brucellosis antibodies was 22% for FG elk vs 0.7% in free-ranging elk. Options for risk management were outlined. A Forest Service research study showed elk tended to avoid cattle and use other areas when cattle are present, they avoid roads, and the avoidance increases with increased traffic. Forage depletion by livestock results in lower fetal production in mule deer in poor condition range compared to good condition range, this provides implications for elk populations. Scavengers reduce potential brucellosis transmission risk.

We mapped the distribution of open and vacant allotments in the BTNF with FG occurrence in parturition and crucial range for elk. Most FGs occur within or adjacent to the BTNF. Dell Creek FG is in close proximity to five active allotments and is in crucial and year-long habitat. We illustrated the occurrence of unauthorized roads and trails on the BTNF that can fragment habitat and affect elk security and habitat use. We provided ways of resolving the issue, while acknowledging that Dell Creek FG serves only a small fraction of elk. FG locations in and adjacent to grazing allotments increase contact with livestock. We pointed out the relative forage consumption rates between cow/calf pairs and elk with a cow/calf pair consuming about 4 elk equivalents per day. Thus, providing more forage on public and private lands and limiting conflicts with cattle on the BTNF are needed. We noted that our surveys show impaired production of vegetation on the BTNF, lower plant vigor, loss of key species, and dominance by non-native or undesirable forage species. These are effects of poor livestock management that need to be corrected.

We pointed out that while WGFD manages the FGs, the Forest Service has the overall authority, and it should use that authority to resolve issues in order for “the forces of natural selection” to dominate. The BTNF should use its 36CFR251 Prohibition Authority to ban FGs on the BTNF and to ban trapping and killing of wolves, coyotes, foxes, and other predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume or reduce contaminated birth or abortion offal.

Based on our review of the science and facts, we proposed the following:

- Do not renew the Dell Creek FG special use permit. This is consistent with Wyoming's CWD Plan.
- Begin resting pastures within the affected five allotments surrounding Dell Creek FG so that plant communities can recover their vigor. Rest can be rotated annually between the pastures, or those pastures containing the preferred elk habitats can be rested multiple years to restore plant community production.
- Reduce livestock stocking rates by updating capability and stocking rate analysis to current forage production and livestock consumption rates, and to provide rested pastures, thus reducing the overall area grazed by livestock each year.
- Require herding of livestock to manage them around areas preferred by elk.
- Prohibit trapping and killing of predators and scavengers in these five allotments as well as the BTNF.
- Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve the habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF.
- Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex.
- This process should be repeated for each FG in a planned phasing out of FGs in Wyoming. No CE should be used as brucellosis and CWD are not "minor" issues.

- On private lands, fence haystacks, manage livestock away from elk, including hazing elk, leaving forage for wildlife, and be tolerant of scavengers.
2. Scoping Comments (02/11/2022) Dell Creek and Forest Park Elk Feedground EIS. We expressed concern regarding FGs and their impacts on migration, disease and interrupting natural ecosystem function. The length of this permitting and NEPA process is a concern because it will perpetuate the current situation and increase disease for a decade or more. The special use permits should be allowed to expire and this would be beneficial in many respects, allowing natural migration and habitat use. The EIS should fully analyze the science and effectiveness of management options. Forest Plan objectives, standards, and guidelines are addressed. We noted most FGs are in or adjacent to the BTNF and therefore impact the BTNF. Maps were provided showing these relationships.

We reviewed the background and relative authority of WGFD and the Forest Service, and again urged the use of 36CFR251 Prohibition Authority to control trapping and killing of predators and scavengers and return the forces of natural selection and habitat use by closing the FGs. We expected the BTNF to analyze the habitat in the Forest and its productivity for summering and wintering elk and other ungulates to determine carrying capacity.

We provided a summary of references and outlined the major points of disease dynamics on and off FGs, the role of scavengers and predators, elk being above objective, selective predation on diseased animals, increasing brucellosis seroprevalence, FGs support about 10% of the Wyoming elk population, no strategy implemented for CWD which is increasing, cost of FGs is high, FGs interrupt migration, and other points.

The Wyoming CWD Management Plan has strategies including hunter harvest to reduce positive animals (how, since they can't tell which infected vs are letting predators function), pursue feeding bans, and develop strategy to reduce cervid concentrations. The Big Piney Elk Herd Unit Brucellosis Management Action Plan was reviewed and major points with their pros and cons were outlined, including:

- Relocate FGs to provide larger areas for elk dispersal.
- Eliminate FGs.
- Reduce elk numbers through harvest.
- Reduce number of cattle and stored crops with incentives.
- Elk proof fencing.
- Habitat enhancement.
- Acquire native winter range through purchase, easements, or other.
- Vaccination.

Economics was a major point as well. We urged an analysis of the economic cost of degraded lands, lost wildlife, and native plant communities, polluted and degraded rivers

and streams from livestock grazing whereas the BTNF never does such an analysis, instead invoking custom and culture. We critiqued the idea that when wildlife grazes on private property it is called “depredation” when the animals are merely trying to use historical land that was coopted by the livestock. We reviewed agricultural subsidies in spite of farm income being at a high point. Headwaters Economics study showed agriculture was only 3.5% of employment in Wyoming, while travel and tourism were 20.2% of private employment in Wyoming and 15% in the region of the FGs. The method for valuing public lands grazing was provided. An estimate of the value of the AUMs on public land is a small fraction of the value of livestock sales and needs to be balanced with the value of the BTNF values foregone, such as recreation, clean water, and wildlife.

In particular, we noted that for Dell Creek and Forest Park: the areas of habitat for elk seasonal, winter and parturition range that are permitted to be grazed by livestock must be determined. Then they should be valued based on the loss of elk forage and habitat (elk numbers and value) due to livestock grazing vs the value if the habitat is allowed to produce at potential. This is attained by not grazing livestock and/or reducing livestock grazing to meet the best science on forage allocations, a sustainable utilization rate of 25%, and rest, to allow plant communities to recover following grazing. This would be based on numbers of cattle using the elk habitat and the length of time they use the habitat and how many elk that habitat could support at different livestock stocking rates ranging to no livestock grazing. Stocking rates would be determined by the factors described above as regards utilization, current forage production, adequate rest and current cattle weights and forage consumption rates. Current Forest Service Regional criteria for determining capable and suitable lands for livestock grazing should also be used to determine the acres upon which grazing should be allowed. The analysis should include values of outdoor recreation, for example that reported by the U.S. Fish and Wildlife Service.

Forage consumption and displacement of elk by livestock was analyzed by calculating the AUMs of livestock on public land in Wyoming and their forage consumption to determine the number of elk this would support. The number of equivalent elk is over 900,000. If we look at the three allotments surrounding Dell Creek, we found that livestock grazing these three allotments was equivalent to 4,291 elk per year. We critiqued the allowed forage allocation of 40 - 50% to livestock and questioned whether monitoring was effectively measuring livestock use. An example of the Elk Ridge Allotment Complex for an upcoming EIS in which we measured current forage production at about 10% of potential, noting that current retention standards do not leave sufficient forage and cover for wildlife. An analysis for both Dell Creek and Forest Park FGs should determine the current state of forage production and plant communities in the allotments surrounding the FGs. Finally, we noted the absence of winter forage on grazed private lands that is easily observable. Photos of ungrazed Hoback Ranches and other grazed lands were provided.

Then we did an analysis of snow depth in relation to elk tolerance. This looked at three areas in the region near Dell Creek. For the prior ten years, finding that in some years the

snow depth did not reach the 20-inch threshold, but on average there were 68 days of greater snow depth, while FGs were operated for much longer time periods. For the migration snow depth limit of 36 inches at the East Rim station along a migration corridor, the average days was 49. For the Pinedale area, snow depth was much less limiting. The results were tabulated and a map of elk, migration tracking, mule deer corridor, grazing allotments, SNOTEL stations vs FGs provided.

We provided recommendations for the phaseout of Dell Creek and Forest Park FGs and providing native forage. The WEST Report analysis was used showing that the long-term feeding periods for Dell Creek and Forest Park were 148 and 135, respectively, far exceeding the ranges we determined based on snow depth. This resulted in a poor ranking in the WEST Report to have successful transition to native range. The potential native range within five miles of the FGs was 22,612 acres or 45% at Dell Creek, which was a high ranking. Forest Park was low with a poor likelihood of supporting elk on native range. We further looked at McNeel FG which has 36,699 acres of native range, or 73% of the overall area. Recommendations included closing the FGs immediately, reduce feeding periods, assess forage capacity and snow depths to determine seasonal availability, map and evaluate outcomes of past habitat management treatments, reduce livestock allocations, rest pastures, permanently close vacant allotments, protect predators and scavengers, identify migration corridors on the BTNF, reclaim unauthorized motorized routes. A summary of literature was provided.

3. Scoping Comments (02/14/2022) Dell Creek and Forest Park Elk Feedground EIS. These were joint comments with Western Watersheds Project, Wyoming Wildlife Advocates, Sierra Club, Gallatin Wildlife Association, Jackson Hole Conservation Alliance, Buffalo Roam Tours, and Yellowstone to Uintas Connection. They expressed grave concern over permitting and operating FGs on the BTNF. We noted our comments going back to 2016 and incorporated those in an attachment. We outlined the three proposed alternatives and supported Alternative 1, No Special Use Authorizations for Forest Park and Alternative 2 with modifications for Dell Creek, pointing out that the 20-year time frame be reduced to three years, recognizing that the process has already been ongoing for many years.

The WGFD designated winter range should be updated to include Bacon Creek-Fish Creek area. Citing the BTNF goal of re-establishing elk migration, we cited examples of phaseouts in other states and the positive and negative reinforcements used. Positive reinforcements were better at changing elk behavior. A map illustrated elk range in the western U.S. and the area of FGs in Wyoming, illustrating the small area of influence by FGs. Of the estimated 1.2 million elk in the U.S. 2% are artificially fed. Where FGs do not occur, states, including Wyoming have mitigated elk-livestock conflicts. Other states have higher road densities, yet do not have higher vehicle collision rates. The rationale for continued feeding in Wyoming lacks basis. A recent court ruled that the Dell Creek FG permit expired in 2016 and cited several facts about CWD, its fatality, transmissibility, its resistance to disinfectants, and can remain infective in the environment for years. "There is no dispute that

“congregating elk at very high densities at feedgrounds is likely to increase the spread of disease because of an increased number and rate of potential infectious contacts with infected individuals and an infected environment.” Other rulings noted the failure to do the required analysis regarding irreversible and irretrievable commitment of resources, NEPA failure to meet goals by blindly following the WGFD goal of managing elk movements in spite of the BTNF goal of re-establishing elk migration, and failed to evaluate cumulative impacts with other FGs on the BTNF.

The comments then summarized concerns over CWD concentration on FGs, Hoof rot, Brucellosis, Bovine tuberculosis, Scabies which are all a threat to wildlife and livestock both when artificially fed while FGs concentrate them unnaturally, spreading bacteria and diseases. The Purpose and Need were inadequate, lacking emphasis on the Forest Service goal of re-establishing elk migration routes. The analysis itself is too narrow, instead it should focus on all FGs in the Forest because focus on a single FG minimizes the severity of impacts and hinders the Forest Service ability to examine alternatives to phase out feeding across the Forest. NFMA and NEPA points were made, not the least of which is the irreversible and irretrievable commitment of resources due to continuation of FGs, animal waste and pollution, liability for contaminating downstream lands thru irrigation with prion contaminated water, and the cost of disposal of infected animals that must be weighed. A brief review of science was provided on CWD and mortality effects due to congregation, incidents of CWD in elk and mule deer. Contamination of lands in and around FGs was reviewed, including soil, water, plants, feces, and urine. Human health concerns were reviewed. Lack of compliance with the BTNF Forest Plan by continuing artificial feeding. We emphasized tolerance of carnivores for their role in carcass disposal, culling sick animals citing a recent study in Yellowstone NP in which wolves were shown to select animals that are infected years before humans can detect CWD in the animals. In addition, these carnivores are not susceptible and do not spread the disease, and they keep the elk away from roadways, reducing vehicle collisions.

The EIS must address effects to species listed under the ESA which can be indirectly affected by the health of prey species. Professional wildlife management agencies recommend phasing out feeding. FGs also affect wildlife regionally across the GYE. For example, Montana sent a letter to Wyoming asking for cessation of FGs. We addressed the common rationales used to defend continuation of FGs, reviewed the Forest Service public trust responsibility, and cited quotes from WGFD that argue against FGs. Landscape connectivity and availability of public lands within the range of these elk using FGs should make FGs unnecessary. The economic benefit of wildlife to the State and Counties could be lost by maintaining diseased FGs.

4. Comments (09/07/2023) on the Draft Wyoming Elk Feedgrounds Management Plan. In these comments we described our role and participation as stakeholders in the FG plan development process. They reference and provide links to related comments. We provided recommendations, including:

- Phase out FGs over five years.
- Protect carnivores and scavengers for their role in maintaining healthy big game herds.
- Protect migration corridors and restoration of migratory behavior.
- Improve the quality and productivity of elk winter range.
- Reserve forage on public lands for wildlife, de-emphasize vegetation treatments, and adjust livestock grazing and intensity to leave adequate forage to support elk herd objectives.

We summarized elements of a phase out plan to include:

- Evaluate summer and winter forage on elk parturition and winter range for the period of occupancy to determine the population size that can be supported.
- Evaluate integrity and habitat capability of migration corridors to allow movement and provide adequate forage during migrations.
- Adjust elk objectives to maintain elk herds within the capacity of natural habitats that can sustain them on a long-term basis.
- Identify funding sources for regulation fencing around winter livestock feeding areas and haystacks.
- Adjust livestock grazing (stocking rates, timing and duration of grazing, pasture rest and rotation plans) in parturition and wintering areas on public land to ensure sufficient forage is present to support elk herds at objective numbers.
- Identify funding for voluntary retirement of public lands grazing permits in important habitat areas for elk, mule deer, and moose.
- Controlled hunting is used to reduce elk numbers to meet herd objectives that are aligned with available habitat and forage.
- Commitment to reduce elk feeding seasons to zero over five years.
- Identify strategies to encourage elk to resume natural migratory patterns.

We expressed concerns about the inherent bias of the process and its dominance by the livestock and outfitter interests, the lack of provision of forage on private lands, while collecting depredation fees, and the most probable outcome to suit these interests. The draft plan did not include the forage capacity analysis we requested. The process was a top-down driven process in which hard decisions are delayed indefinitely as disease increases. We could not support the plan without the requested analysis and a phase out plan.

We then cited the guidance of the WEST report which would be part of an analysis for each FG to determine capacity and setting objectives.

- The average number of elk at each feedground,
- the duration of feeding,
- the amount of potential native range on public land within 5 miles,

- potential damage to private property without the feedground, and
- the potential of brucellosis transmission.

We provided an example from our monitoring of livestock allotments on the Bridger Teton NF in the Upper Green area. These showed that current forage production is greatly reduced compared to potential, that the current monitoring program is not capturing the actual use by livestock and greatly understating that use. This forage depletion is due to lack of application of fundamental range science. We calculated that just on the Upper Green allotments, the approximately 8,000 cow/calf pairs consume forage equivalent to 32,000 elk. This example shows that there should be sufficient forage on the Forest to support the elk if livestock use were more accurately monitored and managed, incorporating rest, reducing numbers.

We recommended “Since the WGFD works with the Forest Service, BLM and Private landowners, there should be a study implemented to actually measure the amount of forage available for wildlife in the migration corridors, crucial ranges, parturition ranges and then set a scientifically defensible elk objective. If hunters want a higher number, then they need to come up with a funding plan to incentivize private landowners to provide what is needed.”

DEIS

We have reviewed the DEIS and the USGS Model upon which it is based. We do not support either the model for its omissions and too broad assumptions, nor the DEIS for its conclusory outcome.

The Purpose and Need is to comply with the request of WGFC to continue feeding, not to maintain healthy elk and other wildlife populations or healthy ecosystems. While four reasons are cited for complying with WGFC desires, none of these comport with the science of disease. Instead, they comply with the wishes of livestock producers who garner all the forage on private lands where elk formerly had winter and other range and set what might be artificially high population objectives to satisfy hunters, especially outfitters who profit on high numbers and easy to find elk. We have addressed the problem of livestock dominance of the landscape and consuming the majority of forage on public and private lands, then producers get paid for depredation if an elk eats hay because there is no native forage for them. It’s a hypocritical situation of selfishness and no consideration for ecosystem and natural values.

The Proposed Action is stated as a WGFC Proposed Action, not a Forest Service proposed action, so here the BTNF is deflecting its public trust responsibility and subverting its authority to the State and its livestock-driven philosophy. The proposal is to continue feeding for 20 years while CWD and other diseases proliferate. When one considers that we are nearly 10 years into this process already, then consider the years of delay while the NEPA process, objections, litigation go on, it is clear that the BTNF needs to act now by denying the permits for continued

feeding, after all, the USGS analysis claims only 12 and 20% of the HU populations are fed at these two FGs.

We support immediate closure of the FGs by denying the permits. In addition, the BTNF can use its 36 CFR Prohibition Authority to halt other FGs on Forest Service lands. These should all be phased out within 3 years. Our rationale includes the science we have cited in our prior input which we will not repeat here. It is contained in our attachments. An additional alternative should be added to include closure of all FGs on the BTNF.

The Cumulative Effects Analysis (CEA) is insufficient. We provide Figures 1 – 5 at the end of these comments. Figure 1 is based on the WEST method we cited in prior comments and shows the five-mile radius around each FG. Twenty-two of the 23 FGs have a five-mile radius that contains acreage on the BTNF. Figure 2 illustrates the Hunt Areas that contain FGs or are adjacent. Note that recently CWD was reported in HA 92 and 28. Figure 3 shows these HAs in relation to the BTNF. Most contain lands within the BTNF, while HA 28 borders the BTNF. Figure 4 shows the FGs, BTNF and the DFCs within the five-mile radius and within the HAs. Figure 5 shows the FGs, BTNF, HAs, and DFCs. These all demonstrate that the FGs have an impact on a major portion of the BTNF.

As we have cited in our prior comments, livestock grazing is removing 75% of the herbaceous vegetation in the Upper Green and Fisherman Creek allotments in the zone of influence of the FGs. We have also noted previously the lack of residual forage we see on private lands where livestock grazing occurs. The USGS model lacks consideration of the actual conditions on the BTNF as regards forage for winter, parturition, seasonal, or crucial range. Our computation on the Upper Green allotments shows that the livestock grazed there consume forage equivalent to 32,000 elk. This should drive the analysis. Another example is the presence of Hoback Ranches which is nearly 7,000 acres of livestock free, highly productive habitat. It now produces a large forage reserve, yet the feeding of elk at nearby FGs appears to be causing the elk to be using the FGs instead of this habitat. In addition, the USGS model assumes livestock present on all private lands in winter. That is not the case, since livestock are fed in smaller areas within that private land and most haystacks are fenced. The majority of the private lands we observe do not have livestock present in winter.

The USGS model claimed 12 - 20% of the elk in affected HAs use the two FGs. Therefore, a vast majority are not using these FGs if these assumptions are true. So, the FGs concentrate those small portion of the herds to accelerate disease and infect the other 80+%. Some of the model assumptions omit consideration of available options. For example, the model assumes closure of FGs would reduce elk carrying capacity. Instead, the model for the CEA should have included analysis of the acres of habitat on the BTNF within five miles of each FG or the HA containing the FG, the current and potential capacity of that habitat to support elk, and address livestock management to provide for elk forage during parturition and winter. This could include closing pastures and reducing use in the areas within five miles of the FGs. A similar

analysis for the HAs should occur. Based on our analysis, this would likely provide sufficient forage for the fed elk. The monitoring by the BTNF does not document this factor.

Our recent studies¹ on the BTNF have illustrated that the current monitoring program which measures utilization is biased and unable to measure the actual use by livestock. This is due to use of key species and methods that do not represent the actual use, locating monitoring sites far from water and in areas less used by livestock. Our monitoring results were validated by the Forest Service's own data which collected quantitative measures by clipping grazed and ungrazed plots as did our study.² The Forest Service does not use that data or method and refuses to participate in a joint study to refine that monitoring and adjust its program. We also determined that current production of herbaceous vegetation is well below half of potential. This is due to a history of unmanaged livestock grazing that ignores the well-known principles of range science. These include rest sufficient for plants to recover their vigor, sustainable utilization rates of 25% rather than the 50 – 65% currently allowed. The CEA should also include a similar analysis of the habitat within each HA and the portion of the HA occurring within the BTNF.

While the DEIS only considered a couple of DFCs relative to Dell Creek and Forest Park FGs, the CEA should also be analyzed for the effects on DFCs within the five-mile radius of all FGs and also the HAs, the portion of which occur on the BTNF.

The USGS model and DEIS do not consider the dynamics of predator and prey. The model used median values of transmission of CWD in fed and unfed elk populations but did not incorporate consideration of the role of predators and scavengers in reducing portions of the population with disease. For example, a study of female elk survival in Yellowstone following wolf recovery found that of 33 elk deaths, 11 were hunter harvest, 14 due to predation, 6 unknown, and 2 to winterkill.³ (Attached). Wolf-killed elk were older at 12 years than hunter-killed elk of 9 years, while elk killed outside the park by hunters were younger at 7 years of age. "Weighted average annual survival rates were approximately 0.83 (95% CI = 0.77-0.89) for females 1-15 years old and 0.80 (95% CI = 0.73-0.86) for all females." This was much "lower than the rate of 0.99 observed during 1969-1975 when fewer elk were harvested by hunters, wolves were not present, and other predators were less numerous." Later research looked at the historical elk numbers of the northern Yellowstone elk herd from 1923 -2019 and effects of hunters and predators.⁴ Hunters harvested 5.7 – 18.7% of the population, while wolves

¹ Carter, J. and Ratner, J. 2023. Surveys of Upper Green, Fisherman Creek, Elk Ridge Allotment Complexes. <https://app.box.com/s/3dux7o4fml2aqnmqkwpg00ayy6hkxpd>

² Carter, J. and Ratner, J. 2023. Upper Green Study – Utilization v Retention – BTNF 1013/2014. <https://app.box.com/s/3y40248iqyx7fq9obi4qesqn5ctow9j9>

³ Evans, S.B., Mech, L.D., White, P.J., and Sargeant, G.A. 2010. Survival of adult female elk in Yellowstone following wolf restoration. *The Journal of Wildlife Management* 70(5):1372- 1378.

⁴ MacNulty, D.R., Stahler, D.R., Wyman, T., Ruprecht, J., Smith, L.M., Kohl, M.T., and Smith, D.W. 2020. Population Dynamics of Northern Yellowstone Elk after Wolf Reintroduction. In: Smith, DW, DR Stahler, DR MacNulty (editors). *Yellowstone wolves: science and discovery in the world's first national park*.

removed 1.8 - 6.2%. The USGS model and DEIS failed to consider the role predators could play in reducing diseased and older animals and how that would affect model outcomes.

Likewise, the model prediction of an increase of elk abortions on private land as a proxy for brucellosis would increase risk to cattle by 8 – 21% without FGs. This ignores the role scavengers may play in reducing that risk and the self-inflicted wound livestock producers create for themselves by killing predators and scavengers. Assumed CWD prevalence rates are based on areas outside Yellowstone NP that are subject to predator control, therefore these rates do not reflect the advantage predation may play if a more natural scenario were included.

The USGS Model and DEIS also do not account for irruptions of disease. For example, Wyofile reported on a die-off of elk calves at the Horse Creek FG due to hoof rot.⁵ The article also describes die-offs at the National Elk Refuge. The article also pointed to lowered hunter pressure. Models are likely not reliable when these eruptions or winter kills happen. The model can't explain away the science that says concentrating the animals on FGs increases disease, so continuation of the FGs will most probably accelerate CWD and other diseases. A current article in Wyofile describes the opinion of eight experts if FGs continue and that is prevalence of CWD on FGs will reach 42%.⁶

We insist that this analysis be done for all FGs whether or not permits are renewed. It is incumbent on the BTNF to assure that all habitats are meeting the intent of the Forest Plan, the intent of NFMA for sustainability, and other laws and regulations. For example, in the studies we have completed, we found that the Elk Ridge allotments are producing less than 25% of potential, after five years rest. This illustrates that recovery is slow. In the Upper Green allotments, we found current production less than 40% of potential. This represents an irretrievable commitment of resources because livestock grazing has been allowed to continue absent application of known principles to maintain production over the history of these areas. Whether this is an irreversible commitment of resources might be debatable, but the resultant soil erosion, streambank damage, loss of native species such as bluebunch wheatgrass are likely not recoverable within a planning period and therefore, we argue are irreversible and irretrievable.

Forest Plan Provisions

The following are sections excerpted from the BTNF Forest Plan. Page numbers for the excerpts are provided in parentheses. Each of these should be addressed in an analysis of Direct, Indirect and Cumulative Effects for the Project area and a designated Cumulative Effects Area (CEA). The Project Area would be the area within a five-mile radius of Dell Creek and Forest Park that lies within the BTNF. It would also include the portions of the Hunt Areas that

⁵ Koshmiri, M. 2023. Historic die-off at Wyoming elk feedground prompts management changes. Wyofile <https://wyofile.com/historic-die-off-at-wyoming-elk-feedground-prompts-management-changes/>

⁶ Koshmiri, M. 2023. Fewer elk, sicker elk. That's what the experts expect if Wyoming keeps on feeding. <https://wyofile.com/fewer-elk-sicker-elk-thats-what-the-experts-expect-if-wyoming-keeps-on-feeding/>

contain these two FGs which occur within the BTNF. The CEA would be the area within the BTNF that includes all FGs that have BTNF managed lands within a five-mile radius of the FGs. This is all FGs except Bench Corral FG. It would also include all BTNF managed lands that occur within HAs that contain one or more FGs. All Forest Plan proposed monitoring needs analysis as to whether it occurred, to what extent it occurred, what the results show, and how this affects elk habitat and populations. This should be incorporated into the Project and CEA analysis.

Desired Conditions: The following are examples of DFCs. All DFCs in the HAs and WEST five-mile radius for all FGs affecting the BTNF need to be analyzed. The following examples provide a general picture of Forest Plan goals.

DFC 6 applies to Wilderness, Wilderness Study Area, and Wild Rivers. Wilderness is described as, "you find almost no signs of people away from trails or camping areas. The Wilderness shows you the natural processes of plants and animals living and dying." (p256). There is a Lakeshore Stock Use Standard that grazing of recreational stock will be at least 100 feet away from lakes. ([259). Fisheries and Wildlife Prescription places emphasis on maintaining native animal and plant species with "special emphasis on the preservation of Threatened, Endangered, and Sensitive Species and their habitats." Regarding fisheries, the Forest-wide standards apply. (p260). The intent of the Fisheries and Wildlife Prescription is to provide habitat "adequate to meet the needs of dependent fish and wildlife populations, including those of Threatened, Endangered, and Sensitive Species." (p155). Fish Habitat Management Guidelines include providing habitat to be improved and maintained to at least 90% of its natural potential. (p157). A Water Protection Standard provides that human and dog feces will be buried at least 100 feet from streams and lakes in Wildernesses. (p261). The Biodiversity guideline maintains genetic integrity and populations of native plant and animal species within the context of Wilderness character. (p263). Natural agents of ecological change will operate freely in Wilderness with all uses managed to preserve Wilderness character. (p264).

DFC 6B emphasis is to "provide for the protection and perpetuation of natural biophysical conditions...with some perceptible evidence of past human use." Fisheries and wildlife populations are affected by natural processes. Vegetation Range Prescription is "to maintain and enhance range and watershed condition while providing forage for livestock and wildlife." (p266). The Vacant Allotment Guideline states, "Vacant allotments will be restocked only to meet resource-management needs". The Forage Management Practices Standard states that, "Grazing management will control livestock numbers so that livestock use will be within grazing capacity." (p267).

DFC 10 emphasis is to "to provide long-term and short term habitat to meet the needs of wildlife managed in balance with timber harvest, grazing, and minerals development. All surface-disturbing activities are designed to have no affect or beneficial effects on wildlife. If any portion of this area contains grizzly bear habitat, no surface-disturbing activities can occur there until the grizzly bear cumulative effects model can be run to help determine potential

effects on the grizzly bears." (p312). Fisheries and Wildlife Prescription, "Groups of species are emphasized, such as early- or late-succession-dependent species, in order to increase species richness or diversity. Habitat is managed to achieve the game and fish populations, harvest levels, success, and recreation-day objectives identified by the Wyoming Game and Fish Department and agreed to by the Forest Service." (p312). The Vegetation Range Prescription is "Range is managed to maintain and enhance range and watershed condition while providing forage for livestock and wildlife." (p314). Aspen Management Guideline is Aspen should be managed for its value as wildlife habitat and for providing seasonal colors while emphasizing its value as habitat for selected management indicator species." (p316).

There should be an analysis of the cumulative effects of past grazing, timber harvest and other vegetation manipulations, roads and trails including all classes, and recreation on the fish and wildlife in the Project Area and CEA. Each affected DFC within the five-mile radius or affected Hunt Area on the BTNF must be analyzed. The Aspen management guideline to manage aspen for wildlife and habitat for MIS also should lead to analysis of past sheep grazing and bedding effects on aspen stand age classes, recruitment, understory plant communities as compared to potential and reveal how future management will prevent domestic bedding and degradation of aspen. Similarly, cattle congregate in aspen and denude the understory. These are all interrelated and intertwined with elk and other wildlife in the BTNF. The Forest Plan emphasizes natural process and management controls. The attainment of these goals and effectiveness of management must be evaluated through this analysis.

Problems: The BTNF Forest Plan describes major problems as (1) human access to and commercial or recreational use, the needs of T&E and Sensitive plant and animal species, and the need to mitigate the impacts of human use and access to natural resources. (p8). The attractions of the region and national interest in the Greater Yellowstone Area have encouraged a high level of recreation use. (p29). Over 200 outfitters and guides offer services for day and overnight trips for river floating, hiking, hunting, and fishing. Commercial operators compete intensely with one another and private users for limited recreation resources in the National Forest. Some developed sites are crowded and overused. Usually, these sites are used to capacity on weekends, holidays, and on some weekdays during July and August. (p31). Crowding in Wildernesses is detrimental not only to user expectations of solitude and to physical elements such as soil and vegetation, but also to the resource of wilderness. Public comments and research results have revealed a number of issues of key importance: user conflicts with pack and saddle stock, poor wilderness-use ethics, crowding and overuse, poorly enforced regulations, conflicts with outfitters and guides, poor signing and maps, conflicts between sheep grazing and recreation use, and horse user and hiker conflicts. (p31). Loss of big-game winter range and high economic value of big-game use has brought about a great deal of pressure for winter elk feedgrounds and habitat improvements. (p37).

Here the Forest Plan is acknowledging the huge demand for the natural attributes of the Forest. This demand is growing as previously cited in these comments showing a near 50%

increase in visitation to the Grand Teton NP.⁷ What is now needed is a greater emphasis on the Forest's natural attributes, with more acres protected as wilderness, roadless areas that are restored and allow no timber harvest with all roads reclaimed, protection of mature and old growth forest, definition of wildlife core and corridor areas and total protection of those to provide security habitat needed by lynx, wolverine, grizzly bears and other Special Status wildlife species such as elk. The area grazed by livestock needs to be reduced to protect watersheds, streams, water quality, soils, and native plant communities as demand for recreation and need for watershed water storage has increased during drought and climate change.

Because of these issues the Forest Plan discussed the identification of fish, wildlife and plant species that are most representative of those occurring on the Forest. These are Management Indicator Species that include T&E species, important harvest species, ecological indicator species and Sensitive Species. These species are described as having specific habitat requirements and additional MIS will be selected and validated for each habitat as part of the Forest Plan implementation process. Two species, the pine marten and Brewer's sparrow, have been selected as appropriate MIS having important requirements provided by a specific habitat. Additional MIS will be selected and validated for each habitat as part of the Forest Plan implementation process. The following species have been selected as ecological indicators: for riparian habitat, cutthroat trout; for mountain meadow habitat, bighorn sheep; for wetland habitat, boreal toad, and boreal chorus frog; for aspen habitat, aspen. Any mention of 'Management Indicator Species' or 'MIS' in the Forest Plan refers to the above 4 species as well as to the pine marten and Brewer's sparrow. (p35). What is the status of MIS and other special status species, their population trends and viability, their habitats?

Monitoring: Habitat monitoring strategies will be developed for each habitat. Riparian and old-growth forest habitats will be monitored primarily by monitoring population trends for their respective guilds and by tracking trends in habitat health and diversity by total acres, amount of each seral stage, condition, and age class. The other four habitat types will be monitored by tracking trends in habitat health and diversity. Habitat monitoring strategies will be developed for each habitat. Riparian and old-growth forest habitats will be monitored primarily by monitoring population trends for their respective guilds and by tracking trends in habitat health and diversity by total acres, amount of each seral stage, condition, and age class. The other four habitat types will be monitored by tracking trends in habitat health and diversity. (p35).

In a later section, Forest Plan monitoring is discussed further. The Forest Service should report on and analyze the monitoring for these habitats, map the outcomes and relate the results to the needs of each of the special status species and how this Project will affect ecosystem attributes. Core and corridor habitat integrity, capability and suitability need to be quantified and mapped for all the special status species. The specific habitat needs of each species should be quantified and used to determine current and potential habitat capability and impacts. Additional MIS

⁷ DOI National Park Service. 2021. News Release. 05/23/2021.

selected and validated for the different habitats under this Forest Plan provision should be identified and their habitats described and mapped. Do they occur in the Project and CEA? If so, what are the impacts?

Wild, Scenic and Recreational Rivers: The Forest Plan points out the significance of Wild, Scenic and Recreational Rivers as important corridors for wildlife, wintering bighorn sheep, elk, deer, moose, grizzly bear, bald eagles. (p62 - 69). Monitoring data for the watersheds of each of these designated rivers should be analyzed, mapped, and presented in an analysis of the effectiveness of the Forest Plan to achieve protection of scenic values, wildlife habitat and water quality. Identified problems should be presented and corrective measures delineated. If any of these watersheds occur in the Project area and CEA, their effects need to be disclosed. How are elk populations affected by current management and how should that management be changed to provide for elk migration, parturition, crucial and seasonal ranges?

Wilderness in the BTNF exceeds 1.2 million acres, but there are growing problems with overcrowding and impacts on soil, water, and vegetation. If expansion of the trail system in Wilderness is used to disperse use, no pristine areas will be left without the imprint of man. (p80). The Forest Plan points out that economic conditions in the livestock industry have decreased demand for summer forage. (p81) This passage points out the increasing demand for wilderness and natural values and decreasing demand for livestock forage. There are a significant number of vacant grazing allotments and roadless areas in the Forest. Roadless areas should be restored for their natural values, with all roads reclaimed and timber projects no longer allowed. Vacant allotments should be permanently closed to meet this demand. We have proposed that the permanent closure of vacant allotments should be part of an alternative for this Project.

Livestock: Stocking rates across the Bridger-Teton National Forest are approximately in line with range capacity. However, some allotments may have to be adjusted downward due to poor range conditions, particularly in riparian areas. (p82). Rehabilitation of sheep driveways and drainage control of older Bridger-Teton National Forest roads are the principal opportunities to improve watershed conditions in addition to more limited needs for streambank stabilization. (p84). Currently, there are 11 watersheds in Class I condition, 38 watersheds in Class II condition and 16 watersheds in Class III condition. Most of the Class III condition watersheds are on the sheep driveways where there has been a slowly improving trend since trailing was stopped in the mid-1970's. (p86).

We have pointed out the need for a revised and updated livestock capacity, stocking rate and grazing management analysis. These watershed areas, sheep driveways, areas of poor range conditions including riparian areas, and older roads with drainage problems that existed at the time of the Forest Plan should be identified and mapped. Do they occur in the Project and CEA? Monitoring data and information for each of these along with measures taken to cure these problems should be reported. Current conditions of these areas should be reported showing which of these have been addressed and the outcome. Along with this, any livestock

grazing allotments within which these problems currently exist must have an updated capacity determination, use current forage consumption rates, be rested for recovery, and have revised standards for 20 - 30% allowable use (alpine and other areas). Future management should require active management, not rely on fences and water developments, and provide for rest after each year livestock are grazed so that the allotment or pasture is rested until key species have recovered full vigor.

Roads: There are about 2,900 miles of road on the Bridger-Teton National Forest of varying standards and use. About 1,400 of these miles were never planned or built by the Forest Service but are "2-track" roads. The trend will be toward a substantial reduction of "2-track" roads. Erosion and wildlife disturbance will be reduced through closure of the access areas and vegetation of tire tracks. Additional road closures will also be found on the National Forest road system. Most such closures will be on the lower-standard local roads. The purpose of the closures is to reduce erosion, enhance wildlife security, and provide dispersed recreation opportunities, where emphasized. (p87). What is the current status of these non-system roads and trails on elk security and migration? Are they being closed and reclaimed?

For example, grizzly bear recovery is influenced by two major factors: quality and amount of habitat, and contacts with humans leading to bear mortality. If the challenges of keeping or creating habitat and modifying or eliminating negative human contact are not met, grizzly bear recovery could be delayed or even lost. (p99). Timber - Concern over these past management practices and perceived conflicts with other resources have led to new considerations about how to manage timber on the National Forest. (p100). Overuse - trails, roads, user created, damage. "Although many traditional uses have been allowed to continue within Wilderness boundaries, little or no evidence of people's presence is supposed to exist and changes occurring from people's presence are supposed to be quite limited." (p101). Wildlife security, soil values, and water quality are often affected by poorly designed or maintained roads. Frequently, Bridger-Teton National Forest users create their own "roads" by simply driving off highway. The challenge is to manage roads and their use to minimize wildlife security, soil, and water value losses. If the challenge is not met, irretrievable loss of resources will occur through increased hunting and human-presence pressures on wildlife, soil erosion, and stream sedimentation. (p103). How is this being addressed? How does this affect elk habitat and capacity?

There are many categories of roads and motorized trails plus non-motorized trails which are potentially used by ebikes and mountain bikes, along with many illegal user-created roads and trails and dispersed camp sites. The full extent of these should be determined, mapped, and presented in the analysis. Because motorized recreation including ebikes and in addition to mountain bikes adversely affect wildlife security, degrade the quiet recreation experience people demand, wildlife security, core and corridor areas must be mapped, and ecologically based standards set to eliminate wildlife conflicts and provide for wildlife as a first priority. Current road standards should be modified to include all classes of roads and motorized trails, including all user-created roads and trails in calculating road density for the purpose of

determining wildlife security and habitat capability. While there are some standards in the current Forest Plan as low as 0.25 miles/square mile OMRD, these should be driven to zero for the protection of Canada lynx core and corridor habitats for the BTNF and this Project and CEA. This would likely protect wolverine as they appear to follow the same or nearly the same paths, require higher elevation and snowy habitats as lynx. In habitats for grizzly bear, to increase security, road densities should be minimized to the lowest combined road and trail density in preferred habitats. Likewise, for over snow travel by snowmobiles and the new tracked motorbikes, these areas should be mapped and placed off limits to protect lynx and wolverine habitats in the BTNF and this Project and CEA. The Forest Plan allows vehicles to be driven 200 feet off roads. This clearly leads to the proliferation of more roads and dispersed camps or play areas. A new standard needs to be implemented to limit this to 50 feet or less. Where these habitats overlap with elk security and foraging areas, this needs to be identified and analysis of effects conducted.

Research and inventory needs include habitat-type relationships on the Bridger-Teton National Forest specific to identification, productivity, potentials, and biotic relationships to vertebrate wildlife species. Effects on wildlife of habitat fragmentation, particularly old-growth stands, need an effects evaluation. Research on natural fires and ecosystem effects. Define the ecological differences between clearcutting and fire. Study of impact of elk on summer range in alpine areas and related riparian zones. Delineation of effects of and limitations on timber removal in areas of sensitive soils. Define wildlife species requirements for old-growth, canopy closure, understory and riparian areas, using characteristics capable of measurement. Inventory wildlife species representing the alpine riparian deciduous shrubs and trees, grassland, and upland dry-meadow communities to determine respective type, specific relationships, and resource-use interactions. Completion of a soil inventory database at the intensity level necessary to implement the Forest Plan. (p106 - 108). What is the status of this effort and what are the results? These should be applied to the FG analysis across the BTNF for all FGs that have an area of influence on the habitat within the BTNF as we have described for the five-mile radius and HAs. Presenting the outcomes of the research described also will determine if the Forest Plan and project plans are actually carried out.

Lack of information on Sensitive plant species. Complete Botanical Surveys to determine locations of Threatened, Endangered, and Sensitive plant species. Develop management and monitoring plans for Threatened, Endangered, and Sensitive species. The analysis of lands for timber suitability must take into consideration soil stability, regeneration of cut-over areas, and the potential to develop new harvesting technology. Increased harvesting of timber and associated road needs could negatively affect wildlife, such as elk migration, old-growth forest-dependent wildlife, and Threatened and Endangered species.

Here the Forest Plan identifies apparent gaps in knowledge it needs to fill. Much research has been published since the Forest Plan. The BTNF should complete a review of the information it has collected to address these needs, combine that with the published research on these topics and then define the limits this knowledge places on extractive and recreational uses with the

highest priority on protecting watersheds, streams, water quality, mature and old-growth forest, and habitats for special status species. The Forest should report on the extent of surveys for the groups of species described, map locations of the special status plant species, account for the current soil survey for determinations of timber suitability, report on the status of all cut-over areas and the success of regeneration and associated plant communities for this Project and CEA.

Goals and Objectives: The Forest Plan describes its direction for land management noting that the Goals and Objectives are intended to be accomplished within the life of the Forest Plan, and then maintained afterwards and adjusted through amendments and revisions when natural resources or public needs require. Some of these include fish and wildlife, vegetation range, access or roads and trails. Hiding Cover - Vegetation that will hide 90 percent of either a grizzly bear or elk-depending on management emphasis-from the view of a human at a distance of 200 feet or less. Thermal Cover - Vegetation used by big game to help maintain comfortable body temperatures with minimal energy expenditure. For elk, a stand of coniferous trees 40 feet or taller with an average crown cover exceeding 70 percent. Security Area - An area to which big game retreat for safety when disturbance in their usual range is intensified such as by logging activity or during the hunting season. Viable Population - Minimal population level to maintain the genetic diversity of the species. Sensitive Species - Those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by: Significant current or predicted downward trends in population numbers or density. Significant current or predicted downward trends in habitat capability which would reduce the species' existing distribution. Grizzly Bear Management Situations - Three different grizzly bear management situations are described. Each management situation fits a type of land area where unique grizzly populations and habitat conditions exist and management direction applies. An animal unit for Range is described as one mature cow or equivalent based upon an average daily forage consumption of 26 pounds of dry matter per day. Open Road density is analyzed by type such as open road density, which is then standardized and analyzed over Management Areas or herd units. (p118 - 120). What is the status of attainment of these goals and objectives? How does this relate to elk and their habitat?

These are not all the topics for which direction in the Forest Plan needs to be updated, but these are some that directly affect wildlife. An analysis should be conducted to evaluate the extent of hiding cover, thermal and security cover across the Forest and for the Project and CEA. This should look at historical, potential, and current condition and extent. This should be mapped and overlain with potential core and corridor habitats as part of a capability analysis for each species of wildlife affected, particularly Canada lynx, wolverine, grizzly bear, elk, bighorn sheep, and northern goshawk. The analysis should reflect goshawk guidelines provided in Reynolds et al (1990) for livestock grazing and timber stand structural classes cited earlier. Sensitive species status should be updated to reflect current distributions and those activities (livestock, timber, roads and trails, mining) adversely affecting each with the current population status mapped. Potential and current habitats for sensitive species plants should also be mapped and overlain with these extractive uses. The animal unit for livestock needs to be

updated to reflect the factors we described in the Livestock Grazing section above as it represents only half the current forage consumption rate for an AUM. We have addressed the need to combine all roads, trails and user-created routes, dispersed recreation sites into the total miles analysis since all are used by vehicles and all disturb wildlife. These factors all need to be addressed in the analysis for the Project and CEA.

Land and Resource Management Goals and Objectives: Help re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients. Protect municipal, agricultural, and other potable water supplies and ensure that management activities do not cause deterioration in water-flow timing, quality, or quantity. Meet or exceed current State water quality standards and National Forest Service water quality goals. Provide suitable and adequate habitat to support the game and fish populations established by the Wyoming Game and Fish Department, as agreed to by the Forest Service. Provide suitable and adequate amounts of habitat for recovery of a viable grizzly bear population in the Greater Yellowstone Area as identified in the Grizzly Bear Recovery Plan. Long-term forest habitat management should provide vegetation diversity, approximate natural conditions and include all successional stages important to the grizzly bear. Prevent needless encounters between grizzly bears and people, and prevent grizzly bears from gaining access to such attractions as food and garbage. (p140 - 146).

Protect National Forest Service Intermountain Region Sensitive plant and animal species and provide suitable and adequate amounts of habitat to ensure that activities do not cause: (1) long-term or further decline in population numbers or habitats supporting these populations; and, (2) trends towards federal listing. Protect National Forest Service Intermountain Region Sensitive plant and animal species and provide suitable and adequate amounts of habitat to ensure that activities do not cause: (1) long-term or further decline in population numbers or habitats supporting these populations; and, (2) trends towards federal listing. (p147).

Waterways designated by Congress as part of the National Wild and Scenic Rivers System will be managed to protect and enhance their outstandingly remarkable values, free-flow condition, and water quality for future generations. Objective 4.11(a): Implement applicable Comprehensive River Management Plan(s) and monitor the resource and social indicators identified. (p148).

Prevent logging or certain logging practices where potential effects on other resource values, including wildlife, Threatened and Endangered species, recreation, soils, air, visual resource, and water-quality values are unacceptable. (p150). Grazing use of the National Forest sustains or improves overall range, soils, water, wildlife, and recreation values or experiences
Objectives: Retain or improve forage and overall range condition. Retain or enhance riparian vegetation, stream-channel stability, sensitive soils, and water quality where livestock are present. Coordinate the management of livestock with recreation use. Require that suitable and adequate amounts of forage and cover are retained for wildlife and fish. (p150).

All of the stated goals and objectives need to be addressed and updated showing trends to current conditions from those that existed when the Forest Plan was published, including analysis for this Project and CEA. What has the BTNF done in the 30+ years since the Forest Plan to address these issues? We have incorporated a few that are important to wildlife and watersheds. Extractive uses such as timber harvest and livestock grazing must be controlled to provide watershed protection, protection of riparian areas, water quality, soils, native plants, old growth, and wildlife connectivity. We have discussed the need for mapping and analysis of wildlife habitats for all special status species to show their current condition relative to what the science shows is necessary for them to be recovered to viable populations "across the planning area" which does not mean isolated bighorn herd units or lynx being unable to move through the Wyoming and Salt River Ranges. These are just examples. Finally, the idea that "Grazing use of the National Forest sustains or improves overall range, soils, water, wildlife and recreation values or experiences" is put forth. Livestock are a negative burden to all of the aspects described and it is the burden of the Forest Service to provide the science and analysis that shows this claim can be achieved. We can point to many scientific articles showing the costs to the ecosystem of livestock grazing and have yet to see any positive ecological benefit.

Management Prescriptions, Standards and Guidelines are provided. Winter Restrictions Standard – Over snow vehicles and helicopters for skiing will avoid crucial winter ranges. (p152). For all the prescriptions, standards and guidelines, their effectiveness needs to be evaluated and they need to be expanded in some areas. This over snow issue is one such example. For other projects, we have commented on Canada lynx and wolverine corridor and core areas and the need to have those free from over snow travel. The same should be true for elk crucial and winter range and migration routes. This should be incorporated into the mapping and analysis for these animals to demonstrate that Forest management will accommodate their ability to occupy and move through the Forest.

The Bridger-Teton National Forest provides habitat adequate to meet the needs of dependent fish and wildlife populations, including those of Threatened, Endangered, and Sensitive species. If a decision to reestablish is made, the Bridger-Teton participates in implementation of the gray wolf recovery plan and formulation of guidelines for the management of gray wolf in the Greater Yellowstone Area. Security Area Standard -Non-activity areas-security areas-will be maintained adjacent to concentrated human activity areas. Habitat Effectiveness Standard -To provide for habitat effectiveness established for each Management Area, non-motorized and motorized vehicle access will be regulated either seasonally or year-round to protect such important big game habitat components as primary feeding areas, crucial winter range, calving/fawning/lambing areas, big-game rearing areas, rutting complexes, and big-game migration corridors for each MIS, T&E, Sensitive and provide limits on roads and trails, timber harvest, grazing - analyze current and potential conditions) (p155).

The BTNF should analyze the outcome of these prescriptions, standards, and guidelines as applicable to special status species by defining the habitat and connectivity needs (capable, potential, core, and corridors) and the locations of each species observations and populations

across the Forest. Are their populations increasing, decreasing, areas occupied increasing or decreasing? How have these prescriptions, standards and guidelines been monitored and enforced? Where are the security areas located and how are they maintained adjacent to concentrated human activity areas as well as other areas? These need to be mapped and defined. Similarly for the Habitat Effectiveness Standard, these need to be mapped and analyzed. The current Forest Plan, by breaking everything down into management zones fragments the analysis and ability to comprehend the extent of these populations, activities negatively affecting them and measures to control those activities. The species must be analyzed across the Forest with their specialized habitat needs, describe, and map the current and potential habitat needs, and whether they are being met. If not met, then changes in extractive uses must be made to restore habitat function and connectivity. At the core of this is reducing fragmentation of habitats to minimum levels that allow habitats to function. This analysis is also critical in the Project and CEA.

Grizzly Bear Habitat Management Standard: Within Grizzly Bear Management Situation 1 and 2, existing and future Interagency Grizzly Bear Management Guidelines will be followed to maintain and improve habitat. In Management Situation 1 and 2, some changes in livestock distribution or numbers will be made where livestock grazing is demonstrated to have an adverse effect on meeting grizzly bear recovery objectives. No changes in class of livestock will be allowed. (p156).

The habitat management for grizzly bears should be changed by updating analysis of suitable habitat. Habitat requirements for grizzly bears should be clearly defined, including denning requirement. Where bears den, over snow travel should be banned. Another example, in the FEIS for the Upper Green River Area Rangeland Project, it was pointed out that "The Green River and the lower reaches of its tributaries flow through open valleys and support well-developed willow riparian communities with abundant herbaceous vegetation (forbs, grasses, sedges) eaten by bears. The bottomlands in the project area also support dense patches of conifers available as bedding and security habitat." The USFWS also reports for grizzly bear diets that, "Forbs, roots, tubers, grasses, berries and other vegetation, and insects comprise most of the bear's diet."⁸ The diet and habitat preference (capable range) of cattle overlap with grizzly preferences, so direct competition occurs where cattle are allowed to graze in grizzly habitat. Domestic sheep also compete for food and resources and are grazed and bedded in preferred habitats of grizzly bears. This also is direct competition for elk and other wildlife for forage and cover. The Upper Green River area where renewal of grazing permits was recently approved is an example of the failure of the Forest Plan to protect grizzly bears and other wildlife habitat and migration corridor integrity.

Sensitive Species Management Standard - Quantifiable objectives will be developed to identify and improve the status of Sensitive species and eliminate the need for listing. Crucial habitats of priority I, II, and III species as listed by Wyoming Game and Fish and the Intermountain Region

⁸ USFWS. 2003. What do grizzly bears eat? Mountain Prairie Region, Fish and Wildlife Service bulletin.

Sensitive Species List will be protected and maintained. The Forest Service will cooperate with Wyoming Game and Fish on management programs when needed to maintain population objectives of these species, especially with species which have been identified as needing immediate attention and active management to ensure a significant decline in breeding populations do not occur. Information collection and interpretive programs will promote the conservation of these species and their habitats. National Forest managers will participate in species and habitat surveys and monitoring programs needed to gain necessary data to determine population status. (p157).

The Forest Service has primacy in managing wildlife habitat and wildlife on the BTNF. Any agreement with Wyoming Fish and Game is subsidiary to that responsibility. The BTNF should report on the development of the "quantifiable objectives" developed for sensitive species. Have these been developed? What are they? Have they been implemented? Are they monitored? All these questions should be part of the analysis for current status of sensitive species across the BTNF and this Project and CEA. Have the crucial habitats, current and potential range been identified? Has the population status been determined? A map of these should be issued showing the extent of occupancy and factors limiting the habitats with corrective actions, criteria, standards, population trends, etc. to provide for habitat so that these species can recover if they are currently not at their potential.

Fish Habitat Management Guideline - For fish habitat providing a fishery at or near its potential, fish populations should be maintained at existing levels. For habitat below its potential, habitat should be improved and maintained to at least 90 percent of its natural potential. First priority for improvement should be streams supporting Colorado River and Bonneville cutthroat trout which are Sensitive species. (p157). Stream bank Stability Guideline -At least 90 percent of the natural bank stability of streams that support a fishery, particularly Threatened, Endangered and Sensitive species, and all trout species, should be maintained. Stream bank vegetation should be maintained to 80 percent of its potential natural condition or an HCI rating of 85 or greater. Stream bank stability vegetation and fish numbers and biomass should be managed by stream type. (p158).

The BTNF should report monitoring of these guidelines, which streams/allotments meet or do not meet these and what actions were taken for those streams not meeting, and results of those actions. Past studies in the BTNF have reported the results of monitoring for sediment. Those results show excessive sediment concentrations in cutthroat spawning areas. We can find no standard or guideline in the Forest Plan for a sediment fines level that promotes spawning success. All sediment core sampling data on the BTNF should be reported and analyzed along with cutthroat trout population trends and other information on stream/riparian condition with any actions taken to meet the population objective for cutthroat trout of 90% of potential populations. A standard for sediment fines needs to be established to allow meeting this 90% guideline. The current riparian utilization standard allows up to 65% use. This is in conflict with the 90% guideline and a new standard for utilization that is consistent with the range science should be set at 25% and be measured in the riparian area as defined in the Forest Plan

as the area between the stream and uplands. This is not represented by only monitoring at the waters' edge, or greenline. The analysis for this project should report on the current status of fish populations in streams in the Project and CEA and also report on the fisheries habitat, including sediment fines in spawning areas. These are all affected by livestock.

Canada lynx management direction is summarized in the Forest Plan. The BTNF is designated as occupied lynx habitat. Maintain or restore lynx habitat connectivity in and between LAU, and in linkage areas. Projects must maintain habitat connectivity in an LAU and/ or linkage area. (p160). Changes in LAU boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office. Manage vegetation to mimic or approximate natural succession and disturbance processes while maintaining habitat components necessary for the conservation of lynx. Provide a mosaic of habitat conditions through time that support dense horizontal cover and high densities of snowshoe hare. (p161). If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects. Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands within an LAU in a ten-year period. (p162). Denning habitat should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees ("jack-strawed" piles). If denning habitat appears to be lacking in the LAU, then projects should be designed to retain some coarse woody debris piles, or residual trees to provide denning habitat in the future. (p164). A linkage area provides connectivity between blocks of lynx habitat. Linkage areas occur both within and between geographic areas, where basins, valleys, or agricultural lands separate blocks of lynx habitat, or where lynx habitat naturally narrows between blocks. Lynx habitat occurs in mesic coniferous forest that experience cold, snowy winters and provide a prey base of snowshoe hare. In the northern Rockies, lynx habitat generally occurs between 3,500 and 8,000 feet of elevation, and primarily consists of lodgepole pine, subalpine fir, and Engelmann spruce. (p172 - 173).

The major problem with these directions is lack of specificity. While the BTNF as well as this Project area and any CEA is considered occupied and critical lynx habitat and there are LAUs, there are no specific habitat criteria that define lynx habitat in an undisturbed or potential state by which current conditions in the BTNF can be compared, other than those laid out regarding conifer forest and elevation. Connectivity is mentioned, but where are the core and connecting areas with suitable natural habitat for lynx to occupy or travel through? Do these occur in the Project and CEA? The Forest Plan states that no more than 30% of an LAU is in a stand initiation stage that does not support snowshoe hare habitat. The location of that 30% or less relative to preferred lynx habitat, denning areas, travel corridors seems critical. For example, what if that 30% happened to have occurred in the preferred habitat? Then the remainder of the LAU may be irrelevant and lynx may not be able to use the entire LAU. What are the quantitative criteria for snowshoe hare habitat related to shrub and herbaceous cover and production? All lynx potential habitat and travel ways in the BTNF must be mapped and those areas managed to limit or prevent timber manipulations, over snow travel, trapping and other

uses that would prevent lynx and snowshoe hare from using their preferred areas. The analysis for the Project and CEA should map and disclose the current status of habitats relative to those preferred by lynx and hare.

Livestock grazing objectives and guidelines apply to lynx habitat in LAUs in occupied habitat, but do not apply to linkage areas. Manage livestock grazing to be compatible with improving or maintaining lynx habitat. Guideline - In fire- and harvest-created openings, livestock grazing should be managed so impacts do not prevent shrubs and trees from regenerating. In aspen stands, livestock grazing should be managed to contribute to the long-term health and sustainability of aspen. In riparian areas and willow carrs, livestock grazing should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes. In shrub-steppe habitats, livestock grazing should be managed in the elevation ranges of forested lynx habitat in LAUs, to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regime. (p164 - 165).

These livestock grazing objectives and guidelines lack specificity and provide no assurance that grazing management is not altering preferred lynx habitat so that snowshoe hare presence is not limited by lack of food and cover or altering stand structure in forested habitats such as aspen or conifer forested areas. These are also effects on elk habitat. These objectives and guidelines are stated to not apply to linkage areas, but all the linkage areas lie within the BTNF and the BTNF is designated as occupied habitat, to which these should apply. Maps of preferred lynx core and corridor areas should be overlain with grazing allotments and specific standards applied to provide multiple years of rest and conservative use such as was described for Forage Reserves, or those areas should be declared Forage Reserves with no more than 20% use in alpine areas and no more than 30% use in all other lynx preferred habitats. Grazing in these areas should be limited to three years out of ten as recommended for Forage Reserve and this is consistent with range science for plant recovery following grazing use. This analysis should also apply to the Project and CEA.

Manage recreational activities to maintain lynx habitat and connectivity. Map the location and intensity of snow compacting activities and designated and groomed routes that occurred inside LAUs during the period of 1998 to 2000. The mapping is to be completed within one year of this decision, and changes in activities and routes are to be monitored every five years after the decision. (p168).

Again, the preferred habitats and corridors for lynx (and wolverine) should be mapped and placed off limits to over snow travel. Do they occur in the Project and CEA? The maps specified in the Forest Plan should be produced and overlain with the preferred habitat of lynx, wolverine, grizzly bear denning locations and the Project and CEA. Closure to over snow travel for these areas should occur and have suitable buffers. Is there enforcement?

The definitions in the Forest Plan section on lynx describe old growth, red squirrel habitat, riparian areas, winter snowshoe hare habitat associated with potential or near potential conditions. Old growth forests generally contain trees that are large for their species and the site, and are sometimes decadent with broken tops. Old growth often contains a variety of tree sizes, large snags, and logs, and a developed and often patchy understory. Red squirrel habitat consists of coniferous forests of seed and cone-producing age that usually contain snags and downed woody debris, generally associated with mature or older forests. Riparian areas have an area with distinctive soil and vegetation between a stream or other body of water and the adjacent upland; includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation. Winter snowshoe hare habitat consists of places where young trees or shrubs grow densely - thousands of woody stems per acre - and tall enough to protrude above the snow during winter, so snowshoe hare can browse on the bark and small twigs (LCAS). Winter snowshoe hare habitat develops primarily in the stand initiation, understory reinitiation and old forest multistoried structural stages. (p170 - 175).

Here we see definitions that describe lynx habitat components in a mature to old-growth state. Multiple age classes, snags, down woody debris, and patches that occur naturally. Winter snowshoe hare habitat describes conditions that timber manipulations destroy by their very nature. These are the sapling and in aspen, the many suckers and saplings that would be eliminated by prescribed burns or livestock grazing. These need to be mapped as part of the identification of lynx habitat and protected from timber manipulations and grazing by livestock. Current condition of aspen and riparian areas in lynx preferred habitats and each LAU should be analyzed for the structural age classes and understory components compared to their natural conditions. Sheep bedding occurs in aspen stands, while cattle linger there for shade. The condition of aspen stands in the Project and CEA needs to be monitored and documented in this analysis along with analysis of these other habitat components. Riparian areas are described as the area between the stream and uplands yet review of monitoring reports and the Forest Plan indicates it is not monitored. There are utilization or stubble height criteria for the greenline, and uplands, but the critical area between those is apparently ignored. This area is critical cover for sage grouse brood rearing and many other species, including amphibians. It is preferred by livestock and grazed heavily, leading to very short stubble heights.⁹ These factors are all important in elk habitat as well. Current efforts by the public to have the BTNF cooperatively monitor a subset of these to compare to the riparian greenline and upland utilization of key species measures are being stonewalled.¹⁰

Vegetation: The Vegetation prescription is whether range or timber, vegetation management activities enhance diversity of plant communities and various successional stages of those plant communities within the Management Areas. For aspen, priority is placed on perpetuating

⁹ Carter, J., Catlin, J., Hurwitz, N., Jones, A., and Ratner, J. 2017. Upland water and deferred rotation effects on cattle use in riparian and upland areas. *Rangelands* 39(3-4):112-118. doi 10.1016/j.rala.2017.06.003.

¹⁰ Rob Hoelscher. 2021. Email response to request for cooperative monitoring. 05/24/2021.

stands being invaded by conifers. Vegetation treatment projects are designed to retain diverse age classes. (p176).

We previously commented on a proposed forest plan amendment revolving around bighorn sheep and commented that the Forest Plan amendment must re-evaluate these claims that range or timber management enhances diversity by providing the evidence that a logged or thinned, or grazed habitat is more diverse than a naturally occurring habitat that is undisturbed by human activities. Many aspen stands naturally occur in and adjacent to conifer forest and over time will have increased conifer presence. Of much greater concern is the effect livestock grazing has on aspen and conifer understory and recruitment, browsing aspen shoots, depleting herbaceous vegetation, increasing bare soil, drying of the understory, and accelerating conifer invasion. These habitats should be mapped, and their current conditions described with comparisons between areas that have not been grazed by livestock or exposed to timber manipulations or prescribed fire with those that have. This directly affects elk and other wildlife. This should apply to the BTNF and the Project and CEA.

Forage Utilization Standard - The following utilization standards will be maximum utilization levels allowed for all herbivores on key vegetative species. Uplands 40 - 60%; riparian 45 - 65%. During AMP revision, the Interdisciplinary (ID) Team and livestock permittees will prescribe site-specific utilization levels needed to meet Forest Plan objectives. (p177).

Forage utilization at these levels is unsustainable as discussed in an earlier section of these comments. Science-based standards are for less than 30% utilization with sufficient rest to recover plant vigor following grazing. We reiterate also that use of current key species such as Idaho fescue and Wyethia are inappropriate. Idaho fescue exists in a low vigor state due to apparent heavy use and lack of rest. Wyethia is an unpalatable species. We also note that in the recent Upper Green decision the BTNF preferred alternative for the Noble pastures allotment had a 30% utilization criterion. The ROD raised that to 65%. This must have been an example of the permittees helping with the decision. Where is the public in this equation? Where is the science? What is the extent of tall forb communities in the Project and CEA? What are their condition compared to potential? How does this protect or provide forage and cover for elk and other wildlife?

Old-Growth Standard - Only silvicultural practices which achieve desired old- growth attributes will be used in stands managed as old-growth. Twelve percent or more of existing old-growth Douglas-fir and spruce forest will not be harvested in order to provide for viable populations of old-growth dependent species. Designated old- growth stands will be at least 200 acres contiguous patches, generally spaced 1 to 2 miles apart, but attached by stringers of forested riparian areas or mature timber. (p179).

It is clear that Canada lynx and many other species are dependent on old-growth, not 12% of old growth fragmented into small patches as allowed in the current Forest Plan. The BTNF must analyze wildlife and understory plant populations in existing old growth and compare these to

those areas that have been altered by timber manipulations and livestock grazing. The current status of mature and old-growth across the Forest and in the Project and CEA should be mapped and compared to historic levels. Disclose the method of analysis and the error inherent in performing this analysis. These areas should then be compared to preferred lynx, wolverine, grizzly bear, elk, and other special status species habitat requirements. Core or security areas for these species and the connections to other core or security areas should be mapped and compared to the current status of mature and old-growth and no further disturbance to mature and old growth forest should be permitted in these areas. Due to the carbon storage and climate implications, all mature and old-growth should be protected. Livestock grazing should be eliminated in preferred grizzly bear habitats, such as valleys and riparian areas, willow carrs, and areas near bear security habitat. Criteria and analysis must adhere to the principles laid out in "Management Recommendations for the Northern Goshawk in the Southwestern United States" regarding maintaining six classes of vertical stand structure, canopy cover >50%, habitat for species such as red squirrel, protecting the mycorrhizal fungi layer and limiting livestock grazing to no more than 20% utilization in forested areas.¹¹ What are the current conditions of forested habitats in the Project and CEA compared to these guidelines? How do these compare to the needs of elk for security? Other species?

Aspen Management Guideline: Aspen sites should be managed for aspen-type perpetuation. The loss of aspen stands due to old age, conifer encroachment, and possible overgrazing should be prevented. Priority areas for aspen treatment should be big-game winter ranges, calving areas, and stands where type loss or conversion is imminent. (p182).

This guideline should be refined to prevent development of water sources within a half mile of aspen stands. Current water developments affecting aspen by their proximity should be moved to protect aspen from loafing cattle. Sheep should not be bedded in aspen stands. Current aspen recruitment and understory conditions are degraded across the Intermountain Region due to these issues.^{12 13} Prior to any use of treatments in aspen, livestock grazing should be terminated for five years to allow recruitment to occur. If conifer encroachment is considered an issue, the same prescription will apply, and long-term monitoring will determine whether the condition stabilizes. Over the longer term, wildfire such as occurred in the Roosevelt Fire of 2018 will remove the conifers and the aspen will regenerate. Analyze the current condition of aspen stands and their understories within the Project and CEA and the implications to elk parturition needs, crucial range needs, migration needs.

¹¹ Reynolds, R.T., R.T. Graham, M.H. Reiser, R.L. Bassett, P.L. Kennedy, D.A. Boyce, Jr., G. Goodwin, R. Smith, and E.L. Fisher. 1992. Management Recommendations for the Northern Goshawk in the Southwestern United States. Gen. Tech. Rep. GTR-RM-217, Fort Collins, Colorado. U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 90p.

¹² USDA. 1998b. Draft Sub-regional Assessment of Properly Functioning Condition for Areas Encompassing the National Forests of Northern Utah. USDA Forest Service, Region IV, Ogden, Utah.

¹³ USDA. 1996. Intermountain Regional Assessment: Properly Functioning Condition. USDA Forest Service, Region IV, Ogden, Utah

Streambank Vegetation Standard: Grass and shrub vegetation will be maintained within about 25 feet plus 2 to 4 feet for each 1 percent side slope adjacent to live streams. Vegetation which gives greater stability due to rooting structure will be planted during the revegetation of channel banks following construction. (p183).

As we commented earlier, this zone is not monitored but is the zone of heaviest use by livestock and most important to wildlife. Provide monitoring data and analysis for compliance with this standard. Provide a new standard that limits utilization to less than 30% in the zone between the greenline and uplands for each riparian zone.¹⁴ This also should apply to meadows. This will be validated by clipping total herbaceous vegetation in grazed and caged plots and also comparing the result to the greenline stubble height measure currently used. These parameters should be incorporated into an alternative and analysis for this Project.

Watershed Disturbance Standard: Not more than 30 percent of the forested area of any second-order or higher watershed will be in a clearcut or equivalent condition within a three-decade period. The effects of forest vegetation alteration upon water quantity, timing, and quality will be evaluated by means of a watershed analysis procedure and included in the National Environmental Policy Act process. (p188).

Present an analysis of the watersheds in the BTNF, Project and CEA to document the percent disturbance compared to this standard. Provide the hydrologic or watershed analysis relating watershed disturbance from roads, timber harvest or vegetation treatments, and livestock grazing showing the change in hydrologic conditions from potential. It is of note that these activities compact and denude the soil, reduce infiltration, and increase runoff which then affects baseflows in streams and groundwater recharge. Baseflows in streams are important to control stream temperature and provide aquatic habitat. Evaluate all diversions, spring developments along with these factors to evaluate current stream flows with their potential. Take climate change into account. Degraded watersheds are also degraded habitat and this analysis should address the effects on elk.

Off-Road Parking Guideline: Motorized vehicles will be permitted to park within 200 feet of designated open routes except for areas and trails that are signed to prevent unacceptable impacts on other resources. (191).

The issue of user-created roads and play areas is of concern as it increases actual road density and is not reported as part of the OMRD. Neither are gated, or temporary roads, or motorized trails, or user-created roads and trails counted as road density, but all count for loss in wildlife security and loss of tranquil settings for quiet recreation user. Added to this are dispersed camp locations and the associated user-created play areas. All of these should be mapped within the Project and CEA to show the extent of this problem. This guideline needs to be

¹⁴ Clary, Warren P and Bert F. Webster. 1989. Managing Grazing of Riparian Areas in the Intermountain Region. USDA Forest Service GTR-INT-263. <https://www.fs.usda.gov/research/treesearch/24605>

changed to limit parking to roadside areas < 50 feet of an open road (basically the roadside but far enough away to be safe upon exiting the vehicle). No camping should be allowed except in designated areas. Non-designated campsites, play areas, roads and trails should be reclaimed and blocked to future motorized use.

Animal-Caused Damage Control Standard: Predatory animal damage will be managed in cooperation with the Wyoming Game and Fish Department, Animal Plant Health Inspection Service (APHIS), and cooperators. Control efforts will be used to protect livestock, particularly domestic sheep from predation by coyotes and bears. Methods such as trapping, snaring, denning, aerial gunning, calling and shooting, guard dogs, and the use of toxicants will be considered for control based upon an analysis of losses and the need for control. Control efforts will be directed toward offending animals where need is demonstrated. The Forest Service advises APHIS on predator control needs, control methods, and special precautions needed for each grazing allotment. APHIS provides information on losses and the effectiveness of control methods. (p198).

Predator-friendly livestock practices should be required and no action taken in occupied or suitable grizzly bear habitat. Placing livestock in areas preferred by bears is creating a direct conflict and should be prevented as noted earlier in these comments. Trapping on the Forest and this Project and CEA area should be banned under the Forest Service Prohibition Authority (36 CFR 251). Trapping is a danger to other animals such as lynx, wolverine, pets, people and should not be allowed. Stopping the killing of predators and scavengers in the BTNF and particularly in the areas we have delineated that are within five miles of FGs and within HAs containing FGs will allow natural predator prey relationships to begin to occur, which will aid in controlling diseases.

Open Road Density: The average miles of standard road that will be open per square mile of land with adjustment of actual road miles to standard road miles. (p205).

Effects on wildlife should be determined by the miles of all roads and trails that can be used by people within an area of interest. OMRD alone understates impacts. Hunters, hikers, bikers, motorized vehicles all displace wildlife and fragment habitat. In this case the analysis should total all categories of open, closed, user-created or other classes of roads and trails for the purpose of analyzing wildlife impacts. This would apply to the Project and CEA and areas of interest for analysis can be project areas, watershed areas, habitat and security areas, core, and corridor areas for wildlife. Overall densities should be regulated with appropriate standards that also acknowledge the effects of noise at distance from the source, therefore incorporating buffers is needed. There should be many areas outside wilderness that have zero road density. These would be all roadless areas and any existing roads in these should be reclaimed and revegetated. Other areas outside roadless and wilderness should have minimal densities to protect lynx core and connections, grizzly bear security, elk security and should be based on current science. The road and trail density effects on elk must be analyzed in the Project and CEA.

The Forest Plan presents a Monitoring Plan. (p415 - 430). The monitoring plan contains two categories: policy management and resources management. The two are closely linked, but the first deals with how closely the forest management direction is adhered to during implementation and the second deals with primary or baseline natural resource information about the effects of Forest Plan implementation. Monitoring is further classified according to function: implementation, effectiveness, or validation monitoring. Implementation monitoring examines whether policies were executed or not. Effectiveness monitoring examines whether policies applied resulted in the desired resource conditions. Validation monitoring examines the quality of data and assumptions used in the planning process. Evaluation of monitoring results and evaluation reports of the data are specified. (p415 - 416). Below we have outlined some of the principal areas to be monitored.

Vegetation Manipulation (418)

Maintenance of critical habitat components such as cover, aspen, old-growth, and security habitat (p418)

Validation monitoring of Colorado cutthroat trout populations (p419)

Validation and effectiveness monitoring of ecological MIS (p419)

Validation monitoring of sensitive plant species (419)

Validation monitoring of sensitive wildlife species (419)

Effectiveness monitoring of compliance with interagency grizzly bear guidelines to ensure habitat capability (p419)

Validation monitoring of big game MIS (p420)

Effectiveness monitoring of maintenance of aspen (p420)

Effectiveness monitoring of range trend (p420)

Implementation monitoring of rangeland proper use criteria (p420)

Validation monitoring of range condition (p421)

Validation monitoring or reforestation of harvested areas (p421)

Validation monitoring of land suitable for timber harvest (p421)

Validation and effectiveness monitoring of clearcut size limits determination (p421)

Effectiveness monitoring of timber management practices including harvest on lands not suited meet multiple use objectives (p421)

Effectiveness monitoring of reclamation (p421)

Validation monitoring of riparian areas (p422)

Validation monitoring of soil and watershed impacts such as compaction, revegetation, and erosion control (p422)

Effectiveness monitoring of water quality related to specific projects or activities (p423)

Effectiveness monitoring of road closures (p423)

Compliance with Monitoring Protocol Additions Management Indicator Species (p424)

Cutthroat Trout Monitoring Protocol (p424 - 425)

Boreal Toad and Chorus Frog Monitoring Protocol (p426)

Aspen Monitoring Protocol (p426)

The BTNF must address all elements of the monitoring plan in an analysis that provides results and interpretations for all monitoring, identify failures to comply with the plan for each area described in the Policy, Resource Tables beginning on p417 and ending on p423. If the BTNF has failed to conduct this monitoring as follow up to the Forest Plan and NEPA, CE projects, then this will call into question whether the BTNF has the capacity to implement additional projects. All locations monitored for each element within the BTNF, Project and CEA should be documented providing tabulations of the data collected, analysis of results and recommended actions flowing from the monitoring with reporting of the outcomes from those actions. In regard to the FGs, monitoring results in the five mile radius and HA zones should be summarized to demonstrate whether the Forest Plan has led to improvements in habitat for elk and other wildlife and whether forage is available in suitable quantities for winter, parturition and crucial ranges.

The bighorn sheep monitoring protocol is described on p425. In the Bridger-Teton National Forest Properly Functioning Condition (PFC) Assessment of September 1997, 12 vegetative communities were evaluated on the Forest and the risk to these vegetative communities for a loss of biological/physical components of the ecosystem. Tall Forb meadows came out with High risk. The Forest will monitor this habitat. This follows direction from the Forest Plan (1990) in that it indicated that we would monitor the health and diversity of habitat for the mountain meadow ecological indicator.

It is very important that all monitoring for each of these 12 communities since the September 1997 PFC assessment be reported and compared to the data upon which that report was based. The trends in species, actual ground cover (not foliar cover) be reported as we have seen for example in Wyethia dominated meadows, end of season ground cover is poor as the foliar cover disintegrates over summer as the Wyethia plants dry and senesce. The extent of these 12 communities across the Forest should be mapped, including the Project and CEA.

Management for each area since the Forest Plan should be analyzed along with the monitoring data. Data should be compared to areas which have been rested or closed to livestock over the long term. Current plant community status should be compared to that described in the current soil survey (ESDs) and to long term livestock exclusion areas. Elk habitat capacity is a critical element in this analysis to determine whether the areas within the five-mile radius or HAs within the BTNF can support the elk population objectives.

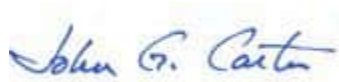
Forest Plan Amendments (p431): The Forest Supervisor may find it necessary to amend the Forest Plan based on such things as:

- Results of monitoring and evaluating implementation of the Forest Plan
- Changes in proposed implementation schedules resulting from differences between funding levels requested and actually appropriated
- Changes resulting from resolution of administrative appeals
- Changes to correct planning errors found during Forest Plan implementation

Changes necessitated by changed physical, social, or economic conditions

It is important that an analysis of each of these issues be done to inform the public of the Forest Service's ability to carry out its proposals. Due to changes in demographic trends with greater emphasis on wilderness and recreation occurring today, changes in management are needed to de-emphasize traditional extractive uses such as livestock grazing and timber harvest and emphasize natural settings, wilderness, primitive, roadless, wildlife habitat, wildlife watching, fishing, hunting, and watershed protection. Note that although Yellowstone National Park is largely unroaded compared to the BTNF, millions of visitors come to view wildlife and natural features. Yellowstone National Park allows no livestock grazing and timber harvest, lets fires burn naturally, and brings a large economic return to the region. Similarly, Grand Teton National Park is bringing large economic returns without being dominated by livestock grazing, timber projects or off-road vehicles. By protecting larger areas, the BTNF can reduce human impacts to wildlife and yet accommodate the increased visitation that is happening. A Forest Plan amendment is needed to change DFCs, combine management areas for protection of wildlife core and corridor areas, permanently retire vacant allotments, and address the changes we have described herein. This could apply to the BTNF, Project and CEA.

Please Reply To:



John Carter, Ecologist
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922
435-881-5404
Jcoyote23@gmail.com

Michael Garrity – Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624

Sara Johnson – Executive Director
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

Figure 1. Elk Feedgrounds with Five Mile Buffers

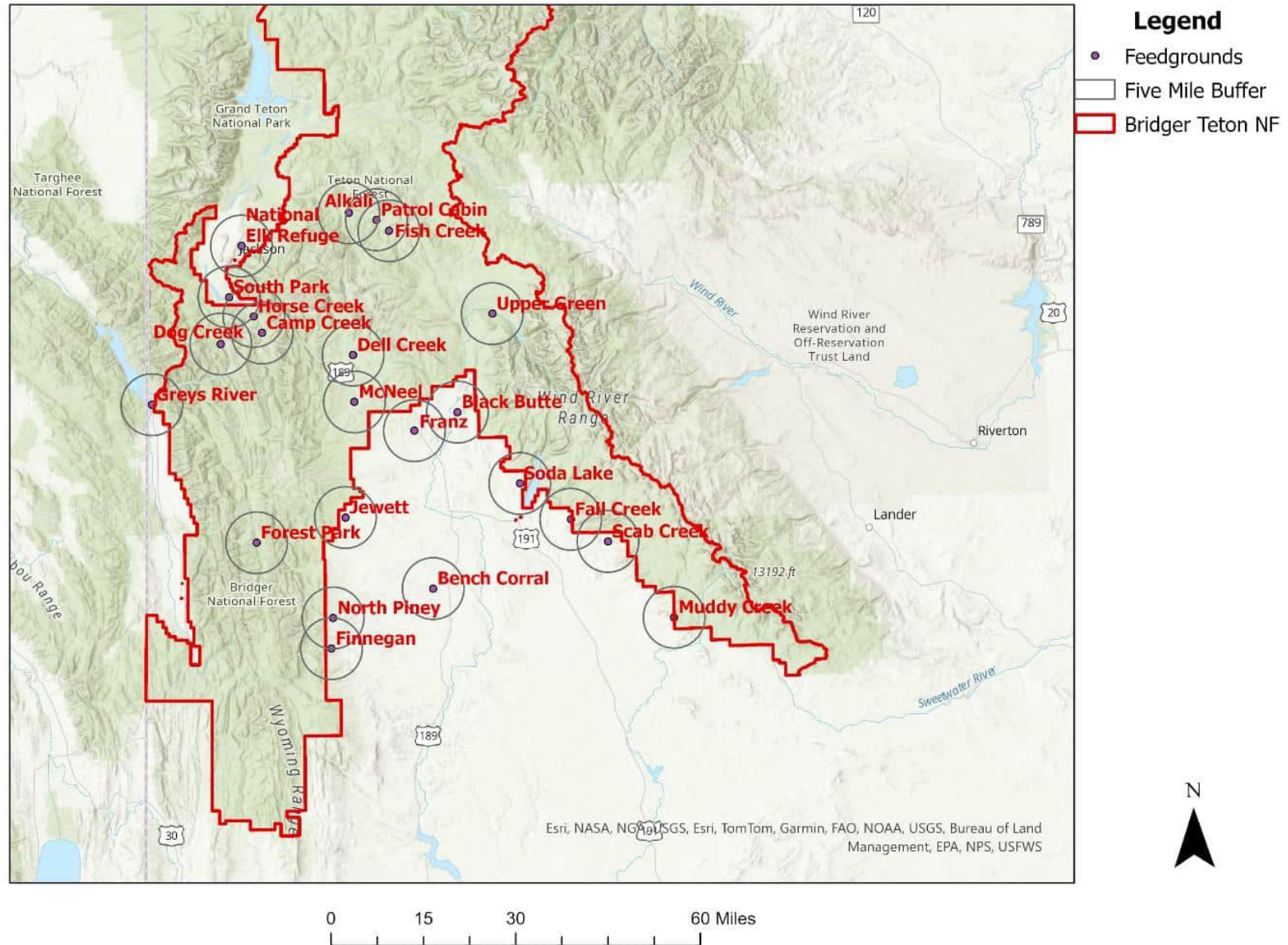


Figure 2. Elk Feedgrounds and Hunt Areas

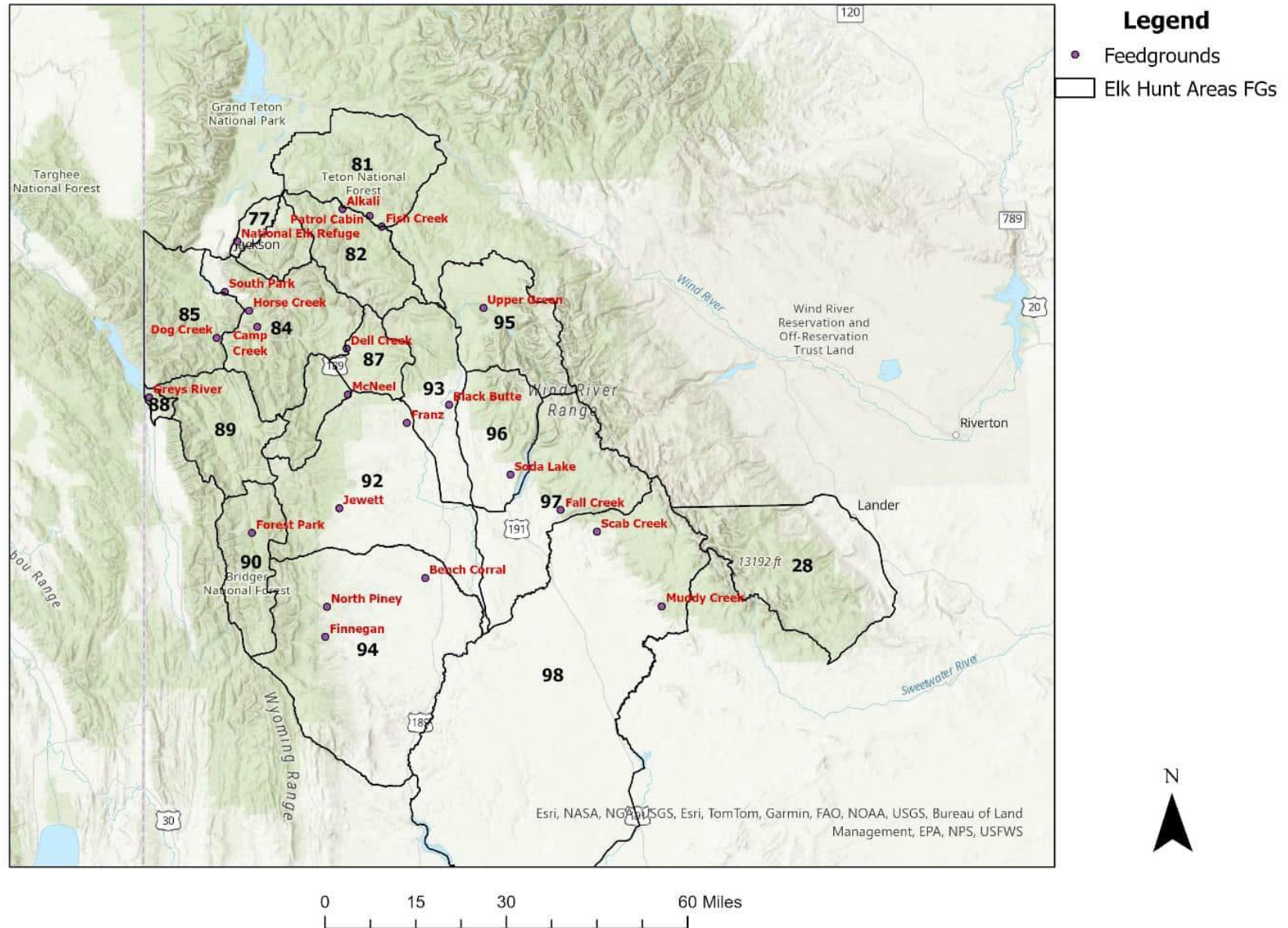


Figure 3. Elk Feedgrounds, Hunt Areas, and BTNF

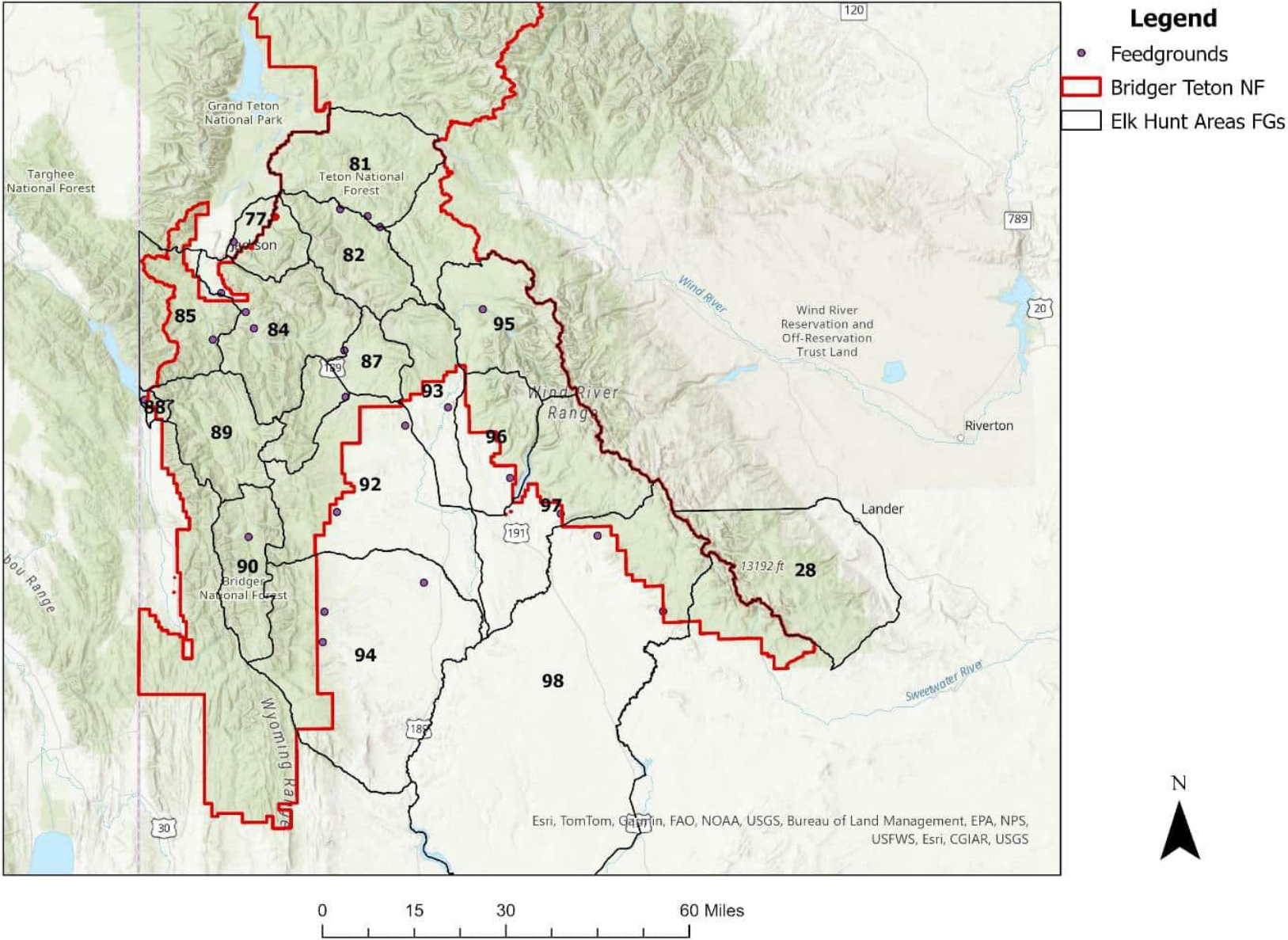


Figure 4. Elk Feedgrounds, DFCs, and BTNF

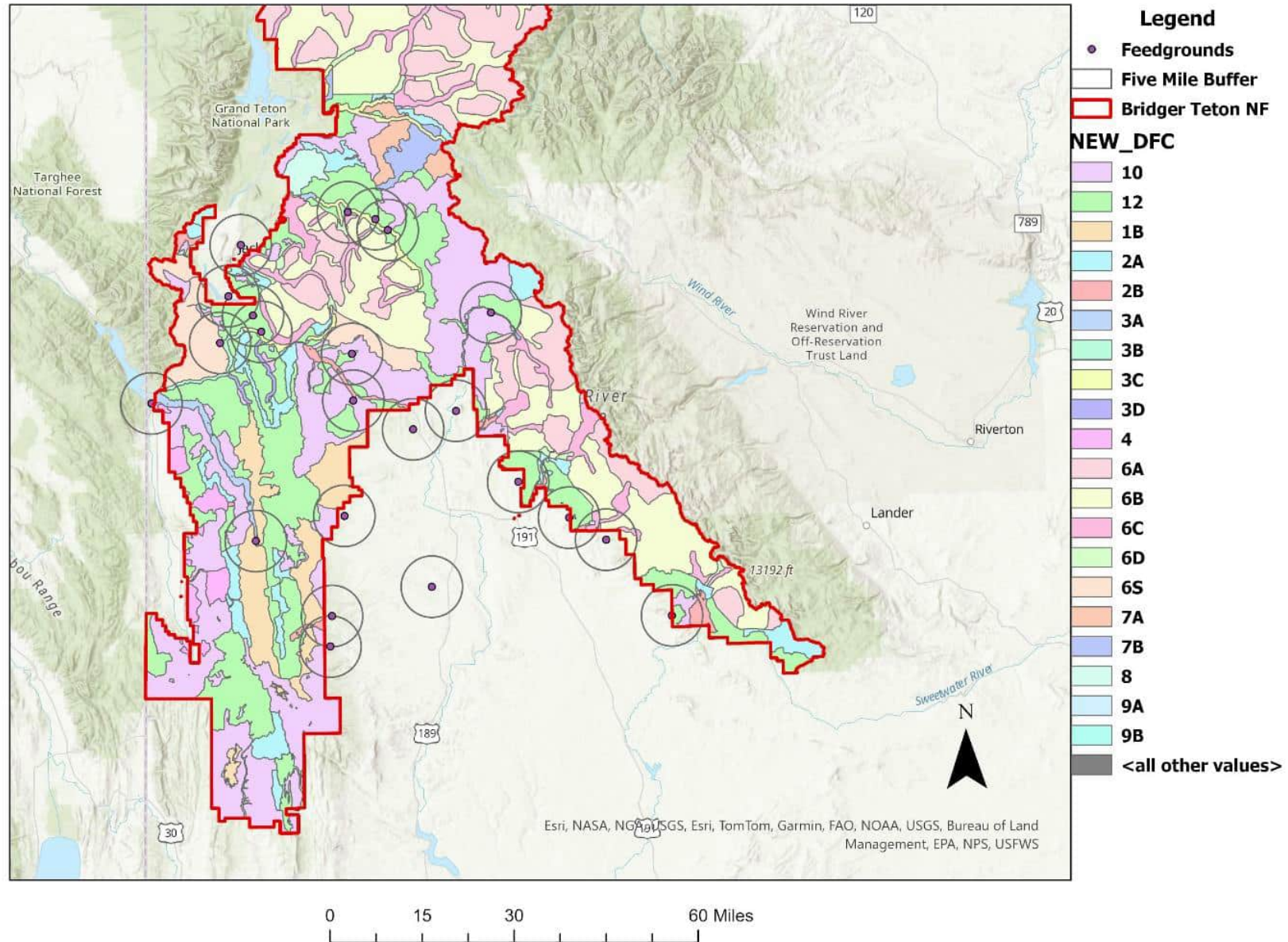
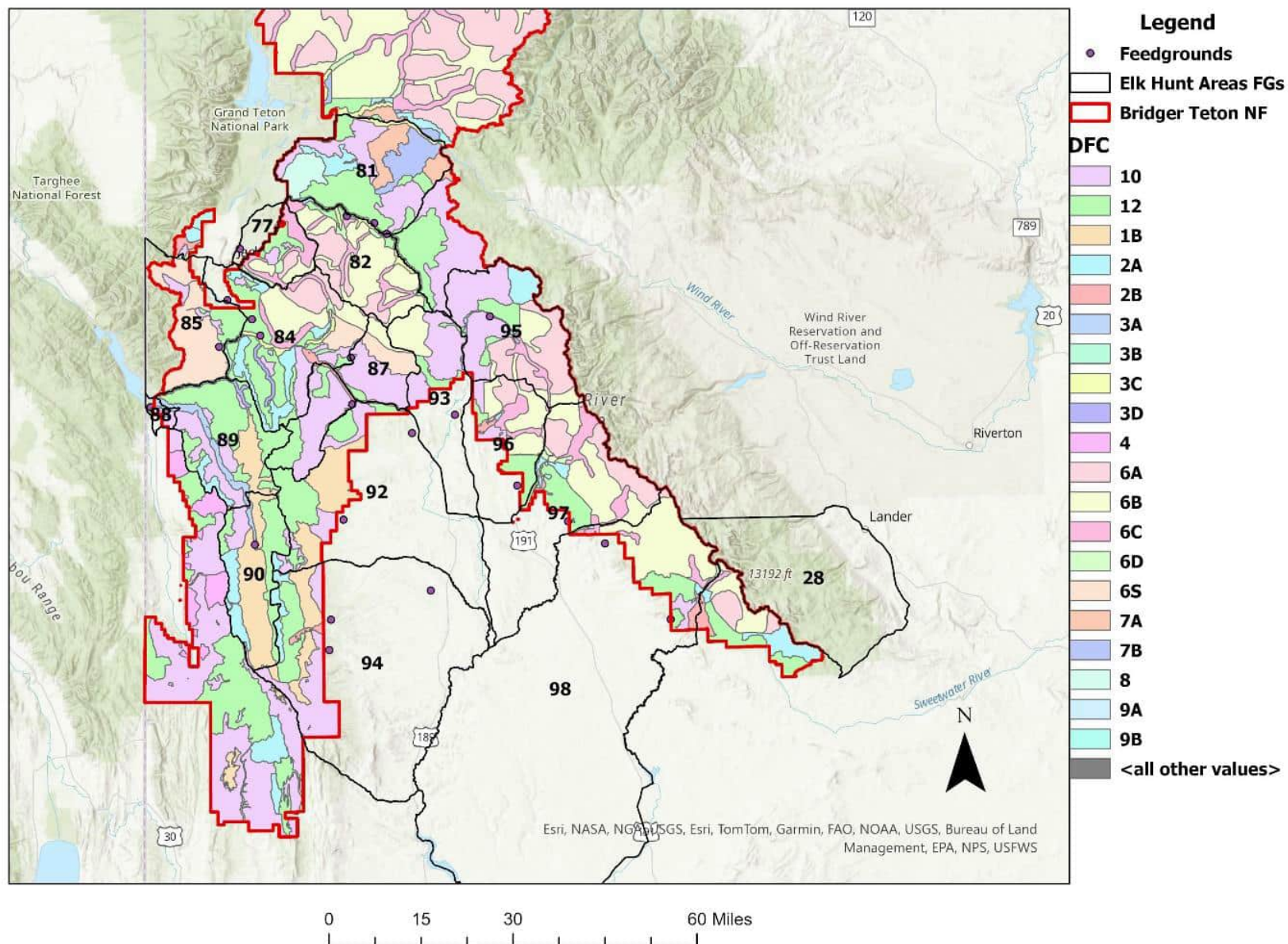


Figure 5. Elk Feedgrounds, Hunt Areas, DFCs, and BTNF



ATTACHMENTS

October 22, 2021

Gregory Brooks, District Ranger
Big Piney Ranger District
Bridger Teton National Forest
324 North Cache Street
Jackson, WY 83001



Re: Dell Creek Elk Feed Ground Special Use Permit Scoping Comments

Dear Mr. Brooks

These scoping comments are provided on behalf of Yellowstone to Uintas Connection, Alliance for the Wild Rockies, and Native Ecosystems Council. We are 501c3 environmental organizations dedicated to science. We advocate for wildlife, wildlife habitat, and migration corridors in the Rocky Mountains. We have major concerns regarding the elk feed grounds (FG) in Wyoming, their impacts on migration, and interrupting natural ecosystem function. These comments apply to the Dell Creek FG as well as the other FGs in western Wyoming.

Your proposal is to authorize a special use permit for one year for Wyoming Game and Fish Commission to continue operating the Dell Creek FG because the current permit expired on September 21, 2021, based on a District Court ruling. You indicate this one-year special use permit is needed for the Bridger Teton National Forest to complete an environmental analysis for longer term use. This is to be accomplished in an Environmental Impact Statement.

Based on our experience with the Forest Service, we expect years of back and forth in a NEPA process involving an EIS, so this special use permit will likely be back for multiple renewals. It would seem a good time to allow the Dell Creek FG operation to be terminated while the fate of the remaining FGs is determined. This would be beneficial to reducing the incidence of brucellosis in elk, reducing the time spent on private lands and the FG area, and more time spent in the BTNF following natural migration patterns. Seasonal, parturition and crucial ranges would be used longer for the beneficial nutrition these habitats may provide. Closing Dell Creek would also reduce the risk of Chronic Wasting Disease that can increase when animals are in close quarters such as FGs.

Your scoping letter notes that Forest Plan Goal 1.1 has an objective to help re-establish historical elk migration routes. That same Forest Plan goal is to provide increased viewing and hunting opportunities for outfitters and clients. Since FGs shorten the time elk spend on the BTNF in native habitats, extending the permit is counter to this Forest Plan Goal. The Dell Creek FG serves an average of 275 elk with 529 fed in the last year. This is a good time to allow these animals to return to natural function and meet your Forest Plan Goals.

1. Background

A study of supplemental feeding on migration habits of elk was conducted in 18 of the 22 State of Wyoming managed feeding operations in 2009 to 2011.¹ The study tracked behavior of collared elk that were fed and those that were not. Migration is an important evolutionary adaptation that allows animals to access nutritious forage and thereby "enhancing demography and population growth". Factors that disrupt the natural migration patterns include roads, habitat loss, agriculture, supplemental feeding, and climate change. Ranching, hunting and FG establishment have altered historical patterns of migration.

FGs were established in Wyoming beginning in 1912 to intercept elk migrating from higher elevations on public lands to prevent them entering private lands in the valleys. This was to limit damage to stored crops and avoid transmission of diseases to livestock. The study identified winter ranges of fed and unfed elk. Fed elk winter range included herbaceous species, shrubs, conifer, and agricultural lands, while unfed elk relied upon riparian areas with willow, sage-steppe, aspen and conifer.

Study results showed that fed elk migrated shorter distances (35.4 km) than unfed elk (54.6 km). Fed elk spent less time on summer range by arriving later and departing earlier and arrived back on winter range earlier than unfed elk. Fed elk resided on summer range 26 days less and departed 10 days earlier than unfed elk. Fed elk relied on stopovers for 11 more days in spring and 13 more days in autumn.

Shortening the number of days for the feeding operation from 134 to 74 days lead to fed elk following a migration pattern and occupancy of summer range similar to unfed elk by responding to plant greenup in a similar way. Feeding for the longer period delayed migration to summer range until plant greenup reached an NDVI threshold value of 0.17 at which point, fed elk began to arrive on summer range. During years when plant greenup was delayed this delay effect due to feeding was more pronounced. Fed elk responded to elevation, decreasing temperatures, and increasing precipitation by leaving summer range earlier than unfed elk.

An important outcome is that while feeding has changed patterns of migration, it has not altered the propensity to migrate. When leaving winter range, both fed and unfed elk left at about the same time, but fed elk tended to remain near the FGs. Feeding appears to condition the elk to leave summer range earlier which limits use of forage during the growing season.

Since elk feeding is within the brucellosis endemic area in Wyoming, prolonged time on winter or nearby transitional ranges may lead to delaying cattle turn-out dates to reduce transmission between cattle and elk. Ending feeding earlier would "encourage fed elk to migrate and spend more time on summer range, thereby increasing access to high-quality forage and maximizing

¹Jones, J. D., Kauffman, M. J., Monteith, K. L., Scurlock, B. M., Albeke, S. E., and Cross, P. C. (2014). Supplemental feeding alters migration of a temperate ungulate. *Ecol. Appl.* 24, 1769–1779. doi: 10.1890/13-2092.1

their distance from cattle. Shortening the feeding season also would reduce intraspecific disease transmission, because FGs crowd elk and expose them to higher disease risk."

A study of brucellosis in the Greater Yellowstone area (GYA) by University of Wyoming researchers provides insight useful to management relative to elk FGs.² Brucellosis is found mostly in the "wildlife-livestock interface" in the GYA and is thought to have "originated from cattle kept within the boundaries of Yellowstone National Park (YNP) for park employees." It was thought that brucellosis was observed in bison in YNP and subsequently transmitted to elk.

The goal of elk feeding was to deter elk from moving onto private lands where they eat hay and mingle with cattle. Because elk infected with brucellosis tend to abort fetuses while they are on FGs, this increases exposure and maintains high levels of the disease among the fed elk.

"Exposure to brucellosis and subsequent infection are, therefore, maintained at relatively high levels among elk that overwinter in Wyoming FGs."

Contamination of parturition sites with brucellosis from infected elk that give birth in mid-May to mid-July can remain present into August, depending on weather. Elk clean up some of the tissues and fluids from birth, which reduces risk of exposure. Brucellosis contamination in soil, vegetation and tissue at birth or abortion sites remained viable for 43 days in April and 26 days in May. The proportion of FG elk testing positive for brucellosis antibodies was 22% compared to 3.7% in free-ranging elk in tests conducted in 2008 and 2009. There appeared to be an increasing incidence of positive tests in non-FG elk. It was suspected that increasing herd sizes and hunting pressure was concentrating elk on private lands not accessible to hunting and these increasing congregations have become a likely source of transmission.

Recommendations for cattle risk management included fencing haystacks, modifying winter feeding practices, hazing elk off private property, vaccinations, spaying heifers, and changing livestock type. Vaccinating elk at FGs, shortening feeding periods, and spreading hay over a larger area have been used to reduce risk. Some producers were delaying grazing on high-risk grazing allotments that overlap with FGs. Converting to steers and spayed heifers was another change some producers were employing. Isolation of elk from cattle by delaying cattle grazing in spring where elk overwinter or excluding elk from areas grazed by cattle in spring and early summer. Predator-prey relationships, hunter access and land use in disease dynamics are also mentioned.

The Starkey Project compared interactions and habitat use between mule deer, elk, and cattle. Elk tended to avoid cattle and will use lower elevations if no cattle are present. But move to higher elevations when cattle move onto lower elevation areas.³ Elk avoid roads and

² Schumaker, Brant A.; Peck, Dannelle E.; and Kauffman, Mandy E. (2012) "Brucellosis in the Greater Yellowstone Area: Disease Management at the Wildlife–Livestock Interface," Human–Wildlife Interactions: Vol. 6 : Iss. 1 , Article 7. DOI: <https://doi.org/10.26077/95s0-ah13>

³ USDA Forest Service. 2006. Science Update: Elk, Deer and Cattle: The Starkey Project. Pacific Northwest Research Station. Issue 13.

avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer overlapped likely due to depletion of forage.⁴ Where cattle were grazed, deer home ranges were larger and hiding cover for fawns reduced.⁵

An early study from Utah looked at range condition and mule deer productivity.⁶ Summer range condition was compared to fetal production per doe with good condition range providing higher ovulation rates and productivity than poor condition range. This is important in looking at how forage depletion by livestock may reduce production of deer or elk.

A current study from the Greater Yellowstone Ecosystem determined that scavengers reduce potential brucellosis transmission risk.⁷ Using remote cameras at 264 sites with simulated abortion materials, they determined that time to removal was slower at sites where mammalian scavengers were reduced (6.5 days) to those with no scavenger reduction (4.1 days). Coyotes, red foxes, golden and bald eagles, and turkey vultures were the dominant scavengers. In areas where cattle and elk congregate there was a 90% probability that abortion materials would be removed by scavengers within 16 days.

2. Relationship of Elk FGs to Elk Habitat

GIS files for elk FG locations, crucial, seasonal, and parturition ranges were obtained from the Wyoming Game and Fish website.⁸ Figures 1 - 4 show the distribution and occurrence of FGs in the Bridger Teton NF and grazing allotments, in elk parturition, and crucial ranges. There are 23 FG locations. The majority of these occur within or adjacent to BTNF. (Figure 1). Thirteen FGs occur within or adjacent to active grazing allotments. (Figure 2). Twenty FGs occur in elk crucial range with only three not in crucial range. (Figure 3). Eighteen occur within or adjacent to elk parturition range. (Figure 4). The Dell Creek FG occurs in and adjacent to five active grazing allotments, including Jack Creek C&H, Hoback C&H, Fisherman Creek C&H and two small allotments, Fortress Hill C&H and Graveyard Hill C&H. The Dell Creek FG is in crucial winter and year-long habitat. (Figure 5). It is also in elk parturition range. (Figure 4).

⁴ Coe, Priscilla K.; Johnson, Bruce K.; Stewart, Kelley M.; Kie, John G. 2004. Spatial and temporal interactions of elk, mule deer, and cattle. In: Transactions of the 69th North American Wildlife and Natural Resources Conference: 656-669

⁵ Kie, J., Evans, C., Loft, E., and Menke, J. 2007. Foraging behavior by mule deer: The influence of cattle grazing. *Journal of Wildlife Management* 55(4):665 - 674.

⁶ Julander, O. (1962). Range management in relation to mule deer habitat and herd productivity in Utah. *Journal of Range Management*, 15(5), 278-281.

⁷ Citation: Szcudronski, K. E., and P. C. Cross. 2021. Scavengers reduce potential brucellosis transmission risk in the Greater Yellowstone Ecosystem. *Ecosphere* 12(10):e03783. 10.1002/ecs2.3783

⁸ <https://wgfd.wyo.gov/Wildlife-in-Wyoming/Geospatial-Data/Big-Game-GIS-Data>

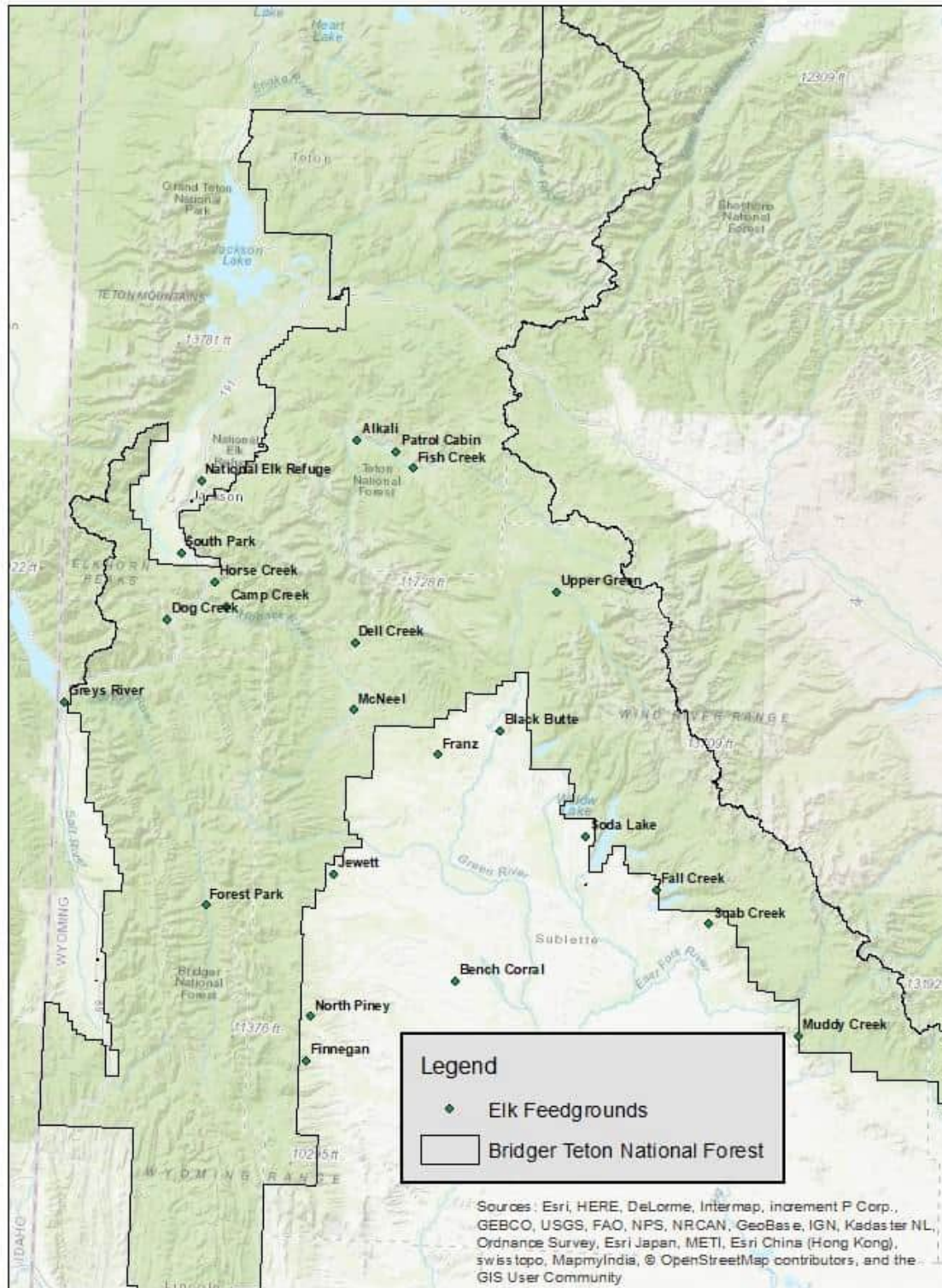


Figure 1. Occurrence of Elk Feed Grounds in or adjacent to the Bridger Teton NF

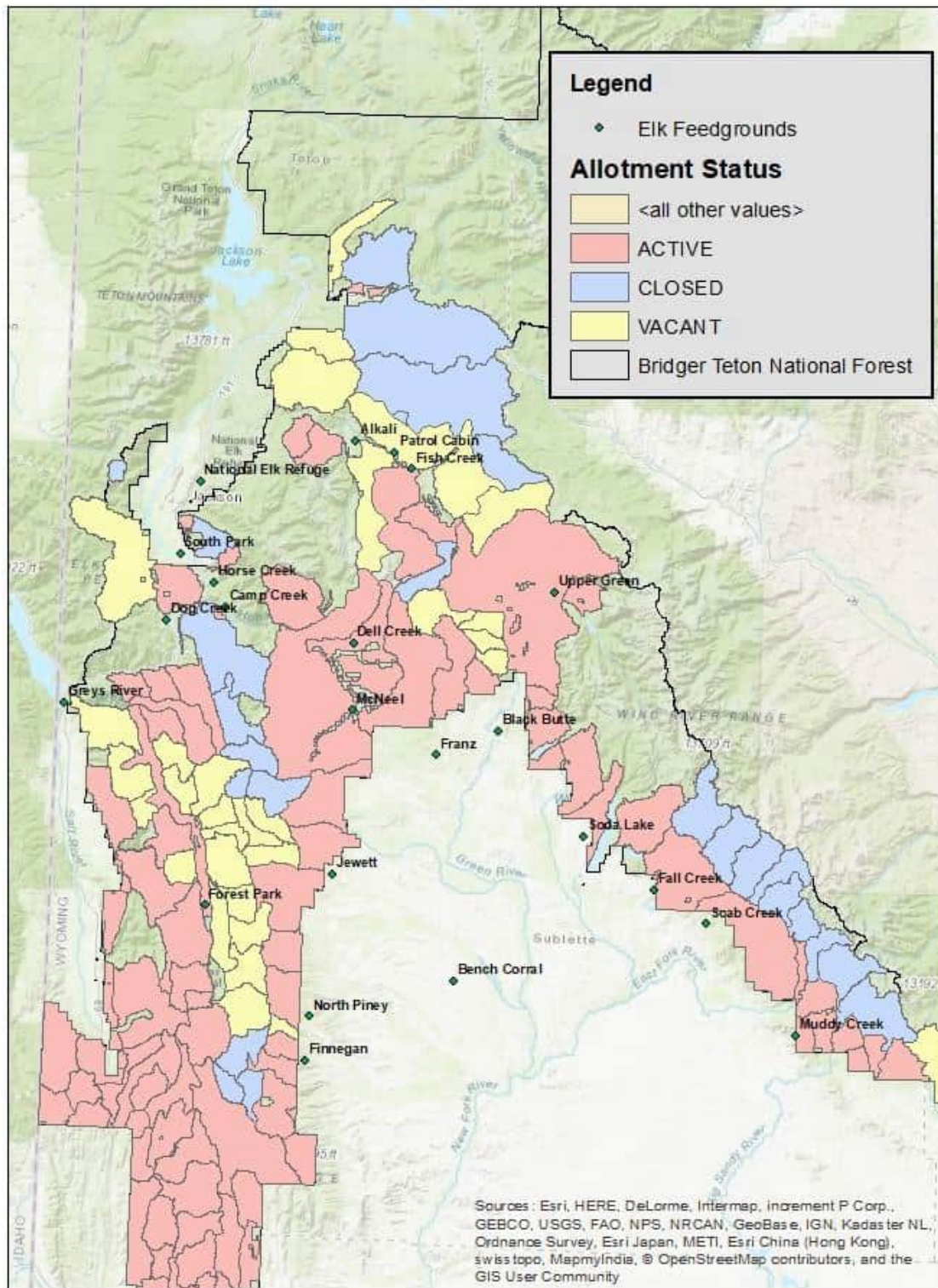


Figure 2. Occurrence of Elk Feed Grounds and Allotment Status



Figure 3. Occurrence of Elk Feed Grounds in relation to Elk Crucial Range

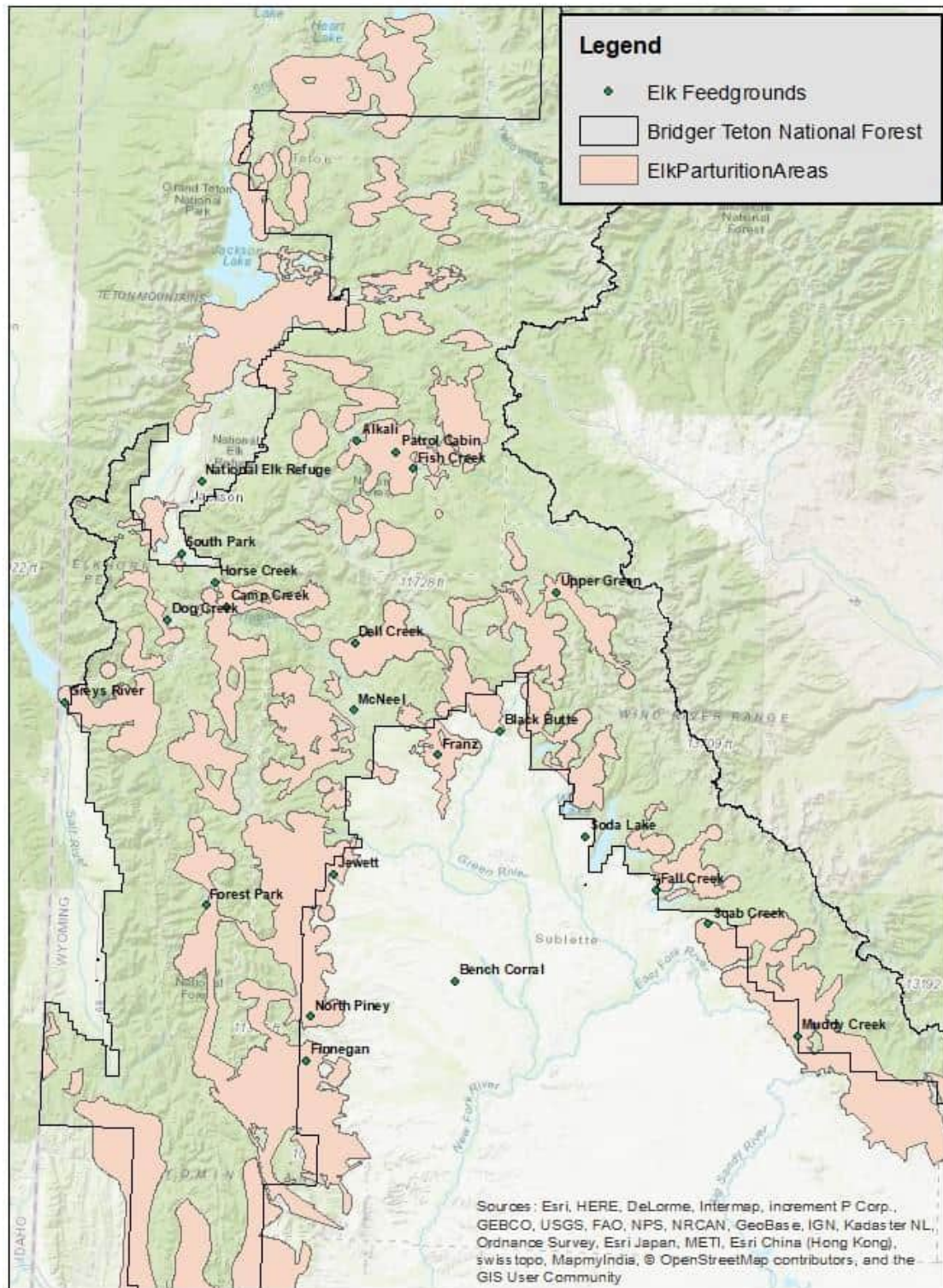


Figure 4. Occurrence of Elk Feed Grounds in relation to Elk Parturition Areas

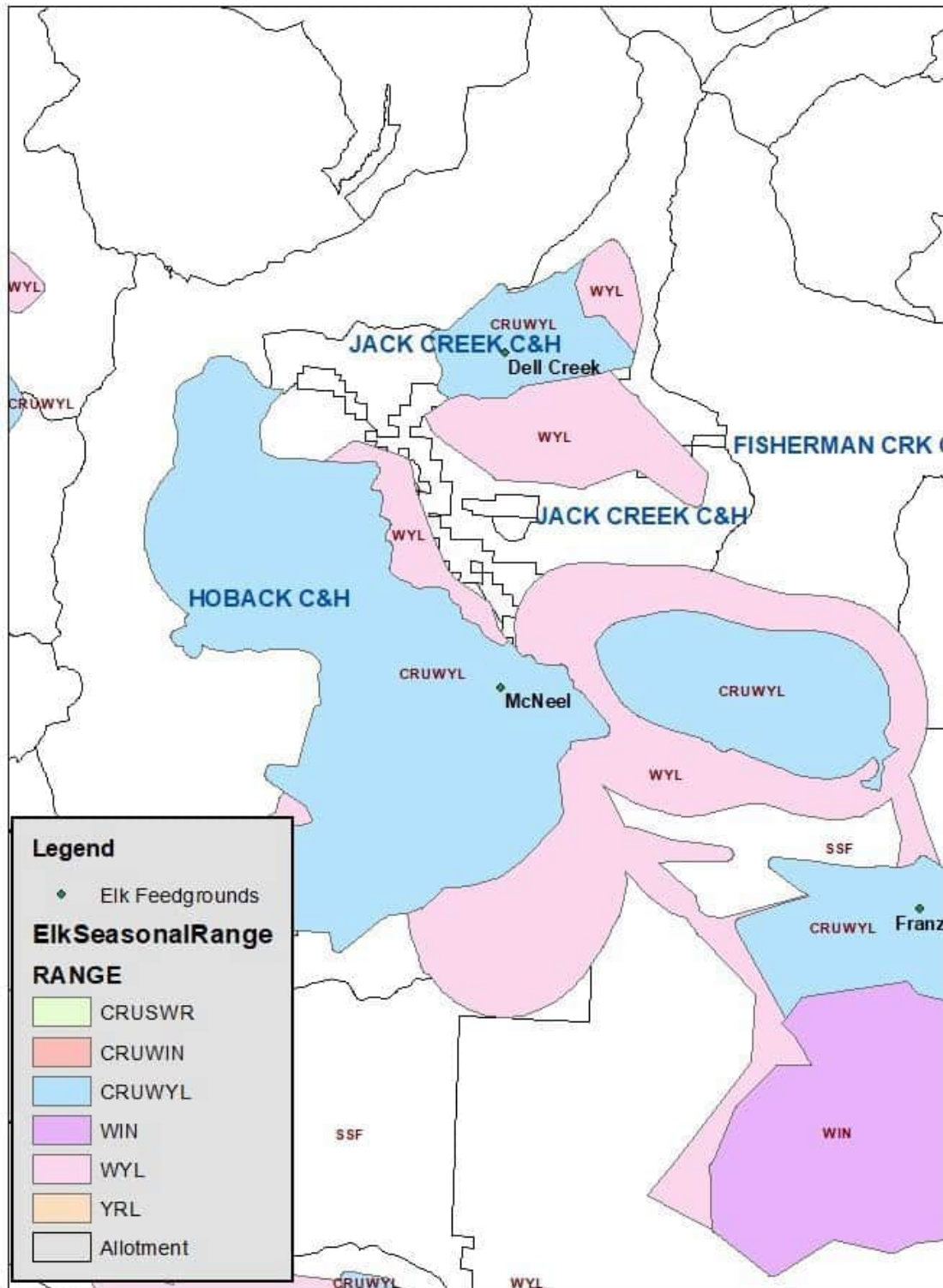


Figure 5. Dell Creek FG and Crucial Winter, Winter and Year Long Range

3. Roads

As noted, road density is a problem for elk. We obtained the current GIS data for the BTNF for illegal or user-created roads.⁹ Figure 6 shows the unauthorized routes from the BTNF database that occur in the allotments surrounding the Dell Creek FG. These impact elk security and habitat selection in crucial habitat surrounding the Dell Creek FG.

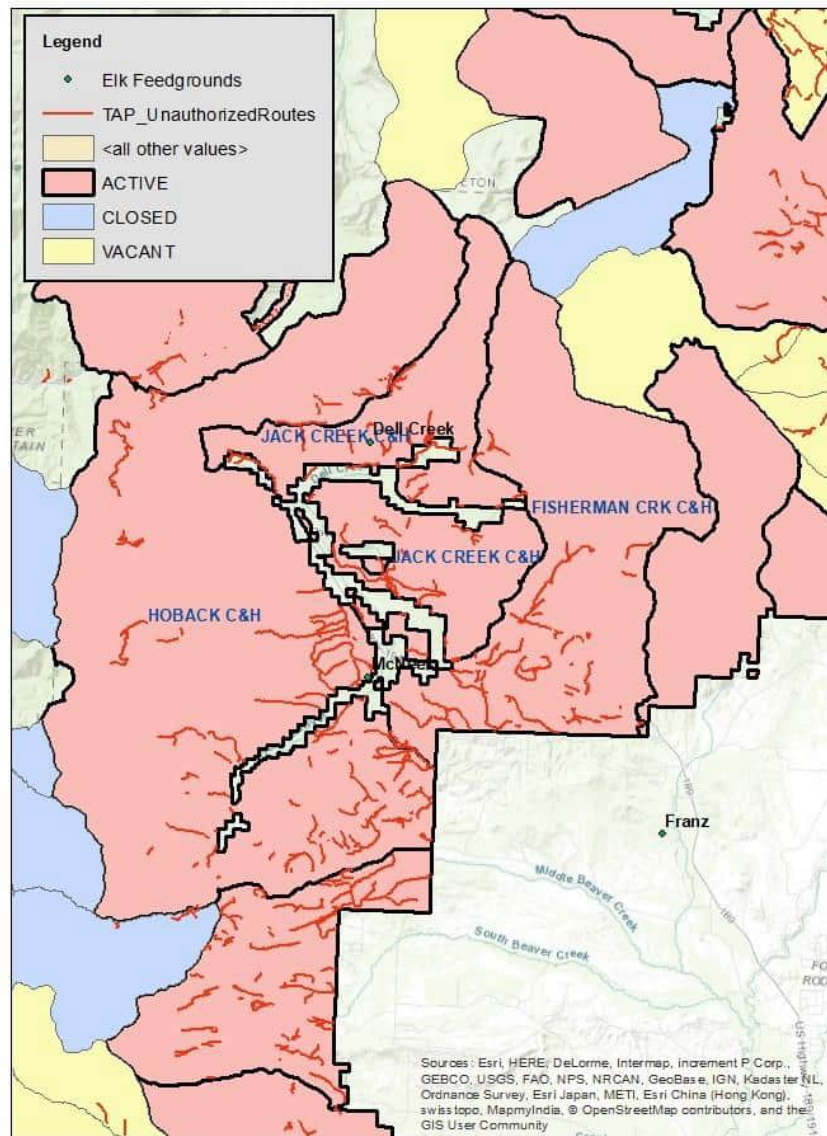


Figure 6. Occurrence of Unauthorized Motorized Routes in Vicinity of Dell Creek Feed Ground on the BTNF

⁹ USDA Forest Service. 2021. TAP_UnauthorizedRoutes: This an inventory from ~2015 of User Created or Unauthorized Routes. These are not part of our system of roads. Bridger Teton National Forest FOIA response.

4. Resolving the Issue

The Dell Creek FG serves only a small fraction of the elk in the BTNF area. It is timely to close this FG in combination with other actions. Since not all elk feed at these FGs and elk using FGs have higher rates of disease than those that do not use FGs, it is highly questionable that FGs are reducing, not enhancing disease transmission to each other and to livestock. Contact between elk and livestock is guaranteed by the locations of these FGs in and adjacent to active grazing allotments. Livestock consume huge quantities of the forage needed by elk and other wildlife. For example, one cow and calf pair consume 50 lbs air dry forage per day¹⁰ while an elk consumes 14 lb/day¹¹. Cattle displace elk from preferred habitats until forage is depleted and then they may congregate. Predators and scavengers can have a positive influence by removing diseased animals as well as the disease contaminated offal from birth or abortion by diseased animals.

To reduce the dependence of elk on FGs, providing more forage on public (and private) lands in their important crucial, parturition and winter ranges and limiting conflicts with cattle on the BTNF is needed. As we have surveyed grazing allotments in the BTNF this summer, we have noted several problems. Plant communities are producing at a fraction of potential as evidenced by observations in the currently vacant Elk Ridge allotment complex as well as other nearby allotments that continue to be grazed by livestock. Plant vigor of the preferred grasses such as Idaho fescue and bluebunch wheatgrass is low. Bluebunch wheatgrass is sparse to non-existent although NRCS ESDs indicate it should be present as a dominant grass. Plant communities are in a state where non-palatable species dominate as evidenced by the forb community of increasers.

While Wyoming Game and Fish Commission manages these FGs, it is important to understand that the Forest Service has the overall authority for management of National Forest lands, including wildlife and habitat.¹² FSM 2300 also addresses wildlife management and the relationship to state wildlife management through coordination.¹³ For example, FSM 2323.31 Objectives include, "Provide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist." It does not cede authority to the state, while FGs are counter to this objective.

In addition, the Forest Service has Prohibition Authority (36 CFR 251) by which it can ban FGs on National Forest managed lands, ban trapping and killing of wolves, coyotes, foxes and other

¹⁰ Carter, J. 2016. Updating the animal unit month. Yellowstone to Uintas Connection. 7p.

<https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

¹¹ Holechek, J, RD Pieper, C H Herbel. 2004. Range Management Principles and Practices, Fifth Edition. Table 8.11. page 240.

¹² Nie, M., Barns, C., Haber, J., Joly, J., Pitt, K., & Zellmer, S. (2017). Fish and Wildlife Management on Federal Lands: Debunking State Supremacy. *Environmental Law*, 47(4), 797–932.

<http://www.jstor.org/stable/44466736>

¹³ USDA Forest Service. 2007. FSM 2300 - Recreation, Wilderness, and Related Resource Management.

predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume and reduce contaminated birth or abortion offal.

The Wyoming Game and Fish Chronic Wasting Disease Management Plan also has expressed that: "To reduce artificial cervid concentrations, the Department will pursue statewide or local feeding bans where possible, identify points or sources of concentration, and develop strategies to decrease cervid concentrations to minimize CWD transmission."¹⁴

Specifically, based on the science we have cited and the authority of the Forest Service to manage wildlife, habitat and livestock grazing, the following points need to be addressed. While these apply to Dell Creek FG, they are applicable to the BTNF and FGs in general.

- Do not renew the Dell Creek FG special use permit. This is consistent with Wyoming's CWD Plan.
- Begin resting pastures within the affected five allotments surrounding Dell Creek FG so that plant communities can recover their vigor. Rest can be rotated annually between the pastures or those pastures containing the preferred elk habitats can be rested multiple years to restore plant community production.
- Reduce livestock stocking rates by updating capability and stocking rate analysis to current forage production and livestock consumption rates, and to provide rested pastures, thus reducing the overall area grazed by livestock each year.
- Require herding of livestock to manage them around areas preferred by elk.
- Prohibit trapping and killing of predators and scavengers in these five allotments as well as the BTNF.
- Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF.
- Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex.
- This process should be repeated for each FG in a planned phasing out of FGs in Wyoming. No CE should be used as brucellosis and CWD are not "minor" issues.

As to the private land equation, we can only recommend that haystacks be fenced and that livestock owners manage their livestock away from elk, including hazing elk away from areas occupied by livestock, leave forage for wildlife, and be tolerant of scavengers.

References may be downloaded at: <https://app.box.com/s/4fk5uuiylwriujfc1rw1efp33wzjvkk>

¹⁴ Wyoming Game and Fish Department. 2020. Wyoming Chronic Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

Please Reply To:

A handwritten signature in blue ink that reads "John G. Carter". The signature is fluid and cursive, with the first name "John" being the most prominent.

John Carter, Ecologist
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922
435-881-5404
Jcoyote23@gmail.com

Michael Garrity – Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624

Sara Johnson – Executive Director
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

February 11, 2022

Tricia O'Connor
Forest Supervisor
Bridger Teton National Forest
PO Box 1888, 324 North Cache
Jackson, WY 83001



Street



Re: Dell Creek & Forest Park Elk Feedgrounds: Long-term Special Use Permits Project EIS

Sent VIA Email To: patricia.oconnor@usda.gov and to the BTNF Comment Portal at <https://www.fs.usda.gov/project/?project=60949&exp=overview>

Dear Ms. O'Connor:

These scoping comments are provided on behalf of the Yellowstone to Uintas Connection, Alliance for the Wild Rockies, and Native Ecosystems Council. We are 501c3 environmental organizations dedicated to science. We advocate for wildlife, wildlife habitat, and migration corridors in the Rocky Mountains. We have major concerns regarding the elk feed grounds (FG) in Wyoming, their impacts on migration, disease, and interrupting natural ecosystem function. We previously submitted scoping comments on your October 13, 2021 scoping letter for issuance of a special use permit for the Dell Creek FG.

The January 14, 2022 scoping letter for this upgraded project is to conduct environmental analysis in an EIS on the effects of reauthorizing Wyoming Game and Fish Commission (WGFC) to operate the Dell Creek and Forest Park elk FGs and associated facilities and activities. Feeding would occur between November 15th and April 30th. The purpose and need of the proposal is to allow WGFC to operate these FGs on the Bridger Teton National Forest (BTNF) and to analyze the proposal to ensure the WGFC is managing elk to sustain the health of the land and meet the goals and objectives of the BTNF Forest Plan. It is unclear as to the length of time this proposed reauthorization will be in effect. It is also unclear as to the length of the process of dealing with annual special use permits while an EIS is being prepared as no definitive end date for issuance of a ROD was specified in the scoping letter.

Based on our experience with the Forest Service, we expect years of back and forth in a NEPA process involving an EIS, so the special use permits for these FGs will likely be back for multiple annual renewals over a period of many years. This means that regardless of what alternatives are selected the FGs will continue to operate unchanged for maybe half a decade, then if there is a phaseout, it will likely occur over many more years. The process alone will perpetuate the ongoing spread of disease for maybe a decade or more. This is unacceptable.

Instead, it would seem a good time to allow the special use permits on both these FGs to be terminated while the fate of the remaining FGs is determined, and their management (feeding

periods) reduced to avoid the high-risk period for disease due to co-mingling of elk and livestock. This would be beneficial to reducing the incidence of brucellosis, chronic wasting disease, and other diseases such as hoof rot in elk. It would result in more time spent in the BTNF or other native range while following natural migration patterns.. Seasonal, parturition and crucial ranges would be used longer for the beneficial nutrition these habitats may provide.

We expect the BTNF to fully analyze the science and effectiveness of various management options; to compare Wyoming FG and disease statistics to other western states and their management; and to address the economics of feeding and livestock grazing, elk hunting, recreation, and their significance to the economy of Sublette County and the State of Wyoming. In the following sections, we provide some background on the issues and options, economics, forage analysis, and snow depth considerations related to winter foraging and migration. In our final section, we look at an alternative to support free ranging elk and reduce disease by closing FGs.

We expect the BTNF to fully address all the objectives, standards, and guidelines as well as the intent, of its Forest Plan. One such provision is the Forest Plan Goal 1.1 objective to re-establish historical elk migration routes. Others have to do with maintaining the Desired Future Conditions (DFC) expressed in that Plan. Elk and other animals depend on areas within many of the DFCs described in the Forest Plan. In our October 21, 2021 scoping comments for renewal of the Dell Creek Special Use Permit, we mapped the 23 FGs and their occurrence relative to the BTNF, elk crucial and parturition ranges. Most FGs occurred within or adjacent to the BTNF. Twenty FGs occur within or adjacent to elk crucial range, while 18 occur within or adjacent to elk parturition range. Thirteen FGs occur within or adjacent to active grazing allotments.

We also mapped the Dell Creek FG in relation to these crucial, parturition ranges and surrounding grazing allotments. Figures 1 - 4 show the occurrence of all FGs in relation to the BTNF, grazing allotments and their status, elk crucial range, and elk parturition range. We also provided a map of the illegal roads and trails in the vicinity of the Dell Creek FG. For wildlife security, these roads and trails should be closed and reclaimed as should those affecting elk security across the BTNF where elk migrate. See Figure 5 showing those in the vicinity of Dell Creek FG.

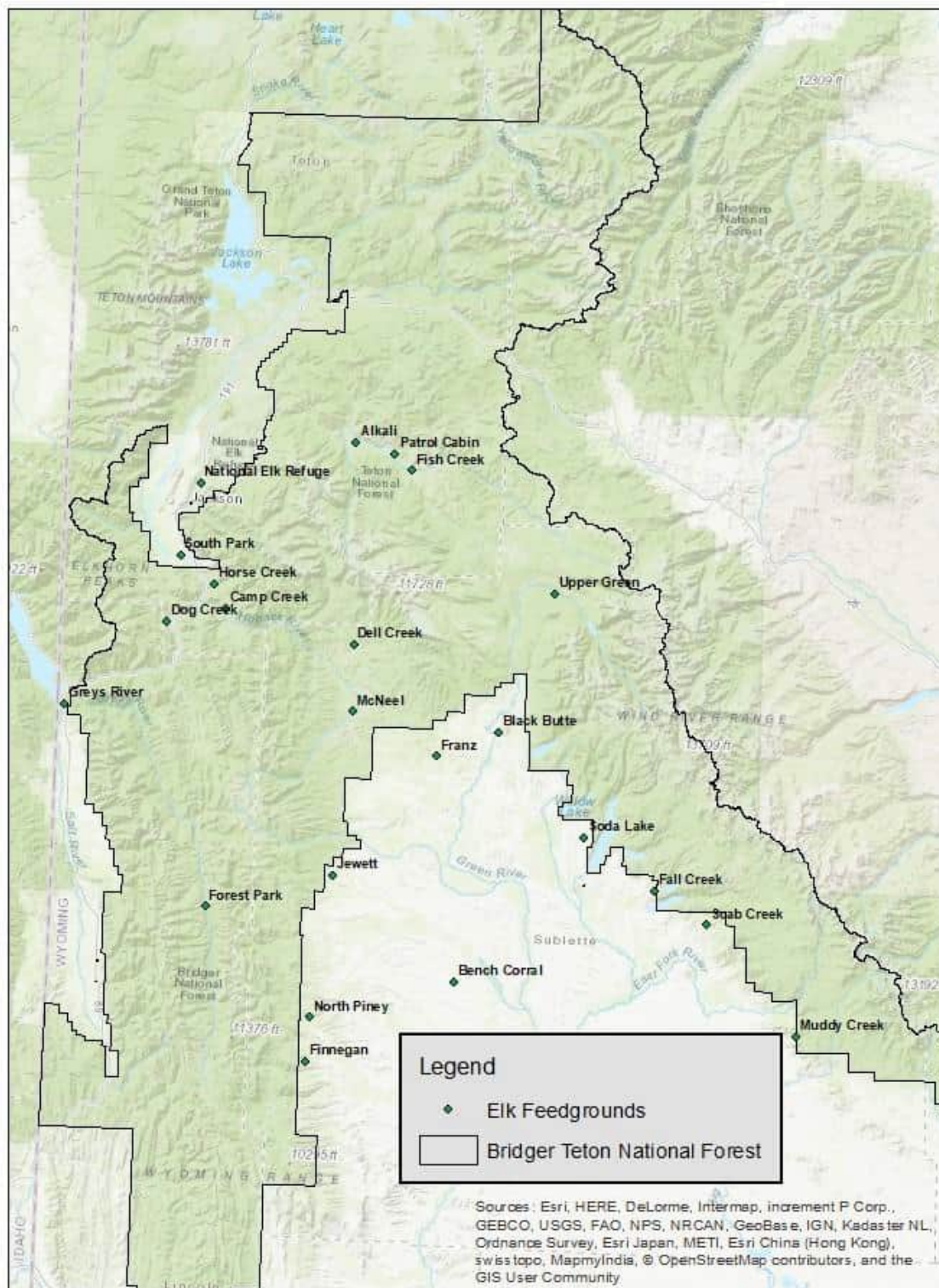


Figure 1. Occurrence of Elk Feed Grounds in or adjacent to the Bridger Teton NF

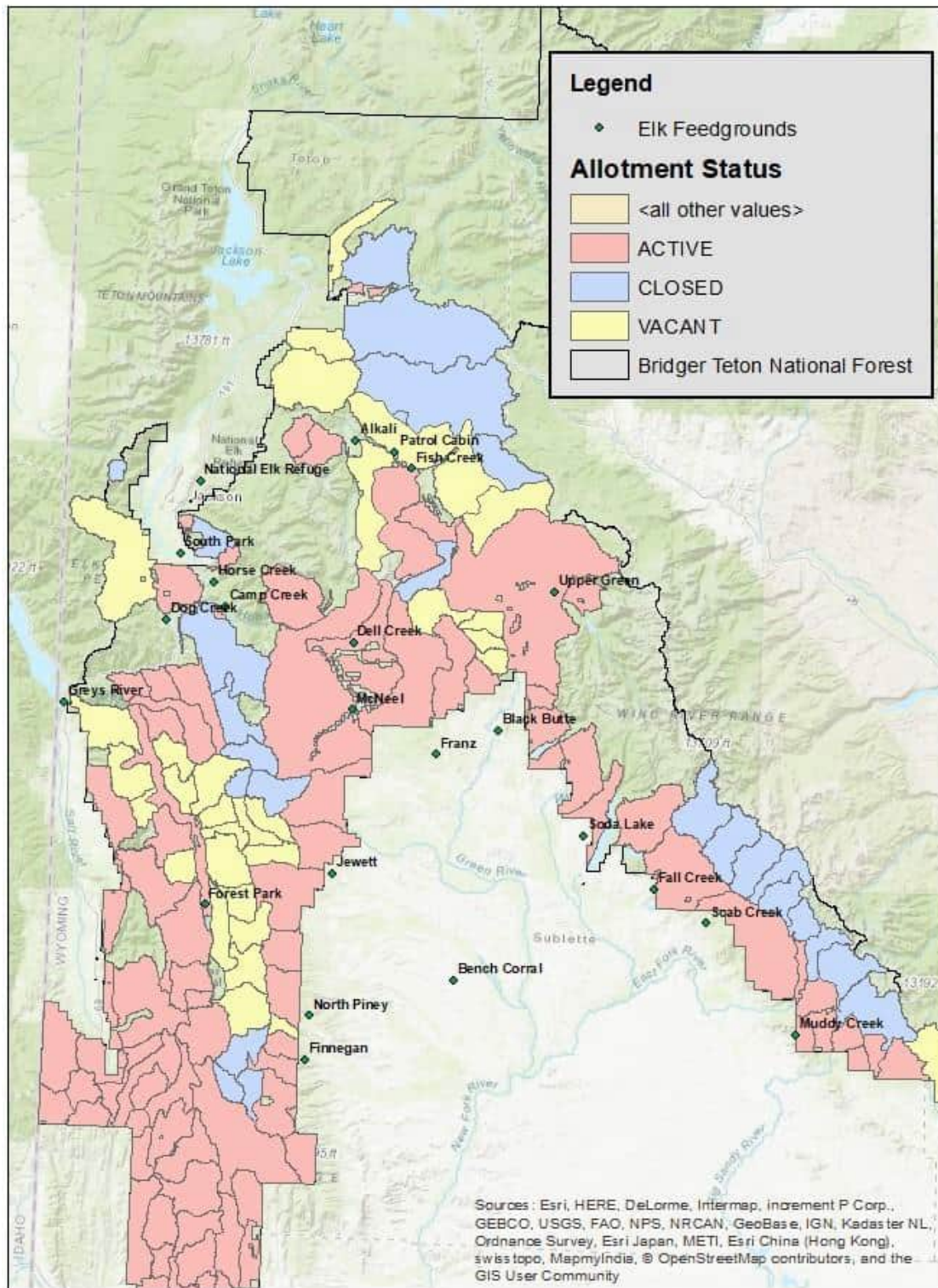


Figure 2. Occurrence of Elk Feed Grounds and Allotment Status



Figure 3. Occurrence of Elk Feed Grounds in relation to Elk Crucial Range

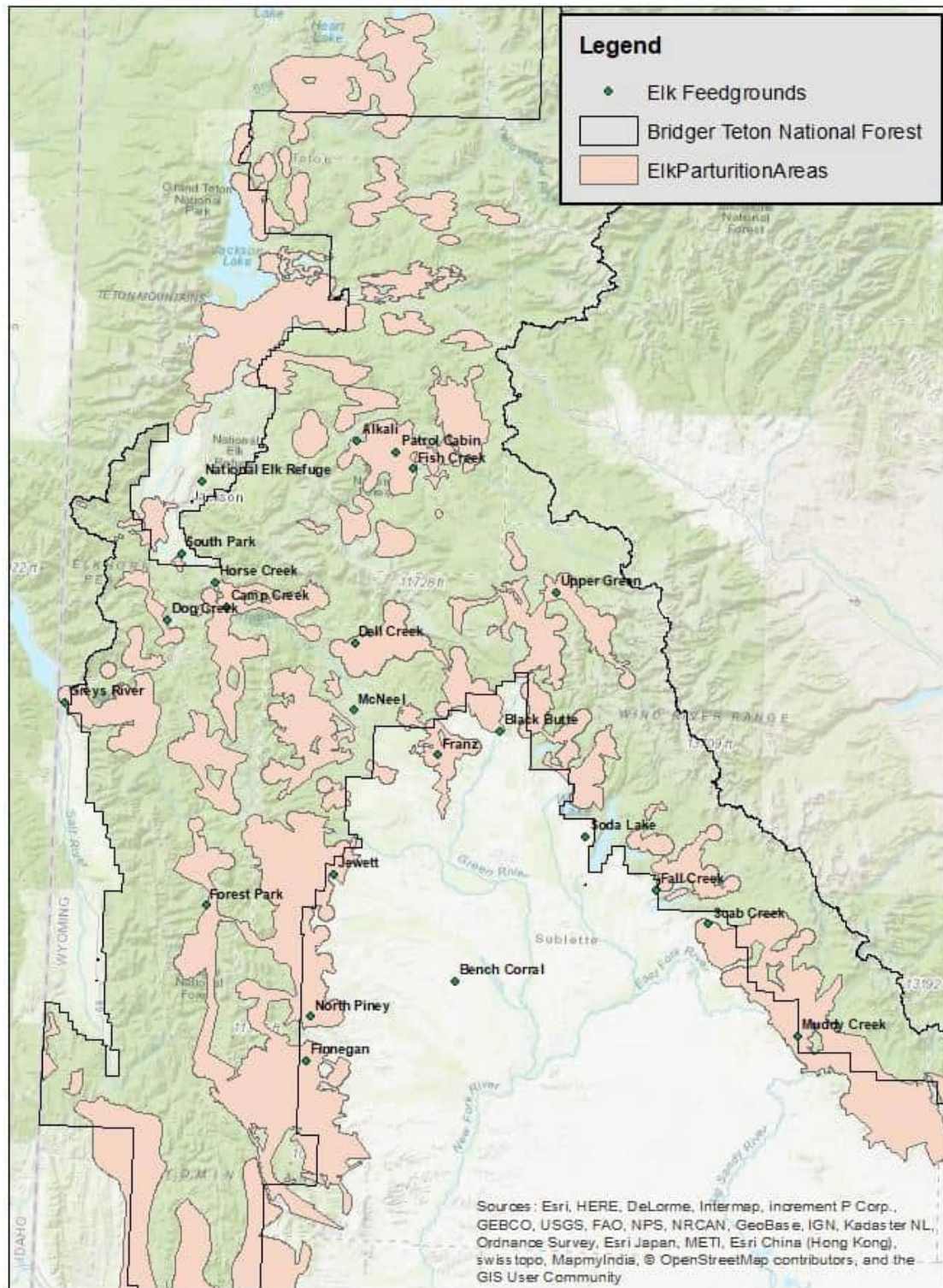


Figure 4. Occurrence of Elk Feed Grounds in relation to Elk Parturition Areas

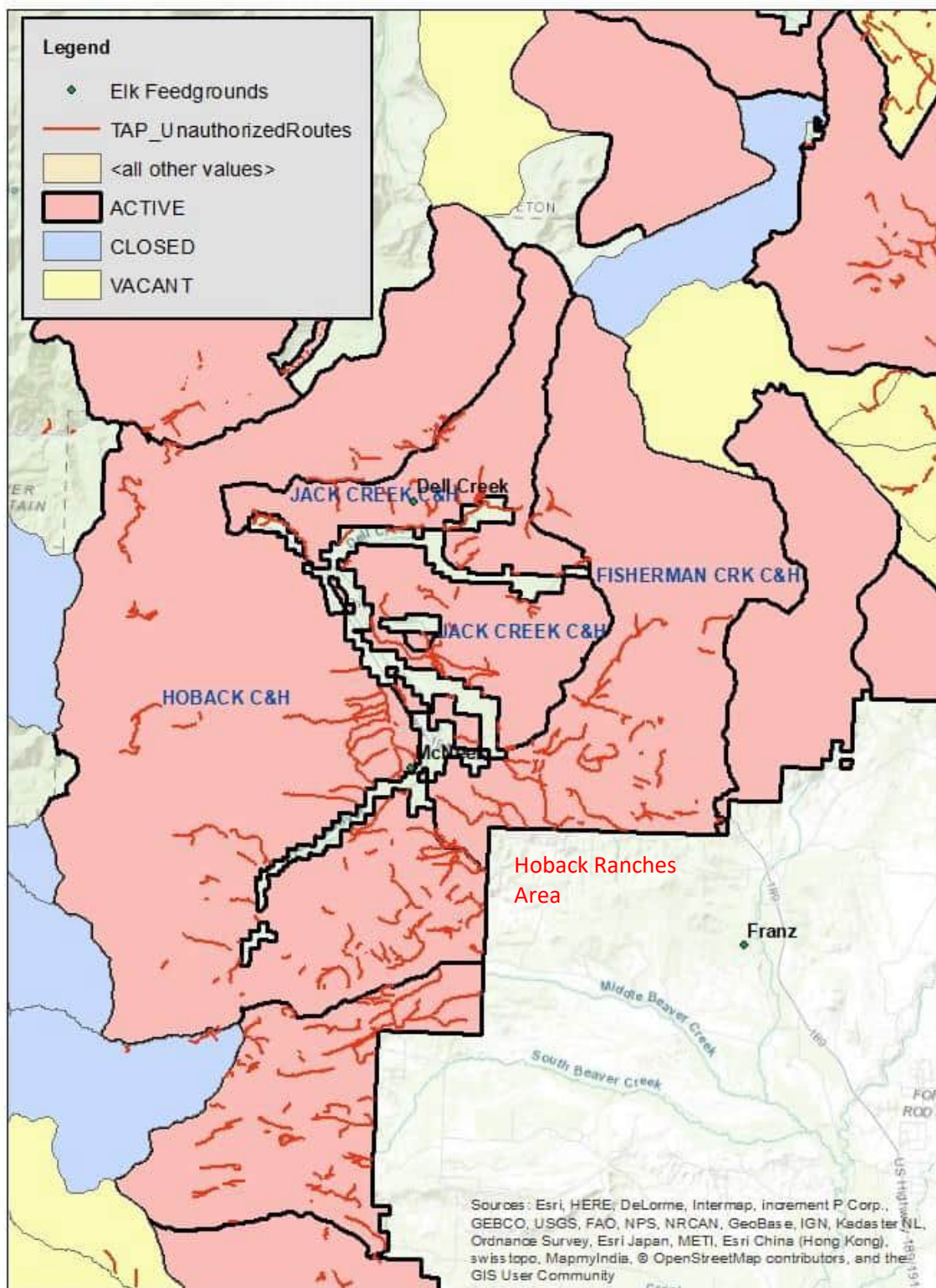


Figure 5. Occurrence of Unauthorized Motorized Routes in Vicinity of the Dell Creek and McNeel Feed Grounds

A. Background

While Wyoming Game and Fish Commission manages these FGs, it is important to understand that the Forest Service has the overall authority for management of National Forest lands, including wildlife and habitat.¹ Forest Service Manual (FSM) 2300 also addresses wildlife management and the relationship to state wildlife management through coordination.² It does not cede authority to the state. FSM 2323.31 Objectives include, "Provide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist." FGs are counter to this objective.

In addition, the Forest Service has Prohibition Authority (36 CFR 251) by which it can ban FGs on National Forest managed lands, ban trapping and killing of wolves, coyotes, foxes and other predators and scavengers that reduce diseased wildlife populations, disperse animals, and consume and reduce contaminated birth or abortion offal, thus reducing potential environmental contamination.

The Wyoming Game and Fish Chronic Wasting Disease Management Plan also has expressed that: "To reduce artificial cervid concentrations, the Department will pursue statewide or local feeding bans where possible, identify points or sources of concentration, and develop strategies to decrease cervid concentrations to minimize CWD transmission."³

We anticipate the EIS will characterize the habitat on the BTNF and its current productivity for both summering and wintering elk and other ungulates to determine whether the current vegetation conditions support wildlife populations during all seasons.

Attachment 1 to these comments is a summary of references that we have reviewed and upon which the following points are based. The NEPA analysis must consider the points provided in each reference.⁴

- FGs concentrate animals and increase the spread of disease with brucellosis seropositive rates of 26%, 2% and 0% on, adjacent to and independent of FGs.
- Scavengers and predators reduce the residence time of aborted fetuses in half and may act as a biological control of brucellosis and CWD related to FGs.
- Elk consumption of crops and hay is not tolerated by producers, who are also opposed to eliminating FGs

¹ Nie, M., Barns, C., Haber, J., Joly, J., Pitt, K., & Zellmer, S. (2017). Fish and Wildlife Management on Federal Lands: Debunking State Supremacy. *Environmental Law*, 47(4), 797–932.

<http://www.jstor.org/stable/44466736>

² USDA Forest Service. 2007. FSM 2300 - Recreation, Wilderness, and Related Resource Management.

³ Wyoming Game and Fish Department. 2020. Wyoming Chronic Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

⁴ Download references from: <https://app.box.com/s/mst3u7nkj7xet15677cl2l2632tpfpao>

- Elk herds are above objectives.
- Modeled CWD population effects indicate CWD could reach 12% - 20% of the elk population and declines in population would occur at 7% seroprevalence in females.
- Predators are a strong defense against CWD by focusing on animals weakened by the disease. Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.
- Tuberculosis in Michigan deer led to eradication of white-tailed deer to protect cattle. Deer populations were beyond carrying capacity and problems occurred in areas with high cattle/deer populations, artificial feeding, and/or continuous interactions between cattle and deer. Michigan banned feeding deer, increased harvest, and worked to eliminate contact between cattle and deer.
- Except for the Greater Yellowstone Area, the U. S. is free of cattle brucellosis.
- Brucellosis seroprevalence around the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 period.
- FGs support between 14,000 and 20,000 of Wyoming's elk population of 112,000.
- Since 2020 CWD has been found in two FGs.
- Since discovery of CWD in 1985 in deer herds in Wyoming, no effective strategy has been implemented to limit spread, while CWD has since been documented throughout most of the state.
- FGs are a high-cost endeavor.
- FGs have interrupted elk migration from summer to winter ranges.
- Continuing feeding elk in the Pinedale region could result in economic loss with CWD.
- The Pinedale area contributes a small part of the regional elk harvest.
- Shortening the feeding period by about half led to elk migrating like non-fed elk.
- Elk tend to avoid cattle and will use lower elevations if no cattle are present. They move to higher elevations when cattle move onto lower elevation areas.
- Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer habitat use overlapped likely due to depletion of forage.
- Summer range condition is important to reproductive success with good condition having higher success than poor condition.
- The Wyoming statewide elk harvest success rate in 2020 was 46%.
- The average number of elk hunters for the states ranged from 57,834 in Wyoming to 220,092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington

The WGFD CWD Management Plan put forth management strategies for CWD that include:

- Use hunter harvest to maximize removal of positive animals
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration

- Develop strategies to decrease cervid concentrations to minimize transmission

The Big Piney Elk Herd Unit Brucellosis Management Action Plan (BMAP)⁵ pointed out that the Wyoming Livestock Board defined the exposure period for brucellosis as January 1 to May 1. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, and reducing the feeding season. A shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to FGs is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. A shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling. It is worth including here the eight options considered and the pros and cons of each while keeping in mind this document was produced using information in the 2007 time frame.

1. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- Find suitable areas lower in elevation with no winter cattle operations.
- Evaluate current habitat to determine production, vegetation, health, and potential.
- All Pinedale Field Office BLM lands are leased for grazing.
- Purchase AUMs for forage reserve.
- These five FGs are not candidates for this option due to potential for damage and commingling.
- Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, and reduce browsing on local native vegetation.
- Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, and increase competition with other species.

2. Eliminate FGs

- Not an option given current herd objectives and current conditions. These would need to change.
- Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Piney EHU, and reduce FG and vaccination expense.
- Cons include increased risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, and reduced vaccination feasibility.

⁵ WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

3. Reduce elk numbers through harvest

- a. Reducing numbers thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, with emphasis on females, and other strategies.

4. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate the need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option.

5. Elk proof fencing of FGs on private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, and reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

6. Habitat enhancement projects in winter range

- a. Facilitated by options 2, 3, 4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high-risk transmission period, create vegetative diversity, and improve range conditions for livestock and wildlife.
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, and may increase invasive species.

7. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, and secure future revenue for WGFD.
- e. Cons are expensive, limited availability of land with potential, and requires landowner willingness.

8. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, and perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, and effective vaccine still lacking.

B. Economics

The BTNF must analyze the economic importance of permitted livestock grazing against the alternative uses of the Forest, particularly given the rising demand for wilderness, outdoor recreation, and wildlife watching. Why should the public have to lose its wildlife so that a handful of livestock permittees can graze their cattle at great public cost? The eroded soils and stream banks, damaged and polluted rivers, streams and springs, and lost wildlife populations are all economic costs that are not accounted for in permitting decisions for grazing livestock. As an example, the FEIS for the Upper Green River Area Rangeland Project⁶ makes the claim that *"Continuing to authorize livestock grazing in the project area would support the custom and culture in surrounding communities and contribute to the achievement of Forest Plan goals."* However, the BTNF did not analyze the real costs and benefits of continued livestock grazing. There is a one hundred year history of taxpayer subsidized feeding of elk to essentially protect livestock producers' stored hay and reduce mixing of elk and cattle. Yet, disease is increasing. We

⁶ USDA. 2017. Upper Green River Area Rangeland Project Final Environmental Impact Statement. Bridger-Teton National Forest.

understand from recent WGFD stakeholder meetings that the current annual cost for maintaining these FG operations is over \$2 million.

As we have observed conditions in the BTNF and adjacent private lands, it has become clear that the BTNF is not effectively managing livestock grazing. We have pointed this out in comments, analysis, and letters to the BTNF. More will be said on this subject in a later section. As we look to phasing out elk FGs as has been done in other states, we see the lack of forage on private lands as permittees first graze the Forest, leaving little, then move their livestock down to the valleys and private lands, where they graze until virtually all the forage is gone before they then move their cattle onto their private winter feeding stations.

When an elk, deer, or moose graze or eat hay on private lands, it is considered "damage", or "depredation" for which livestock producers are reimbursed at taxpayer expense. Yet, the private landowners moved into what was originally wildlife habitat, needed by elk and other animals in winter and summer. What ever happened to giving something back? Many ranches have been paid to place their lands into conservation easements by such entities as the Wyoming Stockgrowers Land Trust⁷, but does that or any other trust require as part of the agreement that forage be left for wildlife and watershed protection? Or, for protection of riparian areas and wetlands? This comes down to an ethical issue in our mind. Not everything must be for profit.

During the period from 1995 through 2020, USDA subsidies for U.S. farms totaled 424.4 billion dollars.⁸ In Wyoming, during the same period, \$317 million in direct payments were made to 10,938 farmers.⁹

An article¹⁰ from the CATO institute on the state of subsidies to farmers in 2020 noted:

U.S. net farm income this year will jump 43% to \$119.6 billion, the highest inflation-adjusted level since 2013, the government said Wednesday in a report. The projected surge occurred as the virus pandemic roiled the food-supply chain in the spring, driving grain prices down and meat costs higher. U.S. agriculture is on track for one of the three most-profitable years in a half century. Adjusted for inflation since 1973, projected net farm income in 2020 will be surpassed only by 2011 and 2013 figures. Direct government aid, accounting for 39% of net farm income, rose to a record \$46.5 billion from \$22.4 billion last year.

⁷ WSGLT. 2022. Wyoming Stock Growers Land Trust. <https://wsgmt.org/>

⁸ <https://farm.ewg.org/regionsummary.php>

⁹ https://farm.ewg.org/top_recips.php?fips=56000&progcode=totalfarm®ionname=Wyoming

¹⁰ Lincicome, S. 2020. Examining America's Farm Subsidy Problem. CATO institute. <https://www.cato.org/commentary/examining-americas-farm-subsidy-problem>

The annual amounts vary and the forecast for 2022 is provided by USDA.¹¹

Overall, farm cash receipts are forecast to increase by \$29.3 billion (6.8 percent) to \$461.9 billion in 2022 in nominal dollars. Total crop receipts are forecast to increase by \$12.0 billion (5.1 percent) from 2021 levels to \$248.6 billion. Soybean, corn, cotton, and wheat receipts combined are forecast to increase by \$11.7 billion (8.2 percent) in 2022, accounting for almost all the forecasted growth in crop cash receipts. Total animal/animal product receipts are expected to increase by \$17.4 billion (8.9 percent) to \$213.3 billion following increases in receipts for milk, cattle/calves, and broilers. Direct Government farm payments are forecast at \$11.7 billion in 2022, a \$15.5 billion (57.0 percent) decrease from 2021 forecast levels.

A current article predicts that cattle prices will explode in 2022, "Fed cattle prices, now near \$140 per cwt, are up \$25 from last year. Feeder calves are now over \$2 a pound at many auction markets, from \$1.60 last year."¹² While these record prices occur, BLM and the Forest Service have released their public land grazing fees for 2022 which will be \$1.35 per animal unit month (cow/calf).¹³ This is less than the Wyoming State fee at \$6.38/AUM and over an order of magnitude lower than the average private land grazing fee in Wyoming of \$21.50/AUM.¹⁴

A current economic analysis of SW Wyoming was conducted by Headwaters Economics.¹⁵ This study determined that Agriculture in Wyoming is 3.6% of private employment and in the Region, including Lincoln, Uinta, Sublette, and Sweetwater Counties, it is 3.2%. Travel and Tourism was 20.2% of private employment in Wyoming while in this Region it was 15%. The agriculture sector was one of the lowest paying sectors. For example, in Sublette County in 2005, average earnings for this sector were less than \$20,000 per job.¹⁶ Agriculture property was assessed at 0.2% of the County's total assessed valuation and sales tax revenue was so low it was not reported.

Dr. Thomas Power states that, "Claims about the relative importance of federal grazing to the economies of the western states can be simply analyzed by answering the following four

¹¹ U.S. Department of Agriculture, Economic Research Service. *Farm Sector Income & Finances: Farm Sector Income Forecast*, February 4, 2022. <https://www.ers.usda.gov/topics/farm-economy/farm-sector-income-finances/farm-sector-income-forecast/>

¹² <https://www.agriculture.com/livestock/cattle/the-cattle-price-explosion-is-now>

¹³ <https://www.blm.gov/press-release/bureau-land-management-and-usda-forest-service-announce-2022-grazing-fees>

¹⁴ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

¹⁵ Headwaters Economics. 2021. A Profile of Key Indicators Southwest Region. Selected Geographies: Lincoln County, WY; Uinta County, WY; Sublette County, WY; Sweetwater County, WY. (Citing BLM and the Forest Service.)

¹⁶ Taylor, D.T. and Foulke, T. 2008. Sublette County Wyoming: A Socio-Economic Profile. University of Wyoming Department of Agricultural and Applied Economics.

questions: 1. What portion of the value produced by cattle and sheep operations is associated with the feed used? 2. What portion of the feed for those cattle and sheep operations comes from grazing on federal lands? 3. What portion of the total agricultural activity involves raising cattle and sheep? 4. What part of the total economy is represented by agriculture?"¹⁷

According to the 2017 Wyoming Census of Agriculture, Sublette County sales of cattle and calves was \$41 million.¹⁸ How much of this can be attributed to public lands? Since permitted grazing seasons on the BTNF and other public lands are approximately 120 days, or about one-third of a year, this is 30% of the livestock economy in the county, or around \$12 million, but the livestock grazing on the BTNF is a smaller fraction which can be determined by an analysis of the authorized AUMS on the BTNF, BLM and State Lands. The EIS must do this calculation. That calculation could show it is maybe \$3 - \$4 million as an approximation.

Against this value, an analysis of the economic importance of BTNF managed lands to the local and regional economies when grazed by livestock should be compared to other values foregone such as recreation, clean water, and wildlife. For this EIS for Dell Creek and Forest Park, the areas of habitat for elk seasonal, winter and parturition range that are permitted to be grazed by livestock must be determined. Then they should be valued based on the loss of elk forage and habitat (elk numbers and value) due to livestock grazing vs the value if the habitat is allowed to produce at potential by not grazing livestock and/or reducing livestock grazing to meet the best science on forage allocations, a sustainable utilization rate of 25%, and rest, to allow plant communities to recover following grazing.¹⁹

This would be based on numbers of cattle using the elk habitat and the length of time they use the habitat and how many elk that habitat could support at different livestock stocking rates ranging to no livestock grazing. Stocking rates would be determined by the factors described above as regards utilization, current forage production, adequate rest and current cattle weights and forage consumption rates. Current Forest Service Regional criteria for determining capable and suitable lands for livestock grazing should also be used to determine the acres upon which grazing should be allowed. The analysis should include values of outdoor recreation, for example that reported by the U.S. Fish and Wildlife Service.²⁰ That report for 2011 shows the value for Wyoming for Fishing at \$463 million; Hunting at \$288 million; Wildlife Watching at \$350 million per year, or a total of \$1.1 billion spent in Wyoming. That was ten years ago before the recent explosion in tourism. A report for 2016 showed over \$156 billion spent on these

¹⁷ Power, Thomas M. 2002. Taking stock of public lands grazing an economic analysis. In: Welfare Ranching, the Subsidized Destruction of the American West.

¹⁸ USDA. 2017. 2017 Census of Agriculture County Profile Sublette County, Wyoming.

¹⁹ Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review. Report Prepared for Yellowstone to Uintas Connection, Paris, ID. <https://app.box.com/s/ngw6723dx52quxw2rd8u>

²⁰ US Fish and Wildlife Service. 2011. 2011 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

endeavors in the U.S.²¹ It should also consider the costs of water treatment and other costs to the BTNF and affected communities related to livestock degradation of the air, water, and plant communities (weeds). A current news release from Grand Teton National Park shows a 48% increase in visitation for April 2021 when compared to April 2019.²² What are the current statistics for Sublette County and how does the value of livestock grazing on the BTNF play into this?

C. Forage Consumption and Displacement of Elk by Livestock

We reviewed statistics for the number of permitted and authorized livestock in BLM, Forest Service and State managed lands in Wyoming.^{23 24} The summary is provided in Table 1 showing that 3,016,445 Animal Unit Months (AUMs) were authorized in recent years. An animal unit month is the allocation of forage used by a cow and calf each month. A 2016 review of the AUMs and rates of consumption of forage by livestock showed that current cattle weights and forage consumption rate as a percent of body weight for a cow and calf pair was 50.4 lbs/day or 1,532 pounds per month.²⁵ The estimated elk forage consumption rate is 14 lb/day.²⁶

Table 1. Authorized Livestock AUMs on Public Lands in Wyoming

Managing Agency	Permitted AUMs	Authorized AUMs
National Forest	443,740	355,392
National Grassland	150,058	126,174
BLM	1,863,702	1,401,056
Wyoming State		1,130,823*
Total		3,016,445

*Calculated from 2011 grazing revenue of 5,247,021 divided by the rate of \$4.64/AUM.²⁷

²¹ US Fish and Wildlife Service. 2018. 2016 National Survey of Fishing, Hunting, and Wildlife Associated Recreation.

²² DOI National Park Service. 2021. News Release. 05/23/2021.

²³ USDA. 2017. Grazing Statistical Summary FY 2016. Forest Service Range Management.

²⁴ DOI. 2020. Public Land Statistics 2019. Bureau of Land Management.

²⁵ Carter, J. 2016. Updating the Animal Unit Month. Report to Yellowstone to Uintas Connection. Paris, Idaho. <https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

²⁶ Holechek, J, RD Pieper, C H Herbel. 2004. Range Management Principles and Practices, Fifth Edition. Table 8.11, page 240.

²⁷ Dyer, H. 2018. State Trust Land Grazing Fees. Wyoming Office of State Lands and Investments. <https://www.wyoleg.gov/interimcommittee/2018/05-20180927statelandsgrazingfees.pdf>

Using these statistics, we calculated the number of elk that could be supported in Wyoming if livestock were not grazing our public lands.

3,016,445 AUMs x 1,532 = 4,621,193,740 pounds of forage consumed by livestock on public land each year

One elk consumes 14 lb/day x 365 days/year = 5,110 lb/year

Number of elk equivalent to livestock grazed on public lands in Wyoming is therefore,

$$4,621,193,740 \div 5,110 = 904,343 \text{ elk per year}$$

Let's look at the three allotments surrounding the Dell Creek FG that contain elk habitat and the number of cattle authorized to graze. These data were taken from the Annual Operating Instructions for the three allotments for 2021 and are summarized in Table 2.²⁸ Our calculation indicates that there are approximately 14,313 AUMs being consumed by cattle in the three allotments that include elk seasonal, winter and parturition range. If an elk consumes 5,110 lbs of forage each year, then the number of elk equivalent to the livestock forage consumption is:

14,313 AUMs x 1,532 = 21,927,516 pounds of forage consumed by livestock on the three allotments each year

One elk consumes 14 lb/day x 365 days/year = 5,110 lb/year

Number of elk equivalent to livestock grazed on the three allotments is therefore,

$$21,927,516 \div 5,110 = 4,291 \text{ elk per year}$$

²⁸ USDA. 2021. Annual Operating Instructions for Fisherman Creek, Hoback and Jack Creek allotments. Bridger-Teton National Forest.

Table 2. Animal Unit Months for Fisherman Creek, Hoback, and Jack Creek Allotments

Allotment	Livestock Type	Numbers	Dates Grazed	AUMs*
Fisherman Creek	Cow and Calf	711	June 11 - Oct 15	2,947
	Yearling	691	"	1,432
	Horse	37	"	77
Hoback	Cow and Calf	692	June 11 - Oct 15	2,868
	Yearling	1,944	"	4,029
	Horse	17	"	35
Jack Creek	Cow and Calf	330	June 11 - Oct 15	1,368
	"	47	June 11 - Oct 20	203
	Yearling	627	"	1,351
Totals		5,096		14,313

*For simplicity we counted a yearling and horse as equivalent to 0.5 AUM each.

The AOIs for these allotments allow 50% utilization in riparian areas and 40% in uplands, but there are questions as to whether these standards are met or whether sufficient forage exists to support the livestock or elk that use, or potentially use, these allotments. We have addressed issues with the current monitoring and management of allotments by the BTNF in several letters or comments referenced above.

A recent example are our comments on the Elk Ridge Complex Supplementation Project Environmental Assessment.²⁹ We collected forage data on the allotments covered by this EA and found that current forage production was significantly lower than that predicted by the soil survey and ecological site descriptions, in fact, it was approximately 10% of the potential amount. This meant that the predicted stocking rate of 603 cow/calf pairs could not be supported at the allowable use standards provided. In addition, the allowable use standards do not leave adequate cover (retention) for amphibians, birds, and small mammals. In fact they provide for less than one inch residual vegetation height on the key species.

We determined that the key species method used by the BTNF is not proper; and that agency monitoring is flawed. We provided photos of some areas in currently grazed allotments managed with these allowable use standards showing that aspen stands have lost much of their herbaceous understory and lack recruitment; that monitoring locations in upland areas are selected for minimal use by livestock (on ridges and far from water); that streams continue to suffer downcutting and degraded riparian areas; that riparian areas are not actually monitored and the green line stubble height is not representative of riparian use; that riparian residual vegetation heights following livestock grazing are very short and not providing cover and forage for birds, mammals and amphibians. See, for example the photos of the Fisherman Creek riparian zone on p25 of those Elk Ridge comments. We also documented over 100 trespass cattle into the vacant Elk Ridge Complex showing that those cattle from the Upper Green Complex are not being properly managed or controlled. Also see our letter to the BTNF

²⁹ <https://app.box.com/s/8w485mxxrpbzbrh2v52n59ozkuud5v49>

critiquing monitoring on the Upper Green Complex.³⁰ For management related to elk FGs, these problems must be corrected to avoid guesswork and provide the public with a data- and science-based analysis.

It is incumbent on the BTNF in its analysis of the Dell Creek FG to document the current state of the plant communities and forage base on the Fisherman Creek, Hoback, and Jack's Creek allotments as well as the seasonal, crucial and parturition ranges for ungulates to determine whether sufficient forage is available to support the livestock being authorized, the potential elk, deer, pronghorn, and moose populations, to provide cover for migrant birds, amphibians, and small mammals, and to provide for watershed protection. These three allotments were chosen to encompass much of the winter range identified in the WEST report for Dell Creek FG. Similarly, for Forest Park the analysis should look at the allotments in which seasonal, winter and parturition range occurs and evaluate the ability of those allotments to support the Forest Park elk in the absence of the FG.

Then there is the question of what ranchers are doing to provide residual forage on private lands that are historic foraging areas for deer, pronghorn, elk, and moose. This past year we have inspected private lands bordering Highway 189/191 between Bondurant and Daniel and found that the valleys are grazed completely with little residual forage going into winter. These private lands are grazed once the livestock leave public lands and enter the valleys and surrounding habitats before winter feeding begins. The Hoback Ranches (HR) residential development bordering the BTNF lies between the McNeel and Franz FGs and is not grazed by livestock. (Figure 5). HR and adjacent areas on BLM and BTNF are used below as examples where livestock access is not available, either through land use covenants or on public lands bordering HR where topography or fencing excludes livestock. HR is a private land block of 7,500 acres with covenants preventing livestock. In these places not grazed by livestock, the plant communities are available for wildlife, including elk. We note that elk from McNeel FG migrate through HR to Franz FG and feed within the HR.

³⁰ Carter, J. 2022. Letter to Patricia O'Connor in Reference to Upper Green Cooperative Range Monitoring. January 3, 2022. <https://app.box.com/s/r05zd3iteyx4fb115f53q5pxp7bnu5md>



Figure 6.

Upper - Fall 2021, private land along Hwy 189/191 north of Daniel grazed prior to winter leaving no available residual for wildlife.

Lower - Fall 2021, same location showing residual grasses providing some forage in HWY 189/191 ROW on left with grazed private on right.

In winter, when deer or elk dig through the snow in these grazed areas, they will find little to no forage for the energy expended.





Figure 7.

Upper - Fall 2021, BTNF Fisherman Creek allotment adjacent to Hwy 189/191. This riparian meadow is grazed beyond standards leaving no available residual for wildlife.

Lower - Fall 2021, Fisherman Creek allotment upland on access road to Hoback Ranches showing low growing grasses and little residual for wildlife.

In winter, when deer or elk dig through the snow in these places, they will find little or no forage for the energy expended.





Figure 8.

Upper - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

Lower - Fall 2021, private land along access road to Hoback Ranches from Hwy 189/191 grazed prior to winter leaving little to no available residual for wildlife.

In winter, when deer or elk dig through the snow in these places they will find little forage for the energy expended.





Figure 9.

Left - Summer 2021, Forest Svc and BLM managed land adjacent to Hoback Ranches. These locations are isolated by topography and a fence, and not grazed by livestock.

Right - Summer 2021, adjacent grazed private land showing little residual vegetation.

D. Snow Depth

WGFD has indicated that a snow depth of 20 inches or more with crusts and ice forming may indicate feeding is necessary.³¹ Elk may move through snow up to three feet deep.³² We were interested in snow depths in the region near the Dell Creek FG and looked up SNOTEL and ACIS data for three locations ranging from lower to higher elevations and along potential migration routes between Bondurant and Pinedale. The station metadata is shown in Table 3 and a map in Figure 10.

Table 3. Metadata for SNOTEL and ACIS Stations

Station Name	Network	Latitude, degrees	Longitude, degrees	Elevation, ft.
Bondurant	ACIS	43.20	110.40	6,620
East Rim Divide	SNOTEL	43.13	110.20	7,930
Pinedale	ACIS	42.87	109.87	7,180

We looked at the period from 2011 to the current day to determine the number of days that snow depth exceeded 20 inches for the three stations and for the higher elevation East Rim Divide we also looked at the number of days above 3 feet snow depth which could limit elk movement. The data is plotted in Figures 11 - 13.

Statistics on the timing of snow depth relative to ability of elk to forage or migrate for these three stations are summarized in Table 4. These are station statistics and don't necessarily reflect site specific data for elements of winter range where depths may be less such as south or west-facing slopes. They are useful in looking at the length of time snow cover may limit foraging or migration and illustrate that current numbers of feeding days may be longer than necessary. We used the foraging depth limit of 20 inches and the migration depth limit of 36 inches as noted in the WGFD reports cited above.

The Bondurant station is representative of conditions at Dell Creek FG and can be used for estimation of the minimum, maximum and average number of days elk may be limited in foraging. In some years the snow level did not reach the foraging depth limit, but on average there were 68 days in which foraging could be limited. In heavy snow years, this increased up to 128 days. It would be expected if forage is available, the elk would migrate to where the forage occurs. In this case, based on migration patterns, it could be to the south across the East Rim Divide.

The East Rim Station is representative of snow depths at the East Rim Divide, the higher elevation barrier elk would negotiate to move south. At the migration limit of 36-inch snow

³¹ Wise, B. 2021. Western State Management of Wintering Elk. Wyoming Game and Fish Department.

³² Oneale, E. Undated. Rocky Mountain Elk. Wyoming Game and Fish Department Habitat Extension Bulletin No. 27

depth, there would be some years in which it is not a barrier (minimum of 1 in our 10-year date range). The average number of days snow depth exceeded 36 inches was 49 and the maximum 94 days. The question is whether elk would move up over the East Rim as snow depths limited foraging in the lower elevations, since it stands to reason the depths would be greater at the higher elevation on East Rim Divide. Since they are reported to move from McNeel FG to the Franz FG, and we observe this movement in HR, it appears likely they would do so.

The Pinedale station is representative of the lower elevations to the south where, ostensibly, elk could winter. It is characterized by shorter periods when snow depth can be limiting. This ranged from 1 day to 63 days with an average of 19 days when snow depth exceeded 20 inches. South or west facing slopes could have lower depths allowing foraging. We recently observed mule deer in the Highway 189/191 ROW resting in about a foot of snow on a south facing slope. They were foraging there while snow depths in other locations were deeper. The BTNF EIS analysis should look at the differentials for snow depth with slope, aspect and elevation as applied to winter range and migration routes to define availability of suitable areas for elk foraging and migration and put special management emphasis on these areas to ensure forage is available and migration can occur.

Table 4. Snow Depth Statistics for SNOTEL and ACIS Network Stations 2011 - 2021

Station Name	Min/Mean/Max Days Above	Date Range for Onset of Depth Limit	Date Range for End of Depth Limit
Bondurant	0/68/128 > 20 in.	12/21 - 2/8*	3/15 - 5/1
East Rim Divide	95/123/152 > 20 in.	11/26 - 1/4	4/9 - 5/4
East Rim Divide	1/49/94 > 36 in.	1/7 - 3/22	3/3 - 4/21
Pinedale	1/19/63 > 20 in.	12/24 - 2/20	12/27 - 3/20

*2017 never exceeded 20-inch snow depth.

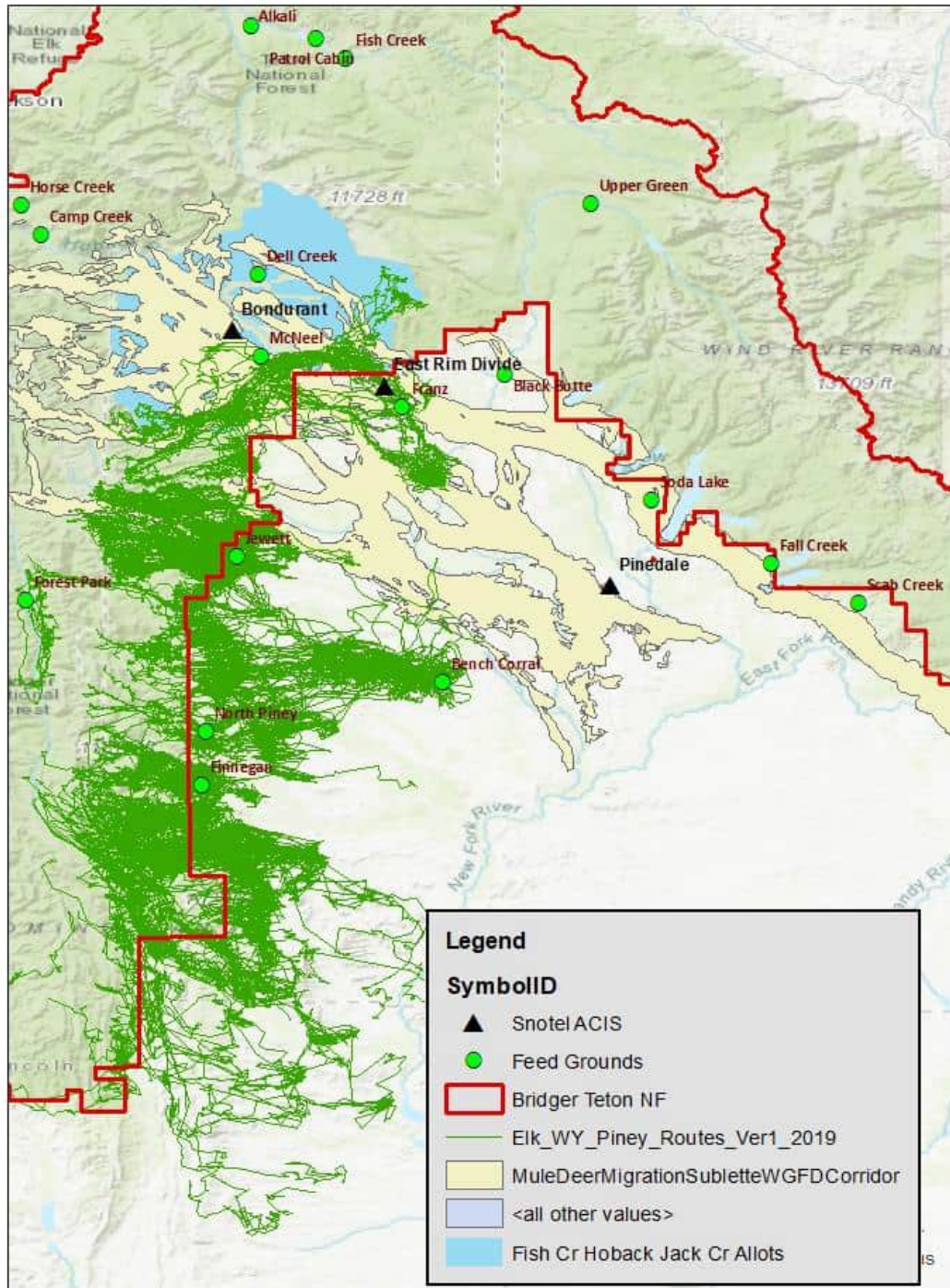


Figure 10. Snow Depth Monitoring Locations and Migration Routes

Figure 11. Bondurant ACIS Snow Depth

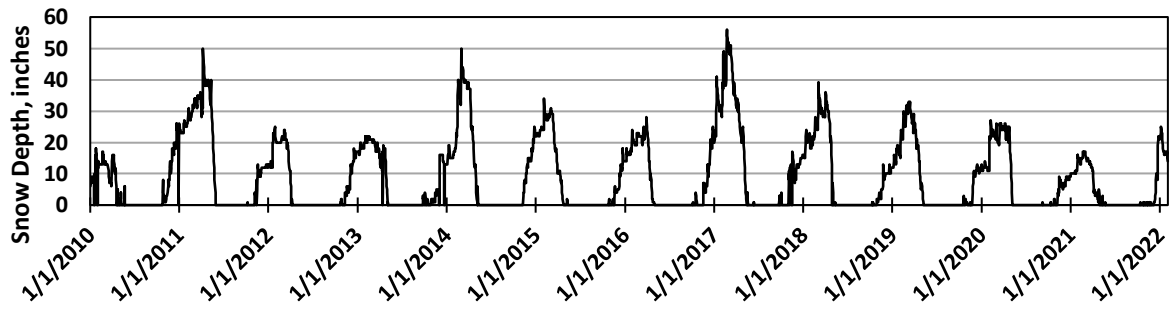


Figure 12. East Rim Divide SNOTEL Snow Depth

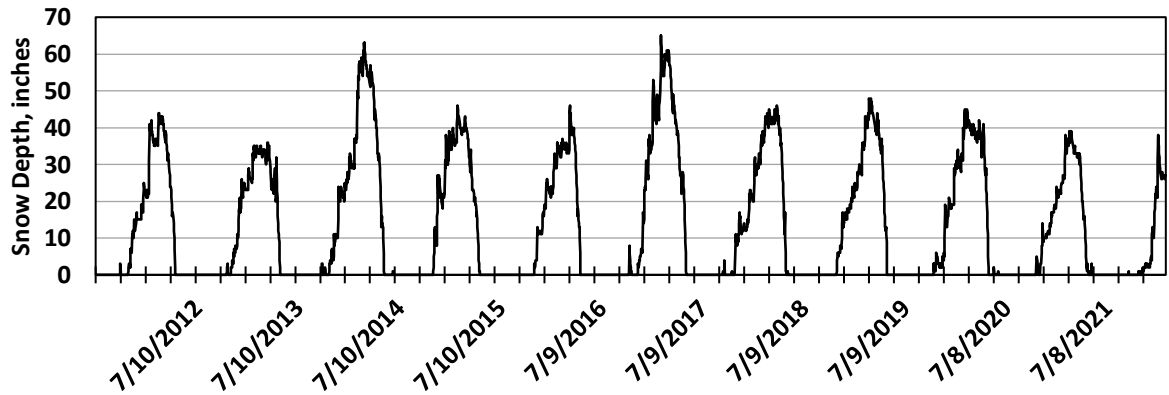
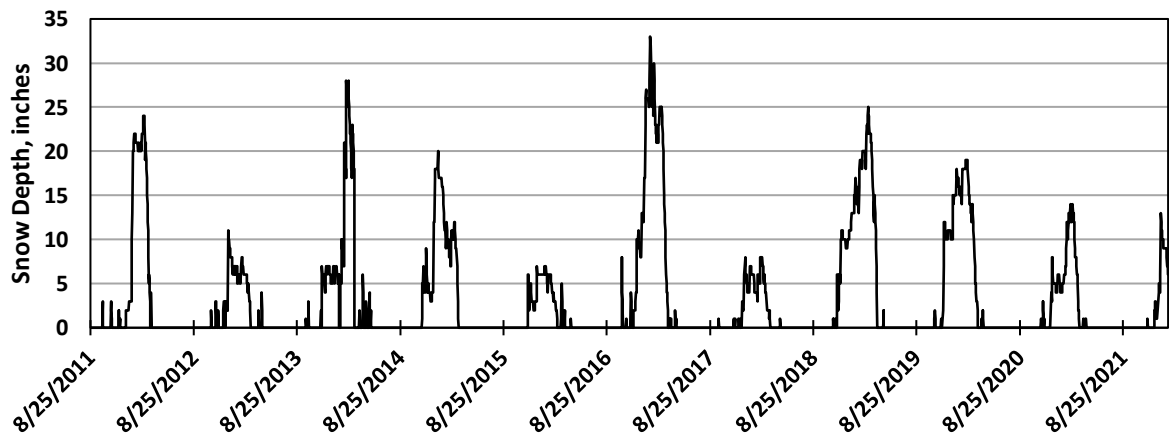


Figure 13. Pinedale ACIS Snow Depth



E. Phaseout of Dell Creek and Forest Park, and Providing Native Forage

According to the WEST report³³, Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135, far exceeding the ranges we found by analyzing snow depth. According to the WEST report, these long periods gave both FGs a poor ranking to have successful transitions to native range. The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range.

The McNeel FG is very near Dell Creek FG and would need to be included in the analysis. According to the WEST report, the McNeel quota is 600 elk with an average fed of 578 animals. McNeel has 36,699 acres of native potential range within a five-mile radius constituting 73% of that overall area. Any analysis of Dell Creek must consider the effects of McNeel and the native range for both. For Dell Creek, these crucial and parturition ranges would be partially included in the Fisherman Creek, Hoback and Jack's Creek allotments described above. See Figures 14 - 18 for migration routes and the overall relationship of all FGs to the BTNF and elk crucial and parturition ranges. The WEST report also noted that elk from McNeel FG move across the Rim to the Franz FG on BLM. As mentioned, we observe the elk here in Hoback Ranches in early winter, then some appear to move south through HR as the snow deepens.

Figure 14 shows the FGs, elk migration patterns, and the mule deer migration route in Sublette County. Elk movement relative to the FGs shows that elk from Forest Park FG move across to the east into Sublette County and the FGs adjacent to the BTNF. The McNeel FG migration pattern is also shown. What is missing from this WGFD data is the migration relative to Dell Creek FG. What we may say is that the presence of crucial, seasonal, and parturition range that is present in the five-mile radius from Dell or McNeel (WEST Report) would imply migration between those summer and winter habitats.

Ultimately, these FGs must all be closed to limit disease spread between wildlife species and between wildlife and livestock by reducing the seroprevalence in wildlife. However, closing Dell Creek and Forest Park can lead to the elk moving onto other existing FGs, thus continuing

³³ WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

the concentration of animals. Dell Creek elk could move to McNeel, for example. We advocate for closure of all FGs, including Dell Creek and Forest Park, which are the subject of this scoping. This EIS should be expanded to analyze all FGs on the BTNF with a selected alternative for closure of them all. In addition, the Forest Service must work with BLM and the State of Wyoming for closure of the remaining FGs. Any alternative and analysis that does not include addressing all FGs is not adequate because the cumulative effects of all FGs are a single problem, the FGs are interrelated and until they are all eliminated, CWD and other diseases will continue to have high seroprevalence and thus the continuing issue with livestock.

We recommend the following steps to address this issue:

1. Close Dell Creek and Forest Park FGs immediately upon issuing a record of decision. We have pointed out that there are other FGs the animals can access until all are closed, and that there is summer and winter range in the tens of thousands of acres within reach.
2. Require WGFD to reduce the feeding period at the other BTNF FGs. The scoping letter notes that feeding would occur between November 15th and April 30th. This overlaps the brucellosis risk period. The feeding period should be reduced to the minimum to escape the high-risk period of exposure at FGs. Ranchers can protect their hay stacks and winter feeding areas.
3. Because native forage and access to it is a key factor to provide alternatives to the FGs, an assessment of the current state of native forage and its seasonal availability must be determined. Forage capacity must be determined by field measurements. Snow depth measurements and modeling must be used to determine the seasonal availability of forage based on snow depth. We have shown some evidence here that neither the BTNF nor private landowners are leaving adequate residual forage for wildlife. Now this must be quantified by identifying all the crucial, parturition and seasonal elk habitat on the BTNF, measuring summer and winter forage availability, and adjusting livestock grazing to accommodate elk and other ungulates to inform the EIS analysis and support a meaningful alternative for closure of FGs.
4. Map, describe, and analyze the outcomes of all past habitat treatments implemented in association with the FGs and on BTNF managed lands, their current condition, native forage productivity, and capacity for wildlife.
5. Livestock allocations must be reduced in these elk habitats by: updating the capability and suitability analysis of all allotments that contain parturition and crucial range to current forage production and livestock forage consumption rates. Reduce the allowable use standards. Annually rest or permanently close pastures that occur in these critical habitat areas to reduce livestock/elk overlap or co-mingling. The science validates 25% allowable use criteria and the need for rest of grazed areas, and this must be accurately monitored by correcting current monitoring issues we have identified. Herding must be used to control livestock use and co-mingling in these areas preferred by elk.

6. Permanently close vacant allotments to livestock grazing. This would include the adjacent Elk Ridge allotment complex, among others.
7. Predators and scavengers must be protected so they can provide their essential role in dispersing animals, reducing the presence of contaminated animal remains, and reducing environmental contamination. The BTNF can effectuate this by using its Prohibition Authority to eliminate hunting and trapping of these animals within the bounds of the BTNF. We remind the Forest Service it has primacy over management on public lands and is a cooperating agency with the State of Wyoming, not its servant.
8. The BTNF must identify migration corridors for elk, deer, pronghorn, and moose that occur on the BTNF and ensure through quantitative monitoring that these migration routes are fully functional in terms of cover and forage, that migration barriers are eliminated, and that they also connect with migration routes in other ownerships.
9. Barricade, reclaim and reseed all the unauthorized motorized routes in the five allotments surrounding Dell Creek FG and provide signage and enforcement to that effect. This will greatly improve habitat for elk. This should be part of an overall program to close and reclaim these routes throughout the BTNF with a priority on grizzly bear habitat and security, elk habitat and security.
10. The State of Wyoming is conducting stakeholder meetings to address the long-term fate of FGs. Unfortunately, this process has already arrived at the predetermination by the State Director of WGFD that FGs will not be eliminated even though its own planning in the past has acknowledged that closing the FGs is important to control disease. The BTNF can do two things. First, close all FGs on the BTNF as there are past examples of this that work. Second, get engaged with the State, BLM, and private landowners to provide forage and migration for these animals on lands managed by other entities.

In our Attachment to these comments, we have provided the pros and cons of closure and a rebuttal to the arguments against closure by Mr. Lloyd Dorsey. The supporters of continued feeding are mainly hunters and livestock producers. We have shown the relative value of livestock production on the BTNF is minor to the local and regional economy. We have also shown that other states continue to sell licenses with much lower harvest success (46% in Wyoming vs as low as 11% in Washington with more hunters than Wyoming). Most livestock producers already fence their haystacks and can also fence their winter livestock feeding operations. Subsidies are available to help with this. WGFD would save over \$2 million in annual costs by not continuing feeding.

Please Reply To:



John Carter, Ecologist
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922

Michael Garrity – Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624

Sara Johnson – Executive Director
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

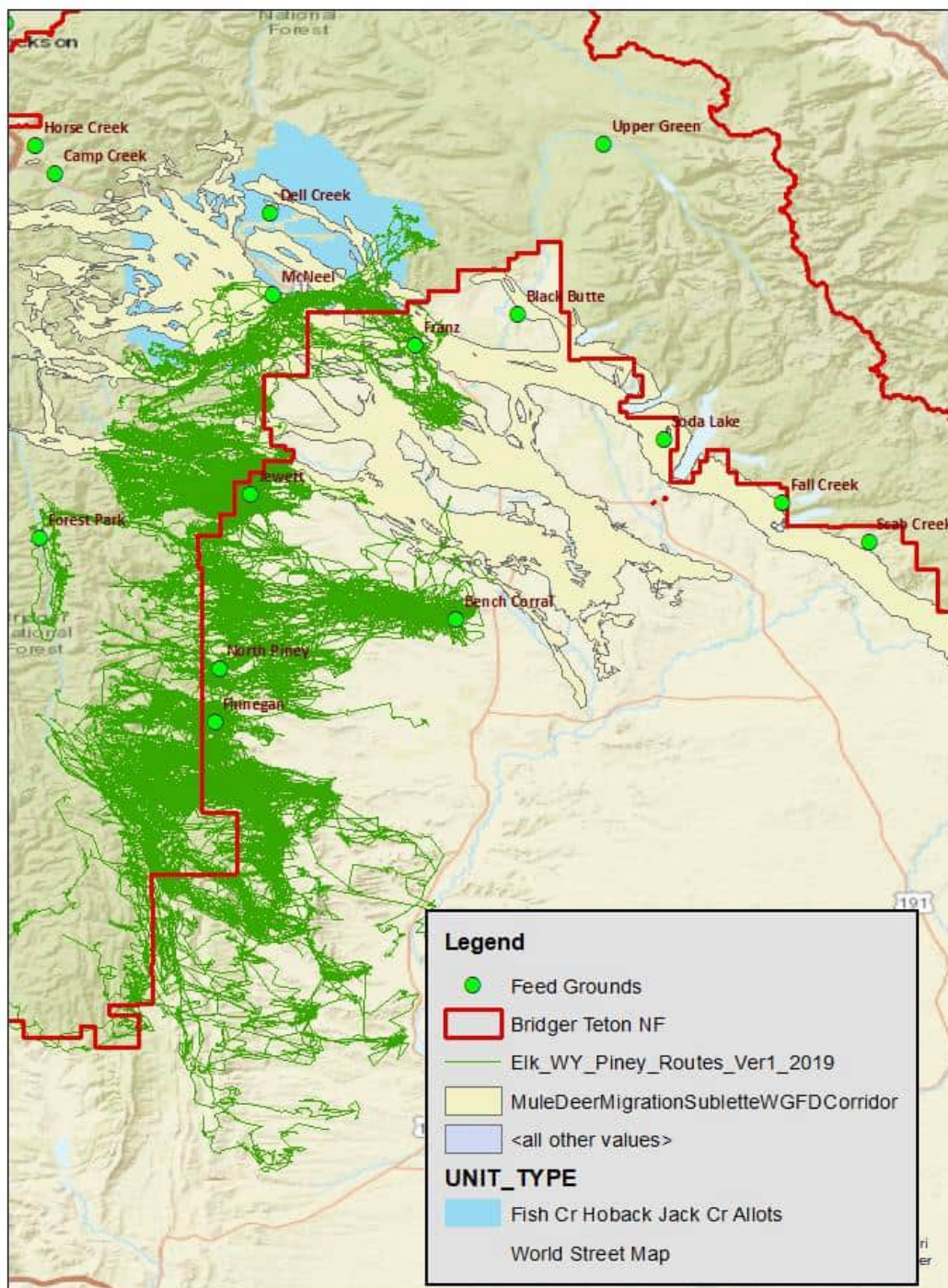


Figure 14. Elk Feedgrounds, Migration Routes and Grazing Allotments

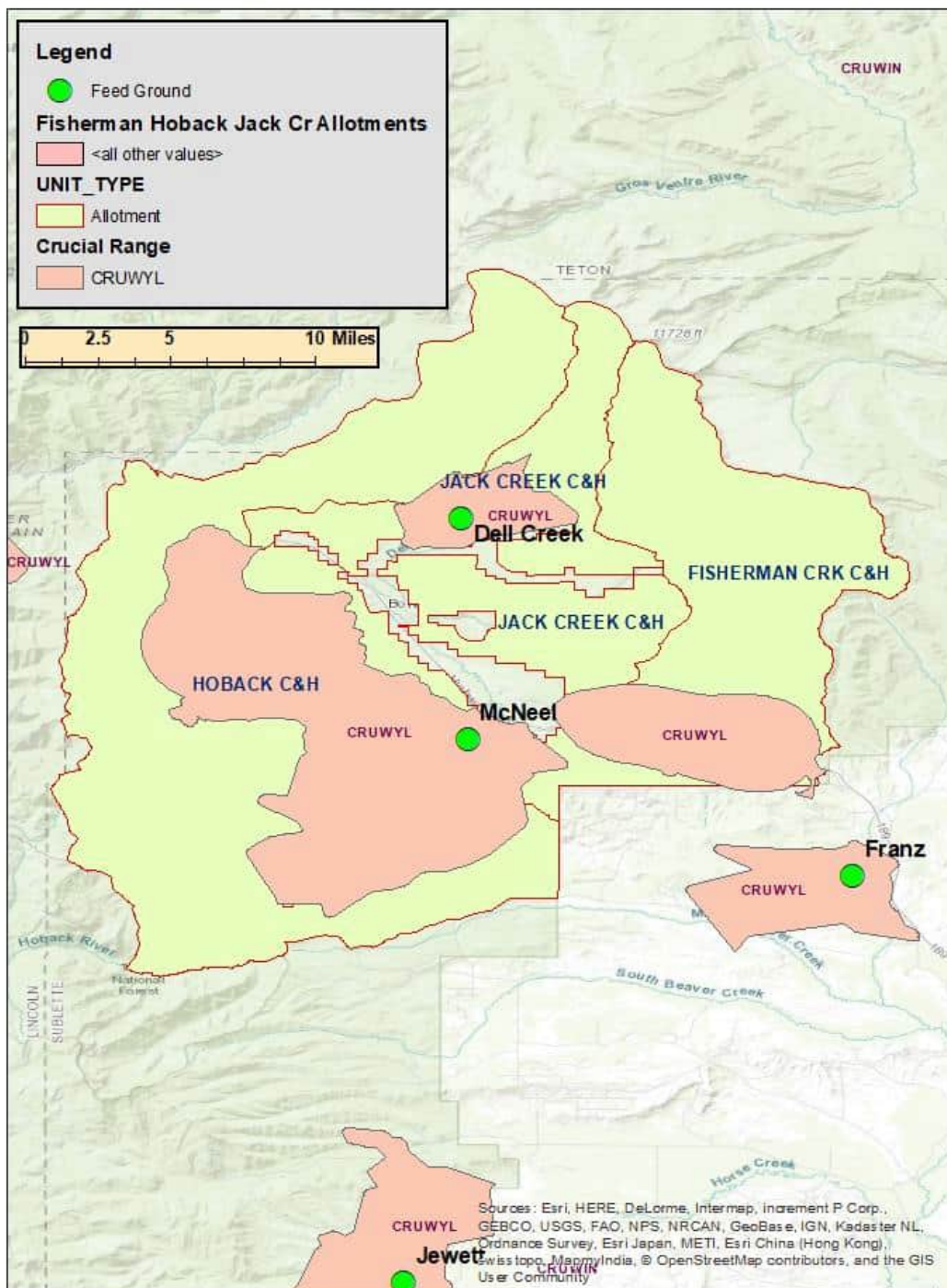


Figure 15. Dell Creek and McNeel FGs, Crucial Range and Grazing Allotments

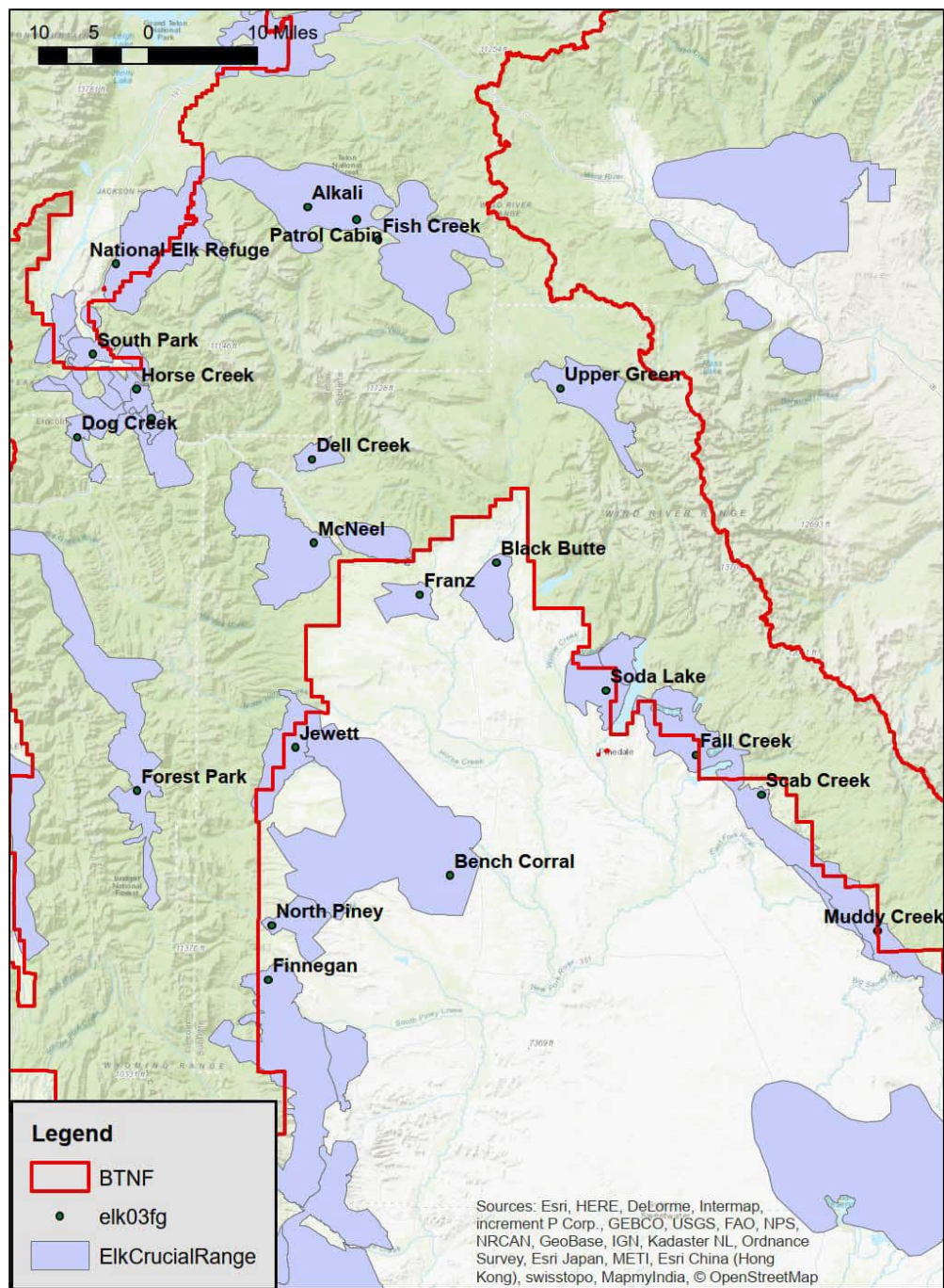


Figure 17. Elk Feedgrounds and Elk Crucial Range

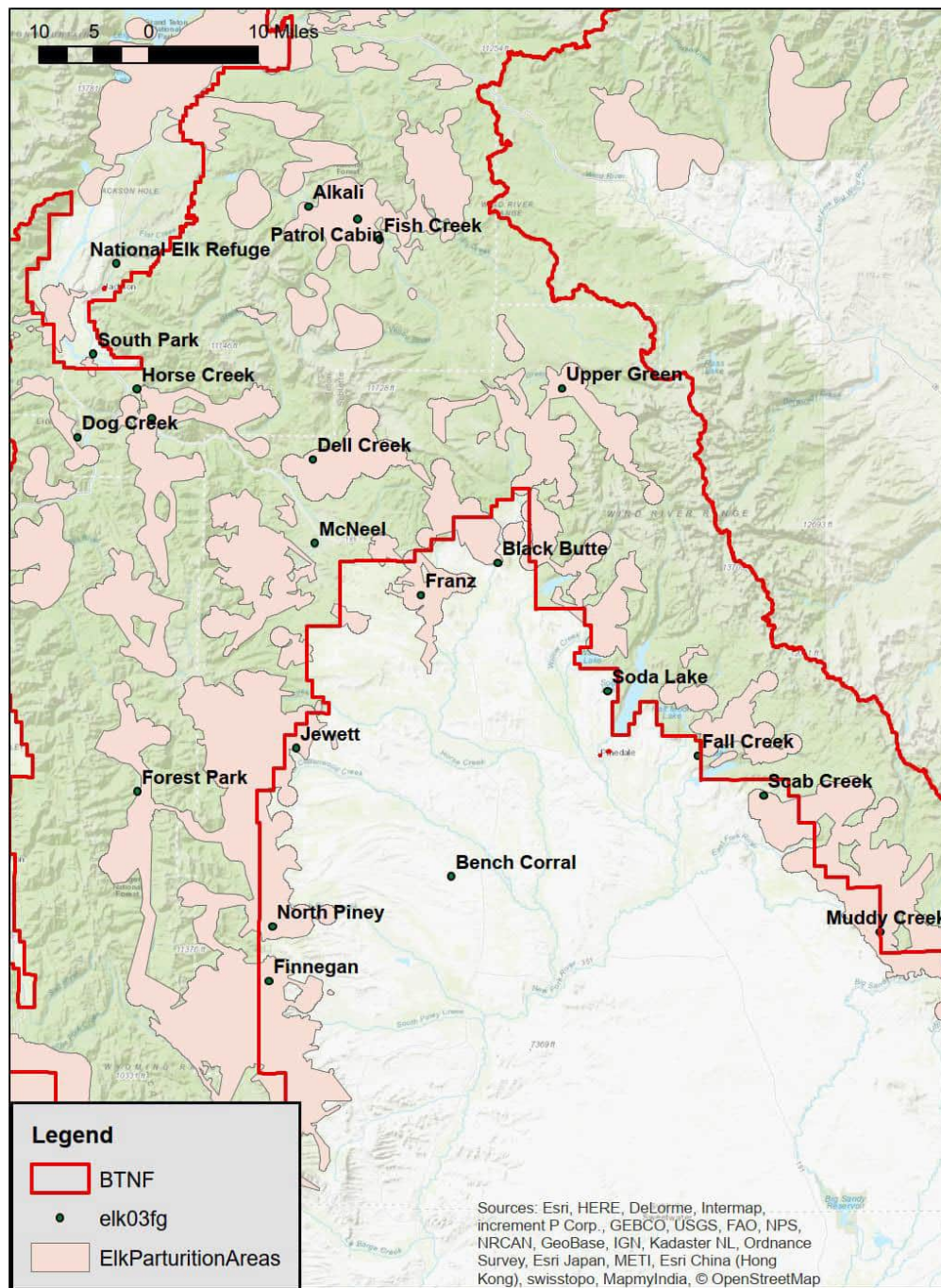


Figure 18. Elk Feedgrounds and Parturition Range

ATTACHMENT 1

Y2U, AWR and NEC Scoping Comments Dell Creek and Forest Park FGs

February 11, 2022

The following pages are notes summarizing content of information sources used in developing scoping comments for the Dell Creek and Forest Park FG EIS. They are not in any particular order, but can be word searched.

WDFD. 2007. Big Piney Elk Herd Unit (E106) Brucellosis Management Action Plan. 11 January, 2007.

Wy lost brucellosis free status in 2004 when it was found in a Sublette County herd. Increased surveillance, research, and brucellosis management action plan (BMAP), and lack of infection in 2005, Wy regained its brucellosis class-free status in 2006. Objectives of the BMAP were to: 1) document and analyze all available quantitative and qualitative data regarding brucellosis, 2) use available data to develop management options to reduce risk of brucellosis transmission among wildlife and from elk to cattle, and 3) select appropriate management options for implementation in the Big Piney Elk Herd Unit (BPEHU).

Currently, five feedgrounds are located within the BPEHU: Franz, Jewett, Bench Corral, North Piney, and Finnegan. All feedgrounds in this Herd Unit (excluding Bench Corral) are located along the border of BLM or private lands and USFS lands and were established “uphill” from livestock operations primarily to prevent damage to stored hay (and later, prevent commingling).

In the BPEHU, of 1,574 sq mi, 17% is in winter range categories. Brucellosis was likely transmitted from domestic livestock to free-ranging bison and elk just prior to 1917 (Meagher and Meyer 1994) after repetitive commingling and subsequent contact with aborted fetuses contaminated with brucellosis. Brucella transmission usually occurs via the oral route, with ingestion of bacteria that are shed by infected females in high numbers in aborted fetuses, fetal membranes and fluids, uterine discharges, and milk (Siello and Marys 1998). Determining if an animal is infected with *Brucella abortus* is accomplished only by removing select tissues (e.g., the reproductive tract and/or lymph nodes surrounding the reproductive tract) from the suspect animal and culturing the bacteria from these tissues.

23 winter elk feedgrounds exist in western Wyoming, including the National Elk Refuge. FGs are used as substitutes for native winter range and to minimize depredation of winter hay stores, winter mortality, and elk-cattle commingling. About 13,000 elk are fed on WGFD FGs annually.

Wyoming Livestock Board defined the exposure period for cattle as 1 Jan to 1 May. Brucellosis abortion events in captive and FG elk have been documented from late Feb to June.

Concentrating elk on FGs likely increases the rate of intraspecific transmission. This explains the seropositive levels of elk at 26%, 2% and 0% on, adjacent to, and completely independent of feedgrounds. Public grazing allotments where cattle and FG elk are present during May and June may lead to interspecific transmission. Commingling has been documented on 1 of 12 grazing allotments that turn-on prior to June 15 and overlap with WGFD delineated parturition areas. Elk from this allotment "are assumed" to be mostly independent of FGs, thus posing little risk.

A vaccination program for elk began in 1985 with 95% of calves vaccinated with Strain 19 annually on every feedground except Dell Creek. Dell Creek is a control site to assess the program. Between 29 - 62% of elk tested were protected by Strain 19. Seroprevalence between vaccinated and non-vaccinated elk are not significantly different.

Tout vegetation treatments as increasing herbaceous species used by elk, and may reduce the length of feeding season, reduce elk density on FGs, reduce intra-specific disease transmission, and influence distribution. Speculate that veg treatments in Buffalo Valley encouraged native forage utilization by that herd. The Buffalo Valley herd had lower seroprevalence (2.7%) than those using FGs (26%).

Brucellosis seroprevalence rates in elk attending feedgrounds with substantial habitat treatments and/or access to native winter range appear to be lower than those on feedgrounds with minimal to no access to additional feeding opportunities (WGFD unpublished data). Among the recommendations produced by the Brucellosis Coordination Team (BCT) was a call for further enhancement of winter elk habitat (Wyoming BCT Report 2005).

Field studies have documented scavengers consuming pseudo-aborted bovine and elk fetuses faster on (33hr, 18.9hr) than off (57.5hr, 33hr) feedgrounds. Primary scavengers (based on total mass of fetus consumed and/or removed) include coyotes, foxes, and eagles, with magpies and ravens as secondary scavengers. Coyotes can be infected with brucellosis, presumably from ingestion of contaminated tissues and/or fluids. no confirmed case of natural interspecific transmission has been observed (Forbes 1990). Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis. Because consumption rates of fetuses are faster on than off feedgrounds, scavengers may act as a biological control of brucellosis, reducing intraspecific transmission of brucellosis.

Methods to minimize intraspecific transmission include feeding on clean snow, vaccination, reducing the feeding season. Shortened feeding season is limited by concerns over commingling and consuming crops. This is not tolerated. So, hazing to feedgrounds is used to minimize the conflicts, which then increases the chance of increasing exposure rates to elk. Due

to the current seroprevalence among elk, these methods are not enough. Alternative management options are needed. Shortened feeding season or stopping feeding altogether are suggested. But these would need gradual implementation. Reducing elk populations through hunting prior to reducing or eliminating feeding could help reduce commingling.

Short term objective is to reduce co-mingling and prevalence in elk. Long-term objectives to eliminate brucellosis in wildlife in the GYE, maintain producer viability, reduce, or eliminate dependence of elk on FGs, maintain herd objectives, improve range health, maximize benefits to all wildlife.

In 1995 elk were relocated from the long duration late season North Piney FG to Bench Corral using baited hay. Elk continued to migrate to Bench Corral after that. This decreased risk of inter- and intra-specific transmission, and costs. No differences in utilization in the three affected allotments were documented. North Piney reclassified as a staging area FG before migrating to Bench Corral.

Each FG is a separate situation, requiring a different approach. Some FGs may have no options given current herd objectives and other conditions. Cattle and elk must be separated during the risk period. Eight options are considered:

9. Relocate FGs to provide larger area for elk to disperse and separate from cattle

- a. Suitable areas lower in elevation with no winter cattle operations
- b. Evaluate current habitat to determine production, veg health and potential
- c. All PFO BLM lands leased for grazing
- d. Purchase AUMs for forage reserve
- e. These five FGs are not candidates for this option due to potential for damage and co-mingling
- f. Pros include reducing elk density, increase feeding area (sanitation), may reduce disease, maintain herd objectives, reduce browsing on local native vegetation
- g. Cons include may maintain disease, cost for structures, difficulty of habituation of elk, increased localized grazing of herbaceous vegetation, increase competition with other species

10. Eliminate FGs

- a. Not an option given current herd objectives and current conditions. These would need to change.
- b. Pros include would reduce risk of intraspecific transmission, help eliminate brucellosis in Big Pine EHU, reduce FG and vaccination expense.
- c. Cons include increase risk of property damage, vehicle collisions and interspecific transmission under current numbers, potential increase in winter mortality, reduced elk numbers, license revenue, hunter opportunity, reduce vaccination feasibility.,

11. Reduce elk numbers through harvest

- a. Reducing number thru changes in hunting could allow flexibility to pursue options 2, 5, 6, and 7.
- b. Pros are reducing disease, increased short term hunting and license revenue, decreased elk densities and duration on FGs, may reduce conflicts on private, reduce FG and vaccination expenditures.
- c. Cons are not likely to reduce seroprevalence as some elk would continue to use FGs, continuing damage to private crops, resistance from outfitters and sportsmen, success limited by hunter skill, loss of long-term hunting and license revenue.
- d. Note population was 3,429 following 2006 hunt, population objective for the herd unit altered to 2,400. Additional hunting opportunities were provided in 2006, emphasis on females, and other strategies.

12. Reduce number of cattle and stored crops or implement changes by providing incentives

- a. Producers at "high risk" could reduce transmission potential and testing requirements by switching to spayed heifers or steers.
- b. Conversion to yearlings would eliminate need for storing hay crops and winter feeding.
- c. Change feeding operation to daily or in the morning to keep areas clean of hay.
- d. Could require changes by BLM or the FS to alter permits.
- e. Ranch Herd Plans could incorporate this option

13. Elk proof fencing of FGs or private lands to reduce commingling

- a. Pros include protecting stored hay, reduce damage problems, may reduce interspecific transmission, reduce attractiveness to elk.
- b. Cons are cost, congregating all elk within the fence unfeasible, impede migration, increase wildlife and livestock mortality, does not address persistence of brucellosis in elk, increase disease risk for livestock or elk in enclosures, landowners not willing, could require NEPA compliance, reduce wildlife viewing opportunities.

14. Habitat enhancement projects in winter range

- a. Facilitated by options 2,3,4, and 7.
- b. Habitat enhancement can reduce time spent on FGs, increased forage would reduce dependence on FGs, snow conditions permitting, thereby reducing feeding durations and lower elk concentrations on FGs during high risk transmission period, and create vegetative diversity, improve range conditions for livestock and wildlife
- c. Opportunity exists primarily around Bench Corral, variable snow conditions may cause less of an effect at other locations, increased forage in autumn may entice elk onto FGs and away from damage situations, without early feeding, increased forage in spring may entice elk off FGs, reducing intraspecific transmission.
- d. Pros include reduced feeding duration and seroprevalence, reduced intraspecific transmission, benefit vegetation, wildlife and cattle, funding available through public and private agencies.

- e. Cons are limited effectiveness in years of average or greater snow accumulation, may increase co-mingling or damage, may require short-term changes in livestock management in the treatment area, may increase invasive species.

15. Acquire native winter range thru purchase, easements, or other

- a. Facilitated by options 1 - 6.
- b. Risk of intraspecific transmission may be reduced by managing lands near areas used by wintering elk. "With adequate, intact, healthy, and accessible elk winter habitat available, elk feeding may be reduced in this EHU."
- c. Buying or leasing land managed for wildlife benefits could be used to promote stability and health of all flora and fauna.
- d. Pros are securing areas for all vegetation and wildlife, long-term solution, could reduce seroprevalence, used as forage reserve facilitating option 6, secure future revenue for WGFD,
- e. Cons are expensive, limited availability of land with potential, requires landowner willingness.

16. Vaccination

- a. Pros are an effective delivery system, may reduce number of aborted infected elk fetus on FGs, perceived to be an active management tool.
- b. Cons are expensive, not shown to reduce seroprevalence in FG elk, elk must be concentrated on FGs to make feasible, thereby maintains brucellosis, effective vaccine still lacking.

Coordination Meetings

WGFD - reclassify and manage North Piney FG as a staging area/FG but not for relocation or elimination. Elk that leave will not be hazed back, but allowed to migrate to Bench Corral. May consider baiting to Bench Corral, reducing feed, establish cutoff date for feeding.

WGFD, BLM, NRCS, APHIS - Discussed all options but 4, 5, 6, 7 of most interest. All agencies agreed that pursuit of Option 6 when feasible, but securing a forage reserve to assist implementation. This would be facilitated most by working to implement the conservation easement option.

Producers - First meeting attendance was poor, but all options discussed with no significant recommendations made. Second meeting provided draft BMAP. WGFD, BLM, APHIS attended along with 4 producers. No significant recommendations.

Producer Survey

Most producers supported relocation of FGs, Fencing stackyards and feedgrounds, vaccination. Most were opposed to eliminating FGs with modest opposition to acquiring native range. Opinions on other options were mixed.

Dorsey, L. 2015. What Happens When Elk Feeding Ends. Prepared for Wyoming Wildlife Advocates.

1. Eliminating FGs impractical - FGs have been successfully ended in Yellowstone, eastern Idaho, North Piney, and Deseret Ranch. Only 3% of Rocky Mtn Elk are fed. Rocky Mtn Elk do well without artificial feeding.
2. Development in winter range - Most lands in the three WY counties are public, thereby not developed with the 20 million acres GYE comprised of 80% public lands with vast areas of winter range. Colorado, with nine times the population of WY does not feed elk, yet has three times the elk and twice the cattle as WY.
3. Available habitat will require reduction of elk - The elk population objective is 81,275 which is 37% below the current population of 112,000.
4. Elk will starve in harsh winters - Other states have similar climates and the elk range freely and remain health through the winter. Moose, bighorn sheep, pronghorn, and deer also range freely and do well.
5. If not fed, elk will be in neighborhoods - Most of the area is open space and people can fence if concerned. If palatable plants are not planted, then the animals will move through. Most people value the wildlife in their area.
6. If no FGs, elk will get into haystacks and mingle with livestock - Most haystacks are fenced, which is normal. Fencing around livestock winter feedlines is also common. Money is available for fencing. Idaho requires fencing haystacks and feedlines.
7. Predators will go hungry and threaten people - Most of the hundreds of thousands of ungulates in the GYE are not fed and predators will not suffer from lack of prey. Bears, wolves, and mountain lions have not posed a threat to people. Domestic animals like horses, cattle, dogs kill dozens of people each year and no one thinks of them posing a threat.
8. Predators will follow elk into neighborhoods - While this happens, even in Jackson where feeding occurs, some do follow the elk and scare people. WGFD relocates or kills the animal. If fencing or not planting palatable plants is practiced, the elk will move through. Teton County passed an ordinance prohibiting feeding of deer and elk.
9. Reducing FGs or numbers of elk will harm the economy - the Jackson elk herd has declined in numbers, yet the local economy has improved. Over the long term, disease could lead to loss of elk, moose, and deer due to the concentration on FGs. Experts say to spread elk out, conserve abundant predators to keep herds spread out and healthy, so disease doesn't cause the loss. Phasing out FGs will pay dividends.
10. Hunting licenses and WGFD funding will suffer - WGFD could save over \$2 million by closing FGs. Could attract wildlife watchers for funding. Our hunting success rate is double that of surrounding states (40% v 20%). Could still sell the licenses and let the rate drop toward that of other states.
11. More elk on roads - Surrounding states have more elk than WY and don't feed, plus the number of elk on FGs is a small part of the population. People are used to deer, elk and

other animals crossing roads and in neighborhoods. Tools are available to mitigate risks to the wildlife and people.

12. Elk can't learn to migrate - Elk behavior is innate and if habitat is available, they will move from harsh climes to less harsh. Protected lands are large and connected, which means they can move across seasonal ranges if allowed.
13. If FGs end - Elk will be spread out across the vast protected landscapes and with predators on the landscape to keep herds dispersed and healthy.
14. Conclusion - CWD will arrive in the FGs and given that elk do well as free ranging herds and in our Rocky Mtn winters without feeding, that we have perfected fencing and have over or under passes and given science supporting ending FGs, it would be impractical not to quickly phase them out before it's too late.

Galloway, N. L., R. J. Monello, D. Brimeyer, E. K. Cole, and N. T. Hobbs. 2021. Supporting adaptive management with ecological forecasting: Chronic wasting disease in the Jackson Elk Herd. *Ecosphere* 12(10): e03776. 10.1002/ecs2.3776

Population data from management of the Jackson elk herd were modeled to consider potential effects of CWD on populations. CWD population effects were simulated based on data from the infected Rocky Mtn National Park population. The effects of management (hunting) were also incorporated into the model. It was estimated that CWD could reach 12% of the population but could range up to 20%. When superimposed on recruitment rates for the past two decades, the model predicted a prevalence of 7% in females would cause the population growth rate to drop below 1 which results in a population decline when female harvest was zero. They could not rule out this effect with a threshold as high as 23%. A time-invariant transmission rate was used, which could change with actual data from concentrated populations. Natural selection for resistance was not expected over the near term with expectations under "worst case" transmission scenarios reaching out to 75 - 100 yrs.

Other research cited observations from captive and free-ranging herds that indicate CWD may have "greater impacts on elk in relatively high-density settings". This is the case for the Jackson elk herd as well as other feedground situations.

In addition, the Bison and Elk Management Plan (2007) strategy is to reduce reliance on supplemental feeding. It is noted that reduction in elk population size and improvements to available natural standing forage "have been unsuccessful in reducing elk density on the refuge winter range."

Elk that migrate over long distances may have an advantage by spending more time over a large area, thus lower density. Intermixing on feedgrounds may negate this effect. [FGs bad under any scenario] Short distance migrants may have higher body condition, thus and their higher recruitment might mitigate impacts on populations growth, but negative factors would then include more vehicle collisions, more co-mingling with livestock, more property damage and decreased hunting opportunity.

"Given that the CWD effects in the model were based on Rocky Mountain National Park in a lower density elk population, it would seem advisable to reduce the areas of higher concentration on the refuge before CWD reaches endemic levels, which may prove to have a much larger impact than that estimated here on crowded herds typical of feed ground populations. Lower population densities may also have the added benefit of increasing recruitment rates (Proffitt et al. 2014), which are relatively low in this population, and allow the population to both handle a higher prevalence of CWD before λ is reduced below 1 and allow for a greater proportion of elk to be sustainably harvested on an annual basis."

Wilkinson, T. 2019. Wildlife Diseases: A Global Expert Takes Stock of Greater Yellowstone. Mountain Journal May 20, 2019.

Princeton scientist, Andy P. Dobson, studies the ecology of infectious diseases and the conservation of endangered and threatened species. His work has spanned the world and he compares the Greater Yellowstone Ecosystem to the Serengeti in Africa where most of the original fauna of the last 1,000 years is still intact. He worked with Yellowstone scientists on the issue of brucellosis and bison.

Of interest is his observation that pathogens and parasites play in natural ecosystems, suggesting that as much as 90% of biodiversity is parasitic on the 10 percent we study. Predators and herbivores carry pathogens that drain their nutritional resources and "occasionally gain an advantage that leads to epidemic outbreaks". He expresses a need for a better understanding of how natural communities operate and how populations are regulated that includes an understanding of the role played by parasites and pathogens. "Many ecological and wildlife management debates are acrimonious because people forget to consider the role of disease."

Dobson notes that brucellosis is "largely a consequence of feeding elk in winter in Wyoming when it might be better to let their populations settle to lower levels with healthier populations." "CWD presents an expanding and increasingly worrying threat to elk, mule deer and cattle. It's a consequence of loss of coyotes, wolves and other predators from the West over the last fifty years combined with efforts to ranch stock on really poor soils where they are so nutritionally deprived that they gnaw on old carcasses and become infected with prions from animals that have died from CWD." "if you have wolves, and coyotes they kill and consume these weakened animals and effectively remove CWD from the ecosystem."

"Wolves and coyotes are our strongest defense against CWD, particularly wolves – they are pursuit predators who always focus on the weakest animals in a group of potential prey. As CWD manifests itself by reducing locomotory ability, wolves will key in on this and selectively remove those individuals from the population. These animals are then not available to infect uninfected individuals in the herd – so there's a bonus knock-on effect of selective predation."

When asked about predators spreading the disease thru their own urine and feces, Dobson

notes, " Canids are not susceptible to prions, many millions of years of evolution as scavengers have insured this. During the BSE [Mad Cow Disease] crisis in the UK, it was estimated that a large number of domestic dogs in the UK was exposed to the prions. Not a single dog was ever recorded as infected. So wolves and canids do not transmit the prions/CWD in their feces and urine. It is nonsense to suggest so. Carnivores are also much more territorial in the West and only dispersing individuals range over areas comparable to those of elk, mule deer and pronghorn."

When asked about feeding of thousands of elk on feedgrounds in Wyoming, Dobson's opinion is that: "...it's really dumb. It's much better to let natural regulation reduce elk populations down to levels naturally supported by the landscape. Aggregating elk on feedgrounds at the time of peak Brucella transmission and with CWD looming is arguably the stupidest form of animal management I can imagine."

Thuermer, A. M. 2021. Feds to Reconsider Two Elk Feedgrounds Following CWD Discoveries. Wyofile November 18, 2021.

Angus Thuermer reporting in Wyofile describes the project background. Wyoming Game and Fish Department operates 22 elk feedgrounds that support 14,000 to 20,000 of the 112,000 elk in Wyoming. In addition, the National Elk Refuge supports the 11,000 elk in the Jackson Elk Herd which is managed by the US Fish and Wildlife Service. Fourteen of the feedgrounds are on federal property. Since 2020, CWD has been found in two feedground-supported elk herds. These herds include about 13,000 elk.

His report also provides an interview with the Forest Service which claimed continuing to issue the special use permit for the Dell Creek FG "will not reasonably contribute additional positive or negative impacts (including the potential for disease transmission) to wildlife in the project area" and could lead to "significant adverse effects to elk and cattle, including elk deaths and disease transmission".

Allen, S. and Edwards, H. 2021. Elk Feedgrounds & Infectious Disease. Presentations to the Stakeholders November 9, 2021.

Concentrating animals can lead to rapid transmission of disease. They gave an example of bovine tuberculosis in white tailed deer in Michigan. Cattle were the original source but it spills back and forth between cattle and white tailed deer. It was eliminated in cattle herds in 1974 - 1975 and Michigan attained "accredited-free" status in 1979. But, in 1994 - 1995 a second white tailed deer was found infected and more cases were found. This led to an eradication program, but in 1997, tuberculosis began appearing in cattle again, leading to loss of accreditation. Deer carrying capacities were at or beyond carrying capacity with high densities maintained through feeding. Problems were occurring in areas with (1) high cattle/deer populations, (2) artificial feeding, and/or (3) continuous interactions between cattle and deer. Can't eliminate tuberculosis in cattle without eliminating it in deer.

The Michigan eradication program included a ban on feeding deer, increased harvest quotas, eliminate contact between cattle and deer, continue monitoring for trends, educate stakeholders on managing deer to eradicate TB.

Brucellosis and Its Management on Elk Feedgrounds

Summary of CWD and Elk Feedgrounds:

- Impossible to eradicate once established & always fatal
- No treatments & no vaccines at this time
- Likely to decrease populations over the long-term
- Zoonotic disease?
- Elk feedgrounds become “hot spot” of CWD transmission from prion contamination
- Transmission to deer, elk, and moose
- Prion source likely to sustain elevated prevalence

Summary of Brucellosis & Elk Feedgrounds

- Difficult to eradicate once established in a reservoir population
- Rarely fatal, but causes elk to abort
- No vaccines for elk available
- Currently, with feeding, no impact to elk populations over the long-term
- Within Designated Surveillance Area, economic/trade challenges for cattle producers
- Zoonotic disease
- Elk feedgrounds concentrate elk, which results in more transmission and sustained infected population

Brucellosis is zoonotic, causing abortion in cattle and infects a range of wild and domestic animals. Vaccination can prevent in cattle, but not in elk. Not found in meat and killed by cooking, so low risk to humans from hunting. Bacteria become active in third trimester with fetus and fluids infected. Risk present after Feb 1. Brucellosis decreases livestock production, transmissible to other animals, must quarantine or destroy, increased testing and vet expenses.

Except for the GYA, the US is free of cattle brucellosis. In the Designated Surveillance Area, within the GYA, about 2.6 cattle or domestic bison herds exposed each year. Transmission from elk. High risk herds have movement restrictions, increased testing, vaccination, quarantine. Overall, the state maintains a Brucellosis Free status.

In elk and bison, the abortion rate is 61% and 82%, respectively. In elk leads to a 24% reduction in reproduction. Elk on FGs have a seroprevalence of 25 - 30%, while in bison it is 65%. The map on slide 14 shows the distribution of brucellosis in Wyoming coinciding with the FGs. The WGFD management approach for FGs includes:

- Surveillance
- Elk/Cattle Separation
- Habitat Enhancement
- Feedground Management
- Vaccination
- Adaptive Management

In non-FG elk includes monitoring outside FGs focused on hunter killed cow elk with blood collection kits. The entire state is covered every 4 - 5 years. Seroprevalence in the area of the FGs has risen from 3% in the 1995 - 2000 period to 14.4% in the 2016 - 2020 time period. Monitoring in FGs covers 3 - 5 FGs each year to look at seroprevalence over time.

Test and Slaughter worked at Muddy Creek to reduce seroprevalence from 37 - 5% over 5 years, but when the slaughtering ended, the rate increased from 6 - 56% over the next 10 years. Dell creek has a high seroprevalence that has cycled over time with low of 8% in 2004 to a high of 88% in 2019. (Chart)

Methods to separate cattle and elk include winter feeding, elk hazing and stack yard fencing. A map of wildfires and treatments in the FG area reveals a significant number of both covering a large area. (could use files). On FGs, carcass removal and feeding on clean snow are used. Used vaccination from 1985 - 2015 on about 2,500 calves each year.

Adaptive management based on March to May as peak transmission period. The longer the feeding season, the more disease. Using low density feedlines led to a 75% reduction in elk-fetus contacts. Collar data mapped in the presentation shows elk pretty much covering the east and west slopes around the basin. The map on p31 is illustrative of the transmission and high-risk transmission periods.

Chronic Wasting Disease

Long incubation period (18 - 48 months) with no signs during the incubation period. During the last 4 - 8 weeks of the disease signs appear as weight loss, drooling, droopy ears, change in behavior, hair, and coat changes. Prions can be shed in feces, urine, and saliva for months to years during incubation. Transmission increases with density. Mechanisms include ingestion of contaminated feed and soil, mineral licks and contaminated surfaces, carcasses. Prions persist in the environment over the long term (16+ yrs scrapie). CWD is equally distributed in bull and cow elk, and in mule and white tailed deer it is more common in bucks.

Slide 10 shows the CWD prevalence in WY mule deer herd units with prevalence increasing and population decreasing. CWD positive female survival is 37% while negative females it was 79%. Mountain lions and CWD are leading causes of mortality. The FG area is shown lacking infection.

Mountain lions selectively prey on CWD infected animals and modeling suggests wolf predation may decrease CWD prevalence.

Slides show pattern of increase of CWD across Wyoming with deer having the highest prevalence. Southeastern elk herd trends graphed showing increases over 20 years. In surrounding states CWD ranges from 6.5 - 28% in elk.

If feeding stopped, CWD will be low initially and increase slowly or stabilize. Mortality rates with supplemental feeding could be high and irreversible with environmental contamination and transmission. Stopping supplemental feeding over several years would lead to a decline in population. "Disease experts fear CWD will significantly decrease elk populations. Feedgrounds will become year round "hotspots" of transmission to all cervids; greatly expanding the distribution and prevalence of CWD across the landscape." (slide 26).

Modeling of CWD in FGs indicates that prevalence will increase rapidly on FGs with highest elk density, elk populations will decrease as prevalence increases, decrease in hunting opportunity as populations decline. They recommend limiting supplemental feeding once CWD detected.

"Most experts think there is a good chance that wolves will be able to select for, and remove CWD positive animals from the population. Wolves are rarely found on feedgrounds, but may be found in areas surrounding the feedground. WGFD does not kill predators on feedgrounds, but WGFC-Chap 21 allows wolf removals in set circumstances." (slide 35).

Prions are detected in coyote feces for up to 3 days from being fed CWD infected elk brain, but infectivity decreased through the digestive tract. Crows fed scrapie mouse brain with infectious prions detected four hours post infection. Conclude prions remain infectious after passage thru digestive system of coyotes and crows.

WGFD. 2020. Wyoming Chronic Wasting Disease Management Plan. Wyoming Game and Fish Department, Cheyenne, Wyoming, USA.

The Plan is not a statewide or regional approach. Instead, strategies will be "tailored to local herd and disease dynamics, and broad and diverse public support must be garnered before being implemented."

As of February 2020, CWD had been identified in 31/37, or 84% of Wyoming mule deer herds, 9/36, or 25% of elk herds, and wherever white-tailed deer occur. The long-term objective is to reduce or limit prevalence and spread where possible. Eradication is not feasible at this time. Strategies include reducing artificial cervid concentration and hunter harvest management.

High concentrations of cervids are commonly observed on traditional deer and elk winter ranges, or artificial sources consisting of modified habitat in urban and rural communities where citizens feed wildlife, or green space such as golf courses. Agricultural operations such

as mineral licks, water developments, haystacks, irrigated hayfields. And, FGs.

WGFD will develop recommendations to the Wyoming State Legislature to provide authority to regulate feeding of wild cervids, but Ag practices will not be included. Work with local governments to develop and implement ordinances on feeding. WGFD will identify areas with unnaturally high concentrations and work with landowners to decrease concentrations through hunting seasons or culling; eliminate the source such as fencing stackyards, salt/mineral feeders that exclude wildlife; engage Ag community to develop management practices.

Management strategies include:

- Use hunter harvest to maximize removal of positive animals
- Use regulations
- Pursue statewide or local feeding bans where possible
- Identify points or sources of concentration
- Develop strategies to decrease cervid concentrations to minimize transmission
- Experimental hunter harvest strategies in some areas to increase harvest of mature male mule deer and/or reduce cervid densities
- These strategies will not be proposed on a large scale in the absence of peer-reviewed research indicating they are a viable means to reduce CWD over the long term.
- In the event such harvest strategies are proven to effectively reduce CWD prevalence, additional public outreach and strategies may be proposed pending public support.

"Since the initial discovery of CWD in 1985 in a free-ranging mule deer in Wyoming, the Department has not implemented any formal strategies to combat the spread or prevalence of this disease. Unfortunately, CWD has since been documented throughout most of the state, with many mule deer and white-tailed deer herds now exhibiting CWD prevalence levels high enough to potentially impact population performance. The need to develop proven methods to manage CWD is now readily apparent and doing nothing to combat this disease is no longer acceptable, a sentiment strongly echoed within hunter survey data."

Modeling efforts suggest CWD may have significant population level effects in Rocky Mtn National Park elk, Wyoming white tailed deer and Wyoming mule deer.

Surveillance for CWD has been conducted since 1997 using hunter-harvested cervids, targeted cervids (symptoms), and road killed cervids. This is a rotating multi-year program to measure prevalence every five years.

WGFD will engage in a localized collaborative process in Teton, Sublette, and Lincoln counties. The collaborative group is to "serve in an advisory capacity to the Department on how to best manage CWD in relation to Department-operated elk feedgrounds." The collaborative process will likely, " 1) review management plans, policies, and literature related to CWD and

feedgrounds; 2) develop feedground-specific disease management plans that encompass not only CWD, but brucellosis, necrotic stomatitis, and other diseases; 3) conduct site-specific feedground evaluations; 4) address proper carcass disposal for suspected CWD-positive elk that die on or near feedgrounds; and 5) evaluate research and monitoring opportunities and needs."

Feeding management strategies will continue to include:

- Low density feeding to reduce intraspecific brucellosis transmission
- Reduction of the feeding season
- Expand feeding areas onto clean snow or new areas to reduce environmental contamination effects

Other Feedground Plan Requirements

- WGFD will identify, remove, and test all cervids with CWD symptoms on and around feedgrounds
- Coordinate with state and federal agencies on CWD
- Coordinate CWD surveillance in NW Wyoming, and coordinate with GTNP and NER on their CWD management plans for elk and bison to manage wintering populations and reduce reliance on supplemental feed.
- Collaborate with stakeholders to acquire critical winter range habitat and migration corridors where possible
- Work with partners to implement habitat improvement projects
- Consider source of hay in relation to known CWD endemic areas
- Determine if closures of specific FGs can occur where dispersal of elk will not cause damage, conflict, or co-mingling issues with private property or create a need to drastically reduce elk numbers.
- Consider CWD dynamics in developing herd unit population objectives, hunting seasons, feedground quotas, and other.
- Continue intensive CWD surveillance in Jackson and Pinedale regions
- If CWD detected in FG, monitor FG and surroundings intensively, remove the animal and properly dispose of it.
- Maximize feeding area to decrease animal to animal contact, feed on clean snow, decrease days of feeding to disperse elk, take additional actions to decrease elk concentrations consistent with other wildlife and FG practices
- Expand research into migration in Jackson and Pinedale Regions to understand mechanisms behind spread of CWD.
- Monitor predatory animal presence and their impacts on FG elk, including implementation of proper management actions for gray wolves causing unacceptable impacts at state operated feedgrounds
- WGFD will continue to consider the potential role of predators and scavengers to remove CWD infected animals and carcasses to reduce CWD transmission

The recent collaborative process used to develop this plan began in 2018 and involved public meetings, CWD working group meetings, reporting to the public and final input and review of the CWD working group. A hunter perspective survey was conducted in 2019 regarding CWD in deer in Wyoming. Taking no action and letting CWD take its natural course was the least acceptable action. Most acceptable was use of special management hunts to remove deer in localized areas of high prevalence.

DOI. 2007. Record of Decision Final Bison and Elk Management Plan and Environmental Impact Statement National Elk Refuge and Grand Teton National Park. U.S. Department of Interior and U.S. Fish and Wildlife Service National Elk Refuge. Jackson, Wyoming.

The ROD claims there have been many benefits associated with wintering bison and elk on the refuge, high animal concentrations have created an unnatural situation that has contributed to increased risk for disease, damage to and loss of habitat due to browsing of willow, cottonwood and aspen stands, low winter mortality which affects predators and other species and requires intensive hunting programs, and a high level of brucellosis in the elk and bison herds.

The ROD recognizes the effects of the herds on surrounding habitats and that the plan will contribute to the herd objectives set by WGFD and objectives established by the Forest Service related to elk, bison, and their habitat in the BTNF.

Goals of the plan are to:

- 1) provide "secure, sustainable ungulate grazing habitat that is characterized primarily by native composition and structure within and among plant communities and that also provides for the needs of other native species."
- 2) Sustainable populations that are at reduced risk of disease, perpetuate to the greatest extent possible, natural processes and the interactions of bison and elk with natural environmental fluctuations influenced by fire, vegetation succession, weather, predation, and competition. Support elk reductions in GTNP when needed to achieve objectives, support hunting in the Memorial Parkway
- 3) Contribute to herd objectives to the extent compatible with Goals 1 and 2
- 4) Work with Wyoming to reduce prevalence of brucellosis to protect the economic interest and viability of the livestock industry and reduce the risk of adverse effects from diseases not currently found in the Jackson populations

The Decision Alternative 4 to adaptively manage habitat and populations to achieve desired conditions over 15 years. Mostly vague generalities, improve summer and winter habitat, ensure biotic integrity is sustained, work with WGFD to implement a dynamic framework for decreasing the need for supplemental feeding.

- Habitat restoration projects
- Work with partners to minimize bison and elk conflicts, financial resources
- Public education

- Identify criteria for beginning and ending feeding each year
- Develop adaptive management actions with triggers to transition from feeding to greater reliance on native forage based on
 - Level of forage production and availability
 - Desired herd sizes and ratios
 - Mitigation of co-mingling
 - Winter distribution of bison and elk
 - Prevalence of brucellosis, CWD other diseases
 - Public support
- Maintain Jackson elk herd objective of 11,000 with 5,000 wintering on the Refuge. Further reductions based on triggers and changing social, political, or biological conditions. Hunting will be used to assist the state in managing herds.
- Maintain 500 bison (current 1,100)
- Permit ceremonial taking by tribes
- Permit WGFD to vaccinate elk

Other alternatives:

- Alt 2 Minimal Management of Habitat and Populations
 - Herds would fluctuate with reduced numbers, establish migration out of Jackson to other wintering areas, feeding phased out over 10 - 15 yrs, eliminating hunting on the refuge to increase use of transitional habitats and over time natural densities would reduce prevalence of brucellosis.
 - Not selected due to negative public reaction due to higher winter mortality, competition for forage with other ungulates, higher depredation to stored hay, landscaping, numbers of elk could fall below objectives, impacts to grizzly bears due to lower elk numbers and higher competition for forage in the Green River basin. Little public support.
- Alt 3 Restore Habitat, Support Migrations and Phase Back Supplemental Feeding
 - Restore habitat by reducing elk numbers, reduce supplemental feeding over 10 years, with feed provided only in most severe winters 2 out of 10. Hunting would continue, brucellosis decrease over time as a result of fewer concentrated animals, vaccines with higher efficacy used when developed.
 - Not selected due to negative public reaction due to decrease in elk numbers in the refuge, decrease elk hunting opportunities, increase winter mortality, similar depredation effects and effects to grizzlies. No public support.
- Alt 5 Restore Habitat, Improve Forage, and Continue Supplemental Feeding
 - Supplemental feeding in 9 of 10 yrs, about 5,000 - 7,000 elk winter on the refuge, elk hunting continue, disease reduction through spreading out feed and moving feeding locations, vaccination continued, woody vegetation restored for other species.
 - Not selected as it remains similar to current management which would continue high disease levels, impacts from non-endemic disease and woody vegetation

destruction, habitat damage would negatively impact other wildlife species from migrant birds to bighorn sheep, potential for transmission to infect mule deer and moose with non-endemic diseases. Stakeholder groups, general public and other agencies opposed this alternative with some support among stakeholders and general public.

- Alt 6 Restore Habitat, Adaptively Manage Populations, and Phase Out Supplemental Feeding.
 - Phase out feeding over 5 years, continue hunting and herd reduction program. 2,400 - 2,700 elk would winter on the refuge and could increase to 3,200 with 1,200 - 1,600 summering in the park, habitat would be managed to improve available winter grazing, woody vegetation initially restored.
 - Not selected as eliminating supplemental feeding and reducing numbers in 5 years could be difficult to achieve and not acceptable to some stakeholder groups, local residents, and the State of Wyoming.
 - Alternative 6 could decrease elk hunting and viewing opportunities, slightly increase elk and bison annual winter mortality, and would likely lower Jackson elk herd numbers below the WGFD's objective in some years. In the short term, competition for forage with other ungulates in some areas and the likelihood of higher depredation on stored hay and damage to crops and landscaping (similar to Alternative 2 effects) would increase.
 - Alternative 6 would result in the greatest overall benefit to the biological and physical environments. Alt 4 was not the preferred alternative but " it will contribute to significant environmental benefits in a manner that is consistent with regional herd management objectives; it better balances the divergent views and interests and perspectives of other agencies, stakeholder groups and the public; it builds upon success implemented on the ground; and it enables managers to adapt to new information and changing conditions."
- Section 7 Consultation
 - "This consultation concluded that the preferred alternative may adversely affect grizzly bear in Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway due to potential hunter conflicts, and that it may affect but is not likely to adversely affect bald eagles and wolves on either Grand Teton National Park/ John D. Rockefeller, Jr., Memorial Parkway or the National Elk Refuge due to increased availability of elk carcasses. (Alternative 4 will have no effect on Canada lynx and yellow-billed cuckoo)."

WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

Review of the history and rationale for feedgrounds. They were established to: (1) change elk distribution and prevent crop or private property damage; (2) reduce winter mortality of elk so herds like those in the Jackson area would not have to be reduced; (3) reduce elk and cattle

interaction during periods of high risk for brucellosis transmission (Feb 15 - June 15).

Feedgrounds were "the least painful remedy for producing immediate results to appease differing groups: agricultural interests that desire rapid resolution to crop damage; and pro-wildlife constituencies that oppose reductions in elk populations despite wildlife-human conflicts and dwindling habitat." A perceived benefit is maintaining a larger number of elk than native winter ranges could support, which is a high priority for sportsmen groups. The major problems with FGs include:

1. High cost
2. Habitat degradation due to high concentrations of elk that damage surrounding vegetation, such as aspen, serviceberry, willow, and other deciduous woody vegetation
3. Public perception - FGs have resulted in less concern for conservation of native range because people feel native range is unnecessary to support elk
4. Disease transmission - the role of FGs in spreading disease, e.g. significant levels of brucellosis in wild elk occur only in the GYE where many elk rely on FGs. "Of the estimated 1 million elk in North America, significant levels of brucellosis in wild elk occur only in areas associated with feedgrounds." Other diseases are of concern, including pasteurellosis, bovine viral diarrhea, scabies, and CWD.
5. Wildlife migration and connectivity - FGs have interrupted elk migration from summer to winter ranges which has fragmented their habitat. This situation could become permanent because of reduced concern for native winter ranges.

The report ranked the FGs in terms of their potential for distributing elk off FGs and into native ranges (without reducing numbers, increasing damage to private property, or increasing risk of brucellosis transmission to livestock). Factors considered included (1) the average number of elk at each FG, (2) duration of feeding, (3) amount of potential native range on public lands within 5 miles, (4) potential damage to private property without the FG, and (5) potential for brucellosis transmission.

The report noted that elk populations were above objective across the herd units. Dell Creek fed an average of 252 elk over the long term with a quota of 400. Forest Park fed an average of 699 with a quota of 750. The average annual cost for feeding at Dell Creek was \$82/elk and at Forest Park it was \$58/elk. Dell Creek is in the Hoback Herd Unit and is intended to stop elk migration short of lower elevation private property. This is a high snowfall area with low winter temperatures which limits opportunity for elk to forage on native winter range. The Forest Park FG is in an area where private property damage and agricultural conflicts don't exist. Subdivision development in and around Alpine creates potential barriers.

The long-term average number of feed days at Dell Creek was 148 and Forest Park, 135 days gave them a poor ranking because FGs with shorter durations were more likely to have successful transitions to native range. The fewer the number fed, it was assumed the greater likelihood of successful transition. Dell Creek at 400 quota was given a high rating of 1 out of 4,

while Forest Park at 750 was ranked 2 out of 4.

The potential native range within 5 miles of the FGs was 22,612 acres, or 45% at Dell Creek, resulting in a high ranking which was then assigned a low score due to high snowpack in the Hoback Basin. Forest Park had 2,728 acres and only 5% which resulted in a poor likelihood of supporting elk on native range. WGFD rankings showed Dell Creek closure would result in the worst ranking for private property damage, with Forest Park least. Dell Creek ranked high in brucellosis transmission risk, while Forest Park ranked low.

In a final summation, the report considered Dell Creek to have the low potential for distributing elk onto native range with Forest Park having moderate potential.

Maloney, M., J. A. Merkle, D. Aadland, D. Peck, R. D. Horan, K. L. Monteith, T. Winslow, J. Logan, D. Finnoff, C. Sims, and B. Schumaker. 2020. Chronic wasting disease undermines efforts to control the spread of brucellosis in the Greater Yellowstone Ecosystem. *Ecological Applications* 30(6): e02129. 10.1002/eap.2129

This paper modeled management strategies using spatial and economic factors. Elk migratory behavior and population densities were modeled with and without feeding. Their model indicates that continuing to feed elk in the region around Pinedale "could result in substantial welfare losses" and to maximize the present value of economic benefits based on the arrival of CWD, "wildlife managers may wish to consider discontinuing elk feedgrounds while simultaneously developing new methods to mitigate the financial impact to ranchers of possible brucellosis transmission to livestock."

The paper also verified the rationale of feeding to reduce winter mortality and support larger elk herds than could be sustained on native range. Also that FGs truncate natural migratory routes thus limiting the time spent on private, low-elevation ranchlands during winter and reducing brucellosis transmission to cattle. But FGS increase the prevalence of brucellosis in elk. A CWD outbreak would negatively affect tourism and hunting. Citing Scurlock and Edwards, they note there is a brucellosis prevalence of 21.9% in FG elk and 3.7% in unfed populations.

The Pinedale region contributes a small part of regional elk harvest. The model suggests a social welfare loss of \$19 million if feeding continues and CWD is introduced into the study area. With CWD, elk management results in lower elk populations to reduce density effects and environmental transmission. Economically it is better to eliminate feeding and increase population targets relative to targets with FGs.

"The benefits and costs of elk management in response to CWD risks accrue differently to hunters and ranchers. Discontinuing feeding will, especially in the first year, increase brucellosis and depredation costs for ranchers associated with elk using private lands. However, our model predicts that these costs are outweighed by the economic benefits to hunters, guides, outfitters, and other regional businesses that provide goods and services to hunters. These benefits accrue to a relatively large and diffuse number of people, whereas the

increased brucellosis-related costs fall on a relatively small number of local ranchers."

The gains for hunters could be used to offset losses to ranchers, while discontinuing feeding is economically optimal. As a "result, the costs of continuing to feed elk after the introduction of CWD outweigh the benefits".

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

FSM 2610.2 - Objectives

1. To develop and maintain partnerships with the appropriate State agencies to jointly establish and meet wildlife, fish, and threatened, endangered, and sensitive species habitat goals, objectives, and standards.
2. To cooperate with other agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive species habitat management.

FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

1. Use management indicators to address issues, concerns and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability for management indicators.
4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including

endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

Jones, J. D., Kauffman, M. J., Monteith, K. L., Scurlock, B. M., Albeke, S. E., and Cross, P. C. (2014). Supplemental feeding alters migration of a temperate ungulate. *Ecol. Appl.* 24, 1769–1779. doi: 10.1890/13-2092.1

A study of supplemental feeding on migration habits of elk was conducted in 18 of the 22 State of Wyoming managed feeding operations in 2009 to 2011. The study tracked behavior of collared elk that were fed and those that were not. Migration is an important evolutionary adaptation that allows animals to access nutritious forage and thereby "enhancing demography and population growth". Factors that disrupt the natural migration patterns include roads, habitat loss, agriculture, supplemental feeding, and climate change. Ranching, hunting and FG establishment have altered historical patterns of migration.

FGs were established in Wyoming beginning in 1912 to intercept elk migrating from higher elevations on public lands to prevent them entering private lands in the valleys. This was to limit damage to stored crops and avoid transmission of diseases to livestock. The study identified winter ranges of fed and unfed elk. Fed elk winter range included herbaceous species, shrubs, conifer, and agricultural lands, while unfed elk relied upon riparian areas with willow, sage-steppe, aspen and conifer.

Study results showed that fed elk migrated shorter distances (35.4 km) than unfed elk (54.6 km). Fed elk spent less time on summer range by arriving later and departing earlier and arrived back on winter range earlier than unfed elk. Fed elk resided on summer range 26 days less and departed 10 days earlier than unfed elk. Fed elk relied on stopovers for 11 more days in spring and 13 more days in autumn.

Shortening the number of days for the feeding operation from 134 to 74 days lead to fed elk following a migration pattern and occupancy of summer range similar to unfed elk by responding to plant greenup in a similar way. Feeding for the longer period delayed migration to summer range until plant greenup reached an NDVI threshold value of 0.17 at which point, fed elk began to arrive on summer range. During years when plant greenup was delayed this delay effect due to feeding was more pronounced. Fed elk responded to elevation, decreasing temperatures, and increasing precipitation by leaving summer range earlier than unfed elk.

An important outcome is that while feeding has changed patterns of migration, it has not altered the propensity to migrate. When leaving winter range, both fed and unfed elk left at

about the same time, but fed elk tended to remain near the FGs. Feeding appears to condition the elk to leave summer range earlier which limits use of forage during the growing season.

Since elk feeding is within the brucellosis endemic area in Wyoming, prolonged time on winter or nearby transitional ranges may lead to delaying cattle turn-out dates to reduce transmission between cattle and elk. Ending feeding earlier would "encourage fed elk to migrate and spend more time on summer range, thereby increasing access to high-quality forage and maximizing their distance from cattle. Shortening the feeding season also would reduce intraspecific disease transmission, because FGs crowd elk and expose them to higher disease risk."

Schumaker, Brant A.; Peck, Dannelle E.; and Kauffman, Mandy E. (2012) "Brucellosis in the Greater Yellowstone Area: Disease Management at the Wildlife–Livestock Interface," Human–Wildlife Interactions: Vol. 6 : Iss. 1 , Article 7. DOI: <https://doi.org/10.26077/95s0-ah13>

A study of brucellosis in the Greater Yellowstone area (GYA) by University of Wyoming researchers provides insight useful to management relative to elk FGs. Brucellosis is found mostly in the "wildlife-livestock interface" in the GYA and is thought to have "originated from cattle kept within the boundaries of Yellowstone National Park (YNP) for park employees." It was thought that brucellosis was observed in bison in YNP and subsequently transmitted to elk.

The goal of elk feeding was to deter elk from moving onto private lands where they eat hay and mingle with cattle. Because elk infected with brucellosis tend to abort fetuses while they are on FGs, this increases exposure and maintains high levels of the disease among the fed elk.

"Exposure to brucellosis and subsequent infection are, therefore, maintained at relatively high levels among elk that overwinter in Wyoming FGs."

Contamination of parturition sites with brucellosis from infected elk that give birth in mid-May to mid-July can remain present into August, depending on weather. Elk clean up some of the tissues and fluids from birth, which reduces risk of exposure. Brucellosis contamination in soil, vegetation and tissue at birth or abortion sites remained viable for 43 days in April and 26 days in May. The proportion of FG elk testing positive for brucellosis antibodies was 22% compared to 3.7% in free-ranging elk in tests conducted in 2008 and 2009. There appeared to be an increasing incidence of positive tests in non-FG elk. It was suspected that increasing herd sizes and hunting pressure was concentrating elk on private lands not accessible to hunting and these increasing congregations have become a likely source of transmission.

Recommendations for cattle risk management included fencing haystacks, modifying winter feeding practices, hazing elk off private property, vaccinations, spaying heifers, and changing livestock type. Vaccinating elk at FGs, shortening feeding periods, and spreading hay over a larger area have been used to reduce risk. Some producers were delaying grazing on high-risk grazing allotments that overlap with FGs. Converting to steers and spayed heifers was another change some producers were employing. Isolation of elk from cattle by delaying cattle grazing in spring where elk overwinter or excluding elk from areas grazed by cattle in spring and early

summer. Predator-prey relationships, hunter access and land use in disease dynamics are also mentioned.

USDA Forest Service. 2006. Science Update: Elk, Deer and Cattle: The Starkey Project. Pacific Northwest Research Station. Issue 13.

The Starkey Project compared interactions and habitat use between mule deer, elk, and cattle. Elk tended to avoid cattle and will use lower elevations if no cattle are present. But move to higher elevations when cattle move onto lower elevation areas.

Coe, Priscilla K.; Johnson, Bruce K.; Stewart, Kelley M.; Kie, John G. 2004. Spatial and temporal interactions of elk, mule deer, and cattle. In: Transactions of the 69th North American Wildlife and Natural Resources Conference: 656-669

Elk avoid roads and avoidance increases as the rate of traffic increases. In summer, elk avoided cattle while in late summer cattle, elk and deer overlapped likely due to depletion of forage.

Kie, J., Evans, C., Loft, E., and Menke, J. 2007. Foraging behavior by mule deer: The influence of cattle grazing. Journal of Wildlife Management 55(4):665 - 674.

Where cattle were grazed, deer home ranges were larger and hiding cover for fawns reduced.

Julander, O. (1962). Range management in relation to mule deer habitat and herd productivity in Utah. Journal of Range Management, 15(5), 278-281.

An early study from Utah looked at range condition and mule deer productivity. Summer range condition was compared to fetal production per doe with good condition range providing higher ovulation rates and productivity than poor condition range. This is important in looking at how forage depletion by livestock may reduce production of deer or elk.

Szcodronski, K. E., and P. C. Cross. 2021. Scavengers reduce potential brucellosis transmission risk in the Greater Yellowstone Ecosystem. Ecosphere 12(10):e03783. 10.1002/ecs2.3783

A current study from the Greater Yellowstone Ecosystem determined that scavengers reduce potential brucellosis transmission risk. Using remote cameras at 264 sites with simulated abortion materials, they determined that time to removal was slower at sites where mammalian scavengers were reduced (6.5 days) to those with no scavenger reduction (4.1 days). Coyotes, red foxes, golden and bald eagles, and turkey vultures were the dominant scavengers. In areas where cattle and elk congregate there was a 90% probability that abortion materials would be removed by scavengers within 16 days.

WGFD. 2021. Hunting in Wyoming - 2020 Annual Reports of Big and Trophy Game Harvest. <https://wgfd.wyo.gov/Hunting/Harvest-Reports/2020-Harvest-Report>

The Wyoming statewide elk harvest success rate in 2020 was 46%.

Backcountry Chronicles. 2020. Newest Elk Harvest Data - Comparison of Western States for 2019 Elk Hunt. <https://www.backcountrychronicles.com/elk-harvest-comparison-western-states/#:~:text=Wyoming%20claims%20an%20amazing%20overall,waiting%20on%202017%20harvest%20data>).

This article summarized state reports of elk hunting statistics. Some interesting points are that the average number of elk hunters for the states ranged from 57,834 in Wyoming to 220, 092 in Colorado. Hunter success ranged from a high of 44.2% in Wyoming to 11% in Washington, yet even at Washington's lower success rate, it still had more hunters than Wyoming.

36 CFR § 241.2 - Cooperation in wildlife management. The Chief of the Forest Service, through the Regional Foresters and Forest Supervisors, shall determine the extent to which national forests or portions thereof may be devoted to wildlife protection in combination with other uses and services of the national forests, and, in cooperation with the Fish and Game Department or other constituted authority of the State concerned, he will formulate plans for securing and maintaining desirable populations of wildlife species, and he may enter into such general or specific cooperative agreements with appropriate State officials as are necessary and desirable for such purposes. Officials of the Forest Service will cooperate with State game officials in the planned and orderly removal in accordance with the requirements of State laws of the crop of game, fish, fur-bearers, and other wildlife on national forest lands.

FSM 2610.2 - Objectives

1. To develop and maintain partnerships with the appropriate State agencies to jointly establish and meet wildlife, fish, and threatened, endangered, and sensitive species habitat goals, objectives, and standards.
2. To cooperate with other agencies, conservation organizations, concerned landowners, and individuals in all appropriate aspects of wildlife, fish, and threatened, endangered, and sensitive species habitat management.

FSM 2620 Habitat Planning and Evaluation

2620.3 - Policy.

1. Use management indicators to address issues, concerns and opportunities for plants, wildlife, fish, and sensitive species habitats through all planning levels.
2. Provide habitat management direction to support recovery of Federally-listed species. Provide habitat management direction to ensure maintenance of viable populations generally well-distributed throughout their current range.
3. Evaluate the cumulative effects of proposed management activities on habitat capability

for management indicators.

4. Specify in forest plans and project plans the standards, guidelines, and prescriptions needed to meet identified habitat goals and objectives for wildlife and fish, including endangered, threatened, and sensitive animal and plant species.

5. Monitor management indicators to evaluate compliance of management activities with plan direction, effectiveness of prescribed management, and validity of information used in habitat evaluation and planning.

February 14, 2022

Patrica O'Connor
Forest Supervisor
Bridger-Teton National Forest
PO Box 1888
Jackson, WY 83001

RE: Big Piney Ranger District and Greys River Ranger District; Bridger-Teton National Forest; Wyoming, Dell Creek and Forest Park Elk Feedgrounds: Long-Term Special Use Permits

Dear Forest Supervisor O'Connor,

Thank you for the opportunity to provide scoping comments in response to the proposed environmental impact statement to analyze the effects of reauthorizing long-term use permits that will allow the Wyoming Game and Fish Commission (WGFC) and Department (WGFD) to operate and manage the Dell Creek and Forest Park winter elk feedgrounds in Sublette and Lincoln counties.

Our organizations have long-standing, grave, and ever-increasing concerns about permitting and operating any elk feedgrounds on the Bridger-Teton National Forest (BTNF), including the Forest Park and Dell Creek feedgrounds. We oppose the proposed action to continue feeding for at least 20 more years at the two specified feedgrounds. Our concerns with continued feeding remain as we have previously articulated in numerous communications to the U.S. Forest Service (USFS) and are well summarized in scoping comments we submitted in 2016 regarding feeding on Dell Creek and Forest Park feedgrounds. Unfortunately, with little progress toward ending the ecologically harmful practice of winter elk feeding, our 2016 comments remain just as relevant today as they were when written six years ago.

Therefore, we incorporate those 2016 comments in their entirety, including all supporting references, into this comment letter, and you will find them attached to this letter (**Attachment 1**).

As stated in the Federal Register notice, "the WGFC's proposal is to continue long-term use (20 years) of the Dell Creek feedground (35 acres), Forest Park feedground (100 acres), and existing facilities for their winter elk management program." There are three proposed alternatives.

Alternative 1: No Special Use Authorization Alternative: Use of National Forest System lands for WGFC's winter elk management activities would not be permitted at Dell Creek and Forest Park feedgrounds. WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Alternative 2: Phase-Out Alternative: Use of National Forest System lands for WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds for less than 20 years. The number of days elk would be fed would decrease over time. Upon expiration of the permit, use of National Forest System lands for WGFC's winter elk management activities would be terminated and WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Alternative 3: Emergency Feeding Only Alternative: Use of National Forest System lands for WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds for emergency use only. Upon expiration of the permit, use of National Forest System lands for WGFC's winter elk management activities would be terminated and WGFC would remove the existing facilities and rehabilitate impacts at both locations.

Support of Alternative 1 as proposed by the USFS for Forest Park

Because of the existing conditions at Forest Park such as disease transmission, noncompliance with the forest plan, and other factors, we support the No Special Use Authorization Alternative for this feedground. The immediate closure of existing facilities and rehabilitation of impacts would minimize the detrimental effects of the artificial feeding of wildlife in this specific area. Additionally, the BTNF objective to "provide suitable and adequate habitat to support game and fish populations established by the WGFD, as agreed to by the Forest Service" would be supported by rehabilitation of the 135 acres currently impacted by the feedground. Finally, since only one (Forest Park) out of the twenty-three feedgrounds managed by the WGFD would be affected by this action, the often expressed concern about mass elk starvation without feedgrounds would be extremely unlikely. The relatively small number of elk that are fed at Forest Park could easily disperse to natural winter range.

Support of Alternative 2 with modifications for Dell Creek

The Phase-Out Alternative described by the USFS has the potential to be a solid solution for managing disease transmission and increasing the health of wildlife, but the proposed time frame for phase out is far too long. We suggest that the USFS implements a phase out plan lasting no more than three years.

As proposed, Alternative 2 provides a path forward for phase out of feedgrounds but would also allow for feeding to continue for up to 20 years. As Bruce Smith wrote back in 2013, "I'm among those who argue that winter feeding serves neither the long-term health nor conservation of wildlife, and therefore is not in the public's best interests. As CWD has recently infected cervids within 50 miles of several elk feedgrounds, two fundamental questions arise: "What happens when CWD reaches those feedgrounds, and should something be done now to address this threat?" (Smith, 2013). Considering that Bruce Smith wrote this back in 2013 and chronic wasting disease (CWD) is now at the doorstep and very likely already present on feedgrounds,

we cannot afford to wait another twenty years to phase out feeding. If we want prevalence rates of CWD to remain low in populations of elk, we cannot continue to provide the living petri dish of perfect conditions to allow the disease to spread that currently exists on feedgrounds. A reasonable phase out alternative would be no more than three years, with the number of days of feeding to decrease each year with no possibility of additional permit renewals.

The WGFD designated winter range totals 84,563 acres, last updated in 1987. This designation leaves out the Bacon Creek-Fish Creek area where elk typically winter and an area that will be included on the WGFD seasonal range overlay map in the next update. Including this area, there are an estimated 106,581 acres available for elk to winter on in the Gros Ventre drainage. Plentiful natural forage exists to accommodate elk that winter in the Gros Ventre. Elk that cannot find food in the Gros Ventre can travel further south along historic migration routes to areas with less snowpack and more snow-free slopes. Indeed, one of the stated goals of the Bridger-Teton National Forest Land and Resource Management Plan is to “[h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients” (Objective 1.1(g)). As has been demonstrated by other efforts to phase out feedgrounds in other states, this goal is realistic and achievable. One notable example is provided by the Deseret Land and Livestock Company in Rich County, UT in the early 2000s. A combination of positive and negative reinforcements were used successfully to modify elk behavior and achieve the goal of either not feeding elk at all on the ranch or only feeding in emergency situations (Magnus, 2011).

Positive reinforcements to encourage elk to return to natural winter range included:

1. Range Improvements
2. Strategic Livestock Grazing
3. Dispersed Supplemental Feed (aka Spot Feeding) - supplemental not replacement feed
4. Sanctuary or ‘Safe Zones’

Negative reinforcements to encourage elk to return to natural winter range were:

1. Hunting
2. Herding and Hazing

Positive reinforcements were better at changing elk behavior than negative reinforcements. In comparison to the Afton and Big Piney herds that were used as a control, no elk were fed in the 2005-2006 or 2006-2007 winters at Deseret Land and Livestock Company, while 73% and 76% of elk were fed in the Afton and Big Piney herds respectively during the same years. Perhaps the most prudent lesson learned from the Magnus (2011) study is, “When managers wish to reduce the occurrence of undesired behaviors and/or increase desired behaviors, the most effective method is to modify the consequences of those behaviors through management. Unfortunately, managers have not been trained to think in terms of behavior principles and their application in management. We simply assume animals behave by —instinct without appreciating the roles of learning in culture in everything they do. Critically, we must come to realize animals are not machines and genes are not destiny.” Using the lessons learned from

this study, it seems reasonable to assume that elk elsewhere can be retrained to move to different areas and avoid conflict with humans if we apply pressure and positive reinforcement effectively.

There is no reason that elk in Wyoming accustomed to feedgrounds cannot be retrained the way the Deseret Land and Livestock elk were. Knowing the harmful effects to elk, cost of feeding, and impacts to the land, Dell Creek feedground should be phased out as expeditiously as possible with full closure after a maximum of three years from starting phase out.

The Bigger Picture of Elk Management in the Western U.S

First, let's examine occupied elk habitat in the United States. Figure 1 shows current elk habitat in green. The blue polygons are public lands that generally could offer less fragmented habitat and far lower potential for conflicts, while private lands, shown in white, would have more fragmented habitat and more potential conflicts. The areas where elk are artificially fed are in red. As is immediately evident from this map, there is only one area in the United States where significant numbers of elk are artificially fed. The few feeding operations run by other states are so small as to be invisible at this scale. This information is from the WGFD's document titled Western State Management of Wintering Elk, dated December, 2021 (Attachment 2).

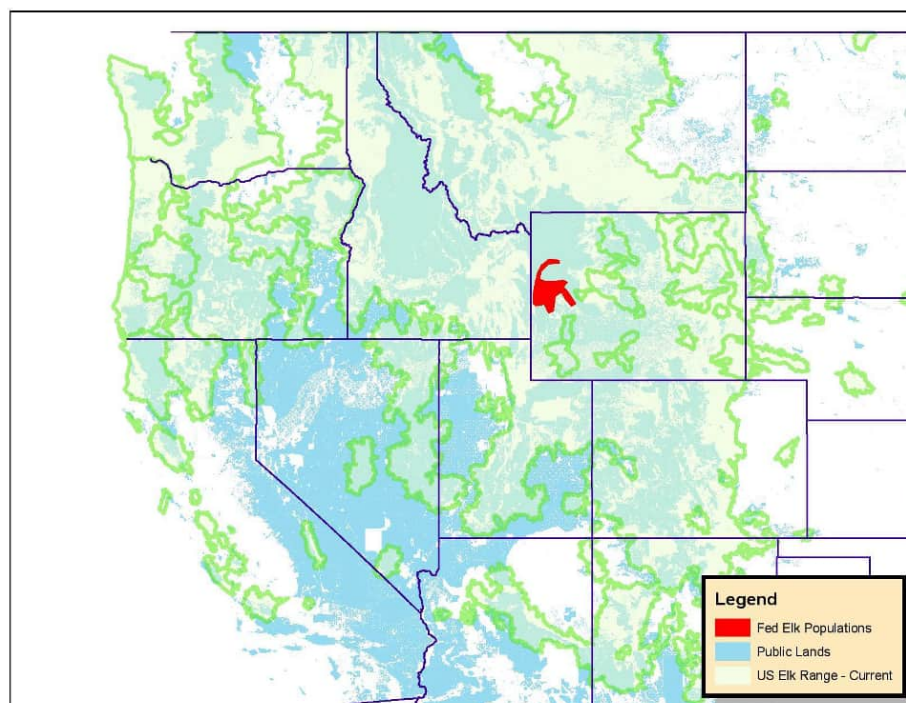


Figure 1. This map visualizes current elk range in the Western United States, and the small amount of elk that are artificially fed hay in Western Wyoming.

An estimated 1.2 million elk live in the United States today. Of that 1.2 million, approximately 27,000 or 2% are artificially fed, almost all of these within the 23 elk feedlots in west-central Wyoming. The artificial feeding of elk does not make sense in the larger scope of elk populations in the United States. Below we compare the differences between the 2% of elk habitat where the network of elk feedlots has been established versus the 98% of elk habitat where elk populations are not artificially fed.

1. There is no difference in elk-livestock conflicts between the habitats. States, like Colorado and Montana, and other areas of Wyoming have mitigated conflicts with livestock operations with proper fencing and other conflict mitigation strategies.
2. In general, road density is significantly lower in the 2% of elk habitat in the network of feedlots than the 98% of elk habitat where populations are not artificially fed, such as the far higher population states like Colorado. So, are elk-based vehicle accidents significantly higher in the 98% of elk habitat without artificial feeding? The short answer is no. Colorado has nearly triple the elk density of Wyoming. Colorado is far more fragmented, with far higher road density, far higher human population density and the same amount of livestock production. However, Colorado does not artificially feed their elk populations. Montana has nearly 50% more elk than Wyoming and is far more fragmented, far higher road and population density and has double the livestock density of Wyoming but none of Montana's elk are artificially fed.

If the specious rationale put forward by the WGFD were true then we should see starving elk across the western U.S., high numbers of elk collisions and few hunting opportunities in the 98% of elk range where artificial feeding does not occur. However, robust data shows this is not the case.

The Special Use application submitted by the WGFC posits this baseless rationale for continuing the status quo despite the known problems that elk feedlots create:

“Feedground is needed to reduce the risk of brucellosis transmission to livestock, prevent vehicle collisions on Highway 191, and to maintain population objectives. No new construction or significant operation costs are anticipated.”

“Feedgrounds will allow WGFD to maintain elk population objectives in the Hoback herd unit, while reducing negative impacts to livestock operators in the area.”

“Continued use of the feedground will allow WGFD to maintain elk population objectives in this herd.”

On September 21, 2021, U.S. District of Wyoming Judge Freudenthal ruled that the permit authorizing the WGFC's use of the Dell Creek feedground expired in 2016, and that annual feeding allowed since has been without a valid permit. Under 36 CFR 251.50, an authorization is required for this use of public lands on national forests. We are happy to see that the BTNF

took Judge Freudenthal's ruling into consideration that the USFS must comply with the National Environmental Policy Act (NEPA) and complete a full environmental analysis based on current best available science that includes alternatives for phasing out artificial winter feeding.

The recent court decision invalidating the USFS's practice of allowing feeding without proper permitting offers the USFS and the WGFD a chance to stop feeding on Dell Creek and Forest Park feedgrounds and start figuring out how to allow and encourage elk to resume natural migration behaviors on natural winter habitats, while minimizing interactions with domestic livestock. Elk have existed for thousands of years in what is now the western United States, migrating between summer ranges in the high country to lower elevation winter ranges in the basins and valleys. Colorado, New Mexico, Utah, and Idaho all have elk herds with healthy populations and natural migration patterns and low elk/cattle conflict rates. The behavior of migrating is innate to elk and they readily make these choices to move from harsh climates to less harsh environments. Protected lands in Wyoming are vast and connected. That means elk and other migratory wildlife can disperse across seasonal ranges if we allow it.

In this recent ruling, the court found:

CWD is an incurable and invariably fatal disease caused by an abnormal protein that affects the central nervous system of ungulates, including elk, mule and white-tailed deer, and moose. AR3549. Its effects are devastating; the onset of disease is slow, and those infected "show weight loss, reluctance to move, excessive salivation, droopy ears, increased drinking and urinating, lethargy, and eventually death." *Id.*

Further, "CWD is highly transmissible via multiple direct and indirect pathways between and among cervid species." AR486. It is transmitted through contact with infected animals or carcasses, and through contact with soil, plants, or feed contaminated with urine, feces, and/or saliva from infected animals. *Id.* CWD exhibits a long latency period (twelve to thirty-six months), during which an infected animal is asymptomatic yet still capable of passing the infectious prions to others. AR487; AR1802. Thus, a single infected animal can transmit the disease to a substantial portion of the population before its presence is detected. AR1798.

Moreover, recent research has shown that CWD, which is "resistant to most general disinfectants," can contaminate soil and remain infective in the environment "for years to decades." AR1802-03 (CWD "prions bound to soil are more infective than free prions, so soil may serve both as an environmental reservoir and a facilitator of CWD prion transmission."). Hence, uninfected animals are at risk of contracting CWD from the environment long after an infected individual has visited the area or died. *Id.*; AR489-90. Once introduced into a population, CWD "by itself can exceed natural rates of mortality," reduce survival of adult females, and decrease population growth of elk herds. AR492-93.

There is no dispute that “congregating elk at very high densities at feedgrounds is likely to increase the spread of disease because of an increased number and rate of potential infectious contacts with infected individuals and an infected environment.” AR486; see also AR1803 (Feedgrounds “increase the risk of [CWD] transmission” by “exacerbating [] densities, increasing contact rates, altering normal behavior, and prolonging exposure to potentially contaminated areas.”)

We provide a few items of note from the September 2018 ruling by the same judge that need to be kept in mind during this process.

As discussed in more detail in a later under the NEPA section, the judge stated:

An EIS must also assess the direct, indirect, and cumulative impacts of the proposed action, including unavoidable adverse environmental effects. 30 CFR § 1508.25.

Those “unavoidable adverse” effects have to include the contamination of soils, water and plants as a result of the proposed action.

The judge stated:

NEPA requires an agency to take a “hard look” at environmental consequences of its actions and to adequately disclose those impacts to the public. *Baltimore Gas*, 462 U.S. at 97-98; *Middle Rio Grande Conservancy Dist.*, 294 F.3d 1220, 1225 (10th Cir. 2002).

The ruling summarized the issue of CWD:

CWD, the equivalent of “mad cow disease,” is a fatal prion disease of cervids, which include elk, white-tailed deer, mule deer, and moose. AR29034; AR10283. The disease is easily transmitted,” the prion (TSE) agent can contaminate the environment for long periods,’^ and management strategies have failed to stop its spread. Id\ AR28854; AR28876. As additional challenges, clinical signs of CWD are not diagnostic, there is a long incubation period, there is no treatment, there is no prevention in the sense of vaccination, and CWD is invariably fatal once clinical signs develop. AR18430. These challenges make surveillance difficult and expensive; hence the emphasis on preventing its introduction into the region. AR18431. Once this chronic disease is introduced into a population, “CWD can exceed natural rates of mortality, reduce survival of adult females, and decrease population growth of elk herds.”

It continued:

CM/ECF Document (“Doc.”) 43, p. 16; AR17781 (seasonal concentrations of elk create “an unnatural situation that has contributed to . . . an increased risk of potentially major outbreaks of exotic diseases,” and “damage to and loss of habitat”). Further, at least one expert with the USDA Animal and Plant Health Inspection Service (“APHIS”) thinks

"long-term feedgrounds are detrimental to the health of the wildlife." AR26800. The Service itself recognizes "that the WGFC action of feeding elk results in the artificial concentration of elk during winter and early spring that increases risk of disease transmission" (AR11108), and that prevalence of CWD is likely "functionally related to ungulate density" (AR28876). Indeed, in its brief the Service states, "the practice [of supplemental feeding] concentrates elk during the winter months and contributes to the spread of diseases such as brucellosis and CWD." Doc. 62, p.11.

Also, the Brief of Amici Curiae Scientists discusses the very high population density estimates of elk at Alkali Creek Feedground, the behavior changes that occur as elk population densities grow (higher frequency and duration of contact), and the corresponding significant risk of disease transmission, both directly between animals and indirectly through the environment. Doc. 55, p.15; AR26284; 24695.

Further, both the NFS and NFWS agree that "elk concentrated on feedgrounds is likely to facilitate the spread of [CWD] when it reaches [the GTNP and Refuge]. As such, an overarching strategy to achieve the goals of the 2007 BEMP is to reduce reliance on winter supplemental feeding of bison and elk, and to transition to complete reliance on natural standing forage at an undetermined time in the future." AR28174.

Finally, one court found that the 2007 BEMP for the Refuge "might well have been unreasonable had the agencies categorically refused to phase out the winter feeding program in spite of all the evidence in the record about the dangers of supplemental feeding." *Def. of Wildlife v. Salazar*, 698 F.Supp.2d 141, 148 (D.C.D.C. 2010), *aff'd* 651 F.3d 112, 118 (D.C.Cir. 2011) ("There is no doubt that unmitigated continuation of supplemental feeding would undermine the conservation purpose of the National Wildlife Refuge System").

Regarding irreversible commitments, the court stated:

There is also little to suggest the Service took a hard look at the irreversible and irretrievable commitment of resources. Both considerations are required by 42 U.S.C. § 4332(C). There is no question that Alkali Creek Feedground could become a reservoir for CWD infection if it becomes established in elk populations in northwest Wyoming. That potential is increased with the concentration of elk at feedgrounds. If infected animals congregate, the environment will eventually be contaminated. This will significantly affect vegetation and soils, thus productivity, over a very long term (if not indefinitely) and may result in an irreversible and irretrievable loss of wildlife and habitat.

Further chastising the Forest Service for its NEPA failures, the court found:

Relevant to the Service (and not simply within WGFD jurisdiction) are the problems that artificial feeding increases the risk of disease transmission, increases the risk that the site will be contaminated with prions for a very long time, and also appears to blindly

support WGFD's goal of managing elk movements to prevent commingling with livestock and danger to agricultural land, notwithstanding the BTNF Land and Resource Management Plan that includes a stated goal to "[h]elp re establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients." ARI 19. Based on the record, feedgrounds seem to undermine this goal.

Regarding cumulative impacts, the court ruled:

Petitioners argue the Service failed to meaningfully analyze the cumulative impacts of the region's feedgrounds on wildlife resources, in violation of NEPA. Specifically, Petitioners complain that the Service refused to examine the impacts of Alkali Creek Feedground in conjunction with the other feedgrounds located in the BTNF, or the artificial feeding program conducted by the NFWS on the Refuge. Rather, the Service restricted its evaluation of cumulative impacts to include effects only from Alkali Creek and the other feedgrounds in the Gros Ventre drainage (Fish Creek and Patrol Cabin), thereby severing analysis of this action's impacts from the effects of other nearby feedground operations impacting the same elk herd, as well as the effect of the 2007 BEMP on the Refuge which anticipates a step-down approach to phase out artificial feeding.

Petitioners argue these feedgrounds are all part of an integrated program which cumulatively impacts the Jackson elk herd, and the restricted analysis by the Service violates NEPA.... As to cumulative impacts, the Court again agrees with Petitioners. The finality of the 2008 FEIS does not eliminate the need for the Service to consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD risk, transmission and mitigation since the 2008 analysis.

We provide both rulings, in their entirety, for your review as Attachment 3.

Concern over the risk of CWD concentration on feedgrounds.

The inherent and unavoidable concentration of elk during artificial winter feeding increases the risk of CWD and has a significant effect on the environment; winter feeding of elk also increases the prevalence of brucellosis and many other transmissible diseases in the herd. Winter elk feeding is highly controversial, with many scientists and members of the public fully aware of its detrimental impacts. It certainly has effects that pose unique risks to the Greater Yellowstone ecosystem's elk herds. The Greater Yellowstone ecosystem is an ecologically critical area; and continued winter feeding of elk may cause the loss or destruction of significant wildlife resources within that ecosystem. These risks are not speculative: rather, they are known, imminent, and rapidly increasing, with documented cases of chronic wasting disease discovered every year in elk and mule deer, now literally adjacent to elk feedgrounds.

Thus, even though the USFS's listed resource conditions does not include impacts on elk from wildlife diseases and other wildlife diseases, the agency's present scoping analysis should consider how its decision to authorize further artificial feeding at Dell Creek and Forest Park will contribute to the spread of CWD and other diseases within and between elk herds that use habitat on the BTNF. To the extent the USFS refuses to consider potential disease impacts, the agency must explain why it has decided to contravene its own guidance under 73 Fed. Reg. 43,091 (July 24, 2008). Because elk feedgrounds have such profound effects (significant by any rational evaluation), the practice of artificial winter feeding is highly controversial, artificial feeding significantly impacts ecologically critical areas, and continuing to allow artificial winter feeding may cause significant losses of wildlife resources (Galloway et al., 2021).

USFS staff have openly acknowledged that winter feeding is harmful and should stop. See our attached comments from 2016 for explicit quotes from BTNF biologists and administrators. To dispel any doubt about the risk of chronic wasting disease becoming established on feedgrounds, review the WGFD's map of CWD positive areas, which clearly shows that the disease now surrounds the Dell Creek area (See Figure 2).

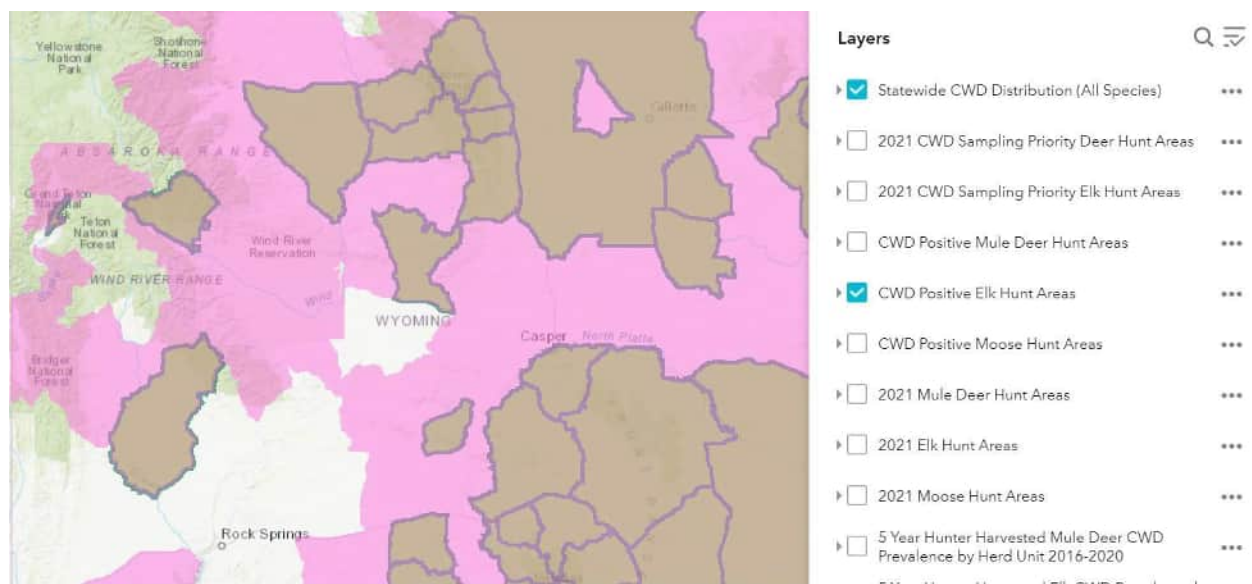


Figure 2: WGFD's map of CWD positive areas.

(<https://wgfd.wyo.gov/Wildlife-in-Wyoming/More-Wildlife/Wildlife-Disease/CWD-in-Wyoming-Wildlife/CWD-Map>)

Given the proximity of the disease to feedgrounds, the catastrophic risk of intraspecific and cross-species CWD transmission in and between herds of elk, deer, and moose, the long-term persistence of infectious prions in the environment, and the known harmful effects of concentrating thousands of elk for months each winter in the face of the highly infectious and 100% fatal CWD and several other contagious diseases, the USFS should consider the preparation of this EIS as a golden opportunity to fully evaluate the effects of feedgrounds and begin the process of phasing out of all feedgrounds on Forest Service land now. In the absence of feeding, mortality rate from CWD will likely be low initially and increase slowly (or stabilize)

(Galloway, 2021). Mortality rates could be high with supplemental feeding and CWD rates could be irreversible with sufficient environmental contamination/transmission (Galloway, 2021). Disease experts, such as Wyoming state veterinarian Sam Allen, fear that CWD will significantly decrease elk populations and that feedgrounds will become “hotspots.”

Concern for the welfare of elk from diseases exacerbated by feedgrounds

Hoof rot

Elk hoof disease, now referred to as Treponeme associated hoof disease (TAHD), is a bacterial-associated syndrome causing severe lameness in elk and livestock. Elk with the disease can have deformed, overgrown, broken, or sloughed hooves. These lesions can be painful and cause limping or lameness when walking. Elk that show these signs do not necessarily have elk hoof disease, as there are many other potential diseases or injuries that could cause similar abnormalities to elk hooves. Some bull elk also have deformities of the opposite antler depending on the timing of the hoof infection with antler growth. Treatment of any disease in free-living wildlife is difficult. In livestock, hoof diseases are often treated with repeated antibiotics and foot baths and managed by keeping their pens clean. Similar actions to treat wild elk are not practical. New research by Washington State University (2021) shows healthy elk can contract the rapidly spreading disease, known formally as Treponeme-associated hoof disease (TAHD), by simply walking on soil contaminated previously by infected hooves. The trampled and moist areas of elk feedgrounds will very much exacerbate hoof rot and this should be another consideration of phasing out elk feedgrounds quickly before both wildlife and livestock are affected.

Brucellosis

Brucellosis is a bacterial disease primarily of Rocky Mountain elk and bison. The disease is limited to northwestern Wyoming and adjoining portions of Montana and Idaho. Cows often abort their first fetus after becoming infected. Abortions may occur in subsequent pregnancies but diminish over time. Brucellosis also infects domestic cattle. A state/federal eradication program has almost eliminated the disease in cattle, but infected elk and bison pose a continuing threat. In the wild where there is no supplemental feeding, Wyoming elk are virtually brucellosis-free. In concentrated feedgrounds, however, elk test from 8% to 54% seropositive for exposure to brucellosis. As long as there are feedgrounds, there will be high percentages of seroprevalence in elk, and Wyoming's brucellosis-free status for livestock will be in continued jeopardy. The Brucella bacteria can survive in the environment for more than 180 days in cool and moist conditions. Like hoof rot and CWD, brucellosis is exacerbated by the use of artificial feedgrounds in Wyoming.

Bovine Tuberculosis

Bovine tuberculosis (bovine TB) is a disease found in mammals caused by the bacteria Mycobacterium bovis (M. bovis). In North America, bovine TB is most commonly found in domestic cattle and captive and wild cervids such as white-tailed deer, mule deer and elk. Bovine TB is spread primarily through the exchange of respiratory secretions between infected and uninfected animals. This transmission usually happens when animals are in close contact

with each other. Thus, animal density is a major factor in the transmission of M. Bovis. Bacteria released into the air through coughing and sneezing can spread the disease to uninfected animals. Research suggests that bovine TB can also be contracted from ingesting contaminated feed. Survival of M. Bovis in the environment is primarily affected by exposure to sunlight. Reports on the length of survival of M. bovis vary from 18-332 days at temperatures ranging from 54-75 F. In a number of studies under laboratory conditions, M. Bovis has been isolated for up to 8 weeks from various feeds kept at 75 F and 14 weeks from various feeds kept at 32 F. However, under field conditions, it is difficult to isolate M. bovis from pastures grazed by animals known to be infected with bovine TB (Michigan DoG, 2022). Non-cervid animals most likely contract TB from feeding on infected tissues from deer carcasses.

Bovine TB is a chronic disease, and it can take years to develop. M. Bovis grows very slowly and only replicates every 12-20 hours. The lymph nodes in the animal's head usually show infection first and as the disease progresses lesions will begin to develop on the surface of the lungs and chest cavity. In severely infected deer, lesions can usually be found throughout the animal's entire body. Non-cervid animals on the other hand do not develop the disease as extensively and lesions are usually not found in lungs or other tissues.

Bovine TB has been greatly reduced in the cattle industry since the National Cooperative State-Federal Bovine Tuberculosis eradication program began in 1917. Currently, most states are accredited as "Bovine Tuberculosis-Free" by the United States Department of Agriculture, however, sporadic outbreaks do still occur throughout the United States. Continuing to feed elk in Wyoming could be a major risk to the cattle industry in Wyoming, if Bovine TB gains prevalence.

Scabies aka psoroptic mange

Psoroptic mange, or the disease known as scabies is prevalent in many mammals. Scabies results in hair, fluid, and heat loss and ear canal occlusions. Secondary infections include decreased weight gain and mortality in domestic and wild animals. Like many other diseases, scabies is more common on elk feedgrounds.

"Scabies isn't rare, but it seems to be more common in higher density herds like those found in the [National Elk Refuge]," - Eric Maichak (2019), habitat biologist for the Game and Fish.

The risk of all the diseases listed above, and many more, remain a great threat to wildlife and livestock both, as long as wildlife is artificially fed, which concentrates them unnaturally and spreads bacteria and diseases with ease.

Purpose and Need is inadequate

The purpose and need as described by the USFS for this EIS process is to "analyze the proposal to assure that the Wyoming Game and Fish Commission is managing elk in a manner

that allows the health of the land to be sustained and to meet the goals and objectives of the 1990 Bridger-Teton Land and Resource Management Plan with Amendments.”

Due to the aforementioned adverse effects of feedgrounds on the health of elk and the presence of diseases that may last for decades on feedgrounds, it’s clear that the WGFC is not managing elk to meet the needs of the health of the elk nor the land. The BTNF forest plan (p. 11) states:

“Historical elk migration routes should be re-established to enhance the outfitting and guide industry.”

Therefore, the benefits to restoring natural elk migrations would benefit not only the health of elk populations in Wyoming, but also the outfitting and guide industry.

According to the Bridger-Teton forest plan (p. 37), “Maintaining elk feedgrounds has adversely changed composition of plant communities surrounding some feedgrounds.”

Continuing to feed for an additional 20 years will continue to deteriorate vegetative conditions in and around Dell Creek and Forest Park. Additionally, the decision to continue feeding elk for 20 years at Dell Creek and Forest Park goes against the BTNF Forest Plan *Big-Game Winter Range Standard* (p. 155)

Human activity and disturbance in crucial big-game winter range will be restricted from November 15 to April 30 if big-game are present in the area.

Lastly, the BTNF *Grazing Use of the National Forest* (p.150) states that grazing must sustain or improve overall range, soils, water, wildlife, and recreation values or experiences. Objective d. States that the BTNF:

“must require that suitable and adequate amounts of forage and cover are retained for wildlife and fish.”

The USFS must take into consideration the fact that feedgrounds are deemed “necessary” for winter elk forage, and then in turn, look into the health of natural winter forage ranges and the impacts that cattle grazing has on wildlife.

The impacts of feedgrounds must be considered comprehensively rather than just for Dell Creek and Forest Park

In response Western Watersheds Project, et al., vs. Vicki Christiansen (Chief, U.S. Forest Service), et al, (Case No. 17-cv-202-NDF) decided on September 14, 2018, attorneys (Meyer Glitzenstein & Eubanks LLP) for the petitioners sent the USFS Chief and the Supervisor of the BTNF a letter, dated September 26, 2018, that describes in part:

“(H)ow the Forest Service should address the National Environmental Policy Act (“NEPA”) and Administrative Procedures Act (“APA”) issues recently remanded to the agency in light of the ruling by the U.S. District Court for the District of Wyoming in *Western Watersheds Project v. Christiansen*, No. 17-cv-202-NDF (D. Wyo. Sept 14, 2018).”

In that letter, among several legal and environmental issues discussed, it points out that:

“These concerns are universal to all elk feedgrounds on the BTNF. Therefore, it is Petitioners’ view that this decision applies to Alkali Creek Feedground, and to all future requests for renewals of special use permits to operate elk feedgrounds on NFS Lands.” (Furthermore,) “(c)onsidering the Court’s holding that the Forest Service must “consider cumulative impacts from the integrated feedground program considering the best and currently available science that has advanced the understanding of CWD [chronic wasting disease] risk, transmission, and mitigation since the 2008 analysis,” Petitioners strongly urge the Forest Service to prepare an EIS for all feedgrounds on the BTNF. The piecemeal approach of examining individual feedgrounds tends to obscure or minimize the severity of adverse impacts and hinders the Forest Service’s ability to examine alternatives to phase out artificial feeding across the BTNF. In contrast, a comprehensive EIS examining the entire “integrated feeding program” would enable the Forest Service to gain a more complete understanding of the impacts of artificial feeding on the BTNF and its resources, and efficiently and effectively consider phase-out and reduced impact alternatives to minimize and mitigate those impacts.”

Take, for example, the Dell Creek feedground, you can not rationally examine the alternatives without relation to the other feedground. It makes little difference across all the issues we have discussed if the elk simply move to the next nearest feedground. The Forest Service must examine the full network of feedgrounds in order to take the “hard look” that NEPA requires.

National Forest Management Act (NFMA) compliance

The BTNF must also act within the mandates of the National Forest Management Act. NFMA directs the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.” (16 USC Sec. 1604(g)(B)) Under this authority, the Forest Service’s regulations require it to provide ecosystem components including ecosystem integrity, ecosystem diversity, and maintain viable populations of species of conservation concern. (36 CFR Part 219.9) Elk feedgrounds are the opposite of healthy ecosystems, they prevent healthy wildlife populations, and, thus, do not comply with NFMA.

National Environmental Policy Act (NEPA) compliance

NEPA Section 102(2)(C) states that an EIS must be a detailed statement on

“(i) the environmental impact of the Proposed action,

“(ii) any adverse environmental effects which cannot be avoided should the Proposal be implemented,

“(iii) alternatives to the Proposed action,

“(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of

long-term productivity, and

“(v) any irreversible and irretrievable commitments of resources which would be involved in the Proposed action should it be implemented.” (Emphasis added.)

There are many irreversible commitments that are being proposed by the Forest Service here. Given the scientific certainty of CWD already on these feedlots or arriving shortly, given the 100% infection rate on exposure to prions, given the 100% mortality rate for infected individuals, given high levels of infectious materials deposited on these feedlots and given the essentially permanent contamination that results due to prions remaining infectious for decades, the issuance of these permits is an irretrievable commitment of resources.

In addition to these obvious direct impacts, there are a range of indirect impacts which must be considered.

For example, Riling Draw runs down the middle of the Dell Creek feedlot. Elk consume approximately 11 pounds of forage per day, so the 700 elk would produce approximately 3 and a half tons of waste per day. So that is some 315 tons of waste matter for a 3 month feeding season. During the peak spring run off period, large quantities of that waste matter would wash into Dell Creek. There are numerous major irrigation diversions downstream of Riling Draw that would spread these feces across the irrigated hay fields. Prion contamination would be taken up in the plants and soils which would significantly increase the scale of contamination. These impacts must be analyzed.

What is the liability to the Forest Service and WGFC should downstream landowners sue for the damages to their private lands due to the essentially permanent contamination by prions? These impacts must be analyzed.

Recently there have been significant discussions within the county governments of the 3 elk feedlot counties regarding the cost, difficulty and liability of the disposal and destruction of infected animals. Facilities capable of destroying the infectious prions will cost millions of dollars. This is an indirect impact of the Forest Services proposed action.

A “hard look” would be examining the information gathered by each county on carcass destruction.

Changed conditions and newer scientific findings

The BTNF should be aware of the changed conditions and newer scientific findings during the years since Forest Park and Dell Creek were last permitted in 1998 and 1996 respectively. See in particular BTNF employee Tyler Johnson's June 2014 Chronic Wasting Disease Literature Review Technical Report (Attachment 5) to the Final Supplement to the Environmental Impact Statement Long Term Special Use Authorization for the Wyoming Game and Fish Commission to Use National Forest System Land for their Winter Elk Management Activities at Alkali Creek Feedground, 2015. Some of the many important findings described in that June 2014 review by Johnson include:

"Owing to highly efficient direct transmission of CWD among cervids, the number, duration, and frequency with which infectious individuals encounter susceptible ones is likely to drive early density dependent transmission of CWD (p .5)."

Cross et al. 2013 demonstrated that "in areas where elk are artificially congregated at feedgrounds per capita rates of contact and duration of contact were more than twice as high as groups not receiving supplemental feed (p. 6)." (E)lk feedgrounds attract elk from large catchments and congregate elk that might not otherwise contact each other, thereby increasing the chance that an infected elk from a distant locale would be the one to introduce the disease to a new herd area. (p. 6)"

"(S)tudies on free-ranging and farmed elk and deer are clear in showing that population level impacts are to be expected from the introduction and spread of CWD in elk on the Bridger-Teton National forest and nearby areas (p. 7)."

Naturally occurring populations of elk have shown that mortality from chronic wasting disease by itself can exceed natural rates of mortality and reduce the overall survival of free roaming cow elk below 85% (Monello et al. 2014)." p.7

"Free-ranging elk herds in Wyoming (Cross et al. 2013, Williams et al. 2014) and Canada (Vander Wal et al. 2013, 2014) have herd densities ranging from .21 to 1.2 elk/km² Elk density at the average state feedground in Wyoming is 1976.6 elk/km², based on the reported average of 600 elk on 75 acres." p.8

"I clearly understand and acknowledge that the Commission's action of feeding results in artificially high concentrations of elk during winter and early spring which increases disease transmission (Johnson, 2014; Attachment 5; and in the 2015 Final SEIS)." (Id.:6)
"When chronic wasting disease becomes established on the Bridger-Teton National Forest, there is a moderate to strong likelihood that the population limiting effects of chronic wasting disease to elk, mule deer, and moose may be hastened by supplemental feeding." (Id.:6)

Patricia O'Connor, has also recently acknowledged that elk feedgrounds should cease on USFS lands stating:

"The continued westward expansion of chronic wasting disease detected during the 2015 hunting season punctuates the need for exploring opportunities for change. In making this decision, I am recommending that the WGFC/WGFD transition away from the need for supplemental feeding for elk. Use at Alkali Creek feedground is not intended to be permitted in perpetuity. My staff will prepare a report annually that identifies changing conditions and recommends any needed adjustment in feedground management." (O'Connor 2015:5 in Final Record of Decision for the Alkali Creek elk feedground SEIS)

CWD exists in western Wyoming in the elk feedgrounds region. It is indisputable that CWD is now in western Wyoming in the region where the WGFD and the US Fish and Wildlife Service feed some 22,000 densely concentrated elk at 23 locations each winter. A moose tested positive for CWD in Star Valley in 2008 (Moose Hunt Area 23). Three doe mule deer tested positive for CWD in Green River, Wyoming, in late 2012 (Deer Hunt Area 132). A dead doe mule deer positive for CWD was discovered in Star Valley early summer of 2016 (Deer Hunt Area 145). A buck mule deer harvested by a hunter near Dubois, Wyoming, tested positive for CWD (Deer Hunt Area 128). More recently, a buck mule deer in Grand Teton National Park tested positive for CWD in November of 2018 and an elk in the park tested positive for CWD in December, 2020. A buck mule deer was confirmed positive for CWD in February of 2022 (Deer Hunt Area 143).

All these CWD endemic areas are either west of the Continental Divide in Wyoming, or adjacent to the Continental Divide; all are near- or are connected via cervid migrations to- elk feedgrounds. Forest Park elk feedground in the Greys River drainage is only 13 miles from where the CWD-infected moose was found in 2008, and only 18 miles from where the CWD-infected mule deer was found in 2016. It is located within a CWD endemic area as determined by the Wyoming Game and Fish Department. Dell Creek elk feedground near Bondurant, Wyoming, is along the migratory path of mule deer from the lower Green River Basin; CWD was found in mule deer in the town of Green River in 2012. Dell Creek feedground is bracketed by CWD endemic areas 31 miles to the northeast (Deer Hunt Area 128), and 26 miles to the southwest (Deer Hunt Area 145), respectively.

Elk, deer, and moose are known to share habitats throughout this region; it is virtually assured that elk, deer, and moose move from CWD endemic areas to currently non-endemic areas every year. The risk is significant that elk that attend both Forest Park and Dell Creek will be or already are exposed to CWD. Given the proximity of the disease, the catastrophic risk of intraspecific and cross-species infection to herds of elk, deer and moose from CWD, the persistence of the infectious prions in soil and plants, and the known harmful effects of concentrating hundreds and thousands of elk for months each winter in the face of this infectious and fatal disease, the BTNF must consider and thoroughly analyze alternatives to elk feedgrounds. Merely "monitoring" elk feedgrounds for symptomatic elk or other cervids is not sufficient and does

virtually nothing to mitigate the risk to elk, nor does removing symptomatic elk or other cervids. Additionally, the BTNF must not allow hay harvested from CWD endemic areas to come onto BTNF lands.

- **Contamination of lands in and around feedgrounds - Soil, water, plants, feces, and urine**

Scientists believe CWD proteins (prions) likely spread between animals through body fluids like feces, saliva, blood, or urine, either through direct contact or indirectly through environmental contamination of soil, food, or water. Once introduced into an area or farm, the CWD protein is contagious within deer and elk populations and can spread quickly (CDC, 2021). Experimental studies have also shown that prions can be taken up by certain plants, including alfalfa, corn, tomatoes, and wheat, and remain infectious (CIDRAP, 2020). Knowing these factors and continuing to expose elk to the prions that cause CWD and potentially make it worse is ignoring the science.

“Scientists searched for prions at Mineral licks – areas where deer seek out essential nutrients and minerals – in the CWD endemic area across south-central Wisconsin. Out of 11 sites, nine had detectable levels of the disease-causing misfolded proteins. Prions were found both in soil and in water from the sites, as well as in nearby fecal samples from one site” (*Outbreak News Today*, 2018).

Given the reality that infectious CWD prions can be in soil, plants, water, feces and minerals, *and, when ingested, may be infectious for mammals*, the BTNF must analyze the potential effects of hay grown and harvested in CWD endemic areas being fed to feedground elk. The BTNF must also consider the effects of mineral licks, both natural licks and minerals placed by people for livestock use, on wildlife and the environment. The BTNF must also consider the effects on wildlife *and human health* given the potential for infectious prions to be in plants, water, and soil, and the potential of elk feedgrounds to amplify the distribution and prevalence of CWD in deer and elk, and consider the effects to wildlife *and people* of increased exposure to CWD prions.

The BTNF must require appropriate disposal of the carcasses of CWD-infected elk or other cervids discovered and/or removed by the WGFD or anyone. The vector of CWD is called a prion, which is a misfolded brain protein known for its near indestructibility and knack for persisting in the natural environment, including in soil and water. Prions are so persistent that attempts to remove them from the environment have mostly proven unsuccessful. Deer and elk holding pens in Sybille, CO, were left empty for six months to one year after all animals were removed and killed. New animals were introduced that had no previous contact with infected deer and elk. Elk in the pens came down with CWD within five years after the attempt at facility sterilization (Forester media et al, 2003). Prions that will be found on both the Dell Creek and Forest Park feedgrounds will not only infect elk today, but have the potential to infect animals for years, even decades, to come. A plan for proper destruction and removal of all elk carcasses at feedgrounds will need to be conducted by the Forest Service during this process.

- **Human health concerns**

In addition to the risk of CWD to elk, deer, and moose, there also exists a human health risk (Waddel et al., 2018; Osterholm et al., 2019). Since 1997, the Centers for Disease Control and the World Health Organization have recommended that agents of any prion disease should not enter the human food chain. Bovine spongiform encephalopathy (mad cow disease), a prion disease, became epidemic in the United Kingdom in the 1980s and 1990s after infected beef was consumed by humans causing significant social and economic disruption. Teton County, Wyoming, Health Officer, Dr. Travis Riddell, M.D., penned a column (2019) in the health section of the Jackson Hole News and Guide warning, “the situation with wild game in Wyoming is eerily similar to that of mad cow disease in the U.K. 20 years ago, and things didn’t turn out so well for humans there.”

Leading researchers are highly concerned about the risk of transmission of CWD to humans concluding that “[t]he past century has provided compelling evidence that effective public health interventions are needed to prevent the transmission of prion-related transmissible spongiform encephalopathies (TSEs) between animals and humans and between humans...Available data indicate that the incidence of CWD in cervids is increasing and that the potential exists for transmission to humans and subsequent human disease” (Osterholm et al., 2019). A human health epidemic could cause similar disruptions with resulting economic consequences for the economy of Wyoming and neighboring states dependent on wildlife-related recreation (Peterson, M.J., 2003; Local News 8, 2019).

Decision to continue artificially feeding elk does not comply with BTNF forest plan

The Bridger-Teton National Forest(s) plan’s main *Resource Management Goal for Recreation Management* lists the Forest’s top priority as “to maintain and improve the health, diversity, and productivity of forest ecosystems for the enjoyment of current and future generations”. The USFS must consider wildlife viewing as very much a part of the recreationist’s experience while visiting national forests in Wyoming.

Also, the USFS must ensure that the decision complies with the BTNF Land and Resource Management Plan. The decision to permit WGFC to continue to feed elk would go against Objective 2.1 (a):

“to [h]elp re-establish historic elk migration routes to provide increased viewing and hunting opportunities for outfitters and clients”

Continuation of artificially feeding elk limits the ability for elk herds to restore their historic migratory patterns. Feedgrounds have interrupted elk migration from summer ranges to traditional winter ranges, resulting in a functional fragmentation of their habitat. With reduced concern for the conservation of native winter ranges, this fragmentation is likely to become

permanent unless action is quickly taken to phase out feedgrounds. Additionally, feedgrounds have resulted in less concern for the conservation of native ranges because some people feel these ranges are unnecessary to support elk (Western EcoSystems Technology, Inc.). In other words, they have accepted winter feeding as mitigation for development and other habitat loss. More emphasis on rehabilitation of winter range for elk should be a priority for the public and land management agencies. Alternative 1, would provide this needed rehabilitation from the impacts of decades of feeding at Forest Park and Alternative 2 would provide the same at Dell Creek.

Carnivore tolerance can benefit healthy elk herds

Increasing tolerance for wolves in CWD-infected areas can be a strategy for containing this disease. Human/predator interactions are often viewed through the lens of 'conflict' or 'risk' to human communities, such as livestock depredation, impacts on abundances of game species, and threats to human safety. However, carnivores can also benefit humans by pest control, waste and carcass disposal, and nature tourism. On the topic of elk feedgrounds, carnivores are especially helpful when it comes to culling sick animals out of the population. A recent study finds that “predators may create healthier prey populations by selectively removing diseased individuals (Brandell, et al., 3).” *Examination of the interaction between age-specific predation and chronic disease in the Greater Yellowstone Ecosystem*, published in the *Journal of Animal Ecology*, in 2022 shows that wolves selectively remove animals that are infected years before humans can detect that an animal is infected with CWD. Ungulates that are infected are likely to have symptoms which, even in the early stages of illness, make them less wary, and less able to avoid predators, long before the disease progresses to the point of death. So, wolves, by the way they hunt, are likely to single out these animals and remove them long before they would have succumbed to the illness. If they take the infected animal out six months or a year earlier than they would have died, it can reduce all those potential transmission to other elk or deer, therefore reducing the spread of CWD. Wolves and other canines are not susceptible to the illness and thus are unable to spread it.

Additionally, research published in 2021 in the *Proceedings of the National Academy of Sciences* highlights an underappreciated benefit of wild wolf populations: the large predators frighten deer and elk away from dangerous roadways, saving money and lives in the process. Most of the reduction in collisions was due to the “landscape of fear” that wolves create (2021). Wolves tend to follow clear paths through the landscape, like streams. In an area that has been developed by humans, wolves follow roads, trails, and pipelines. Deer adapt to the wolves’ presence by staying away, which would reduce the chance that they would get hit by a car. Since car-elk collisions are one of the concerns that comes with closures of feedgrounds, promoting the health of wolves could be a great mitigation strategy.

Impacts on wildlife protected under the Endangered Species Act

Dell Creek and Forest Park feedgrounds are located in critical Canada lynx habitat (USFWS, 2014) and grizzly bear occupied and Demographic Monitoring Area (WGFD 2016). Canada lynx and grizzly bears are protected under the Endangered Species Act (ESA). Since the promulgation of elk feedgrounds by the BTNF adversely affects the health of prey species such as deer, moose and elk, elk feedgrounds have the potential to adversely affect carnivores including those protected under the ESA. The EIS will need to address the long-term effects to Threatened and Endangered Species if elk populations plummet due to disease. Due to these impacts on ESA-listed species, the Forest Service also needs to consult with the US Fish and Wildlife Service about potential effects to listed species under the ESA on any elk feedground permit regardless of term.

The BTNF must also consider the beneficial effects of abundant predators of elk and deer on the prevalence of CWD and other diseases in elk and deer and whether the existence of elk feedgrounds will affect the ability of predators to influence the health of elk and deer herds.

Professional wildlife management agencies recommend phasing out feeding

a. AFWA

- i. The American Association of Fish and Wildlife Agencies (of Which the Wyoming Game and Fish Department is a member) states in their Best Management Practices for Prevention, Surveillance, and Management of Chronic Wasting Disease, “There is currently no evidence that baiting and feeding of free-ranging cervids can be conducted to mitigate increases in the opportunity for disease transmission. There is also no evidence the practice is likely to increase harvest sufficiently to overcome the negative effects of those increases by disease transmission. Evidence to date suggests that “restrictions on feeding quantity would not mitigate the potential for disease transmission” and that putative mitigating practices such as spreading feed or bait over a specified area, or restricting the kinds of food items that can be used, did not substantially reduce the potential risk for disease transmission” (Palmer and Whipple 2006; Thompson et al. 2008).

b. The Wildlife Society

- i. The official statement from The Wildlife Society in 2020 is to “encourage fish and wildlife agencies, wherever possible, to phase-out supplemental feeding of wild ungulate populations, both in-house and by the general public, and to manage populations at levels that are compatible with the long-term carrying capacity of the habitat.”

Regional effects to wildlife from Wyoming’s elk feedgrounds

Elk feedgrounds in Wyoming do not just affect the state but have detrimental effects across the entire Greater Yellowstone ecoregion. The Montana Fish and Wildlife Commission sent a letter to Wyoming asking wildlife managers to reconsider the use of winter feeding grounds in order to

help prevent chronic wasting disease (Montana Fish & Game, 2017). They stressed that feedgrounds make Wyoming's wildlife populations less stable, less healthy, and more susceptible to a catastrophic disease event. They also acknowledged that if we do not address CWD, we will all be culpable in leaving a greatly devalued landscape to future generations. In closing, they asked that Wyoming begin the process of closing feedgrounds.

What Happens When Elk Feeding Ends

As a result of hearing a wide range of questions and concerns about ending the addiction to feeding created by the WGFC in this area, Wyoming Wildlife Advocates examined the common excuses provided for maintaining the status quo of the elk feedlot operations in west-central Wyoming. Please see Attachment 4 for this white paper.

The Forest Service's Public Trust Responsibilities

In 2016, the Forest Service commissioned law and policy experts to research the role and duties of the Forest Service in regard to wildlife management. The legal review was published in 2017 in the journal *Environmental Law*. We provide this review, in its entirety, as Attachment 7. The Forest Service's role here is not simply ministerial, the approval of a Special Use Permit, the Forest Service's role here is the conservation and protection of wildlife. This role and duty cannot be shuffled off to the state.

The executive summary of this review is as follows:

This Article reviews the authority of federal and state governments to manage wildlife on federal lands. It first describes the most common assertions made by state governments regarding state powers over wildlife and then analyzes the relevant powers and limitations of the U.S. Constitution and federal land laws, regulations, and policies. Wildlife-specific provisions applicable within the National Park System, National Wildlife Refuge System, National Forest System, Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered, as is the Endangered Species Act. We reviewed an extensive collection of cases of conflict between federal and state agencies in wildlife management on federal lands. These cases show how federal land laws, regulations, and policies are frequently applied by federal agencies in an inconsistent and sometimes even unlawful fashion. They also demonstrate how commonalities found in state wildlife governance, such as sources of funding and adherence to the North American Model of Wildlife Conservation, often exacerbate conflict over wildlife management on federal lands.

Federal land management agencies have an obligation, and not just the discretion, to manage and conserve fish and wildlife on federal lands. We debunk the myth that "the states manage wildlife and federal land agencies only manage wildlife habitat." The myth is not only wrong from a legal standpoint but it leads to fragmented approaches to wildlife conservation, unproductive battles over agency turf, and an abdication of federal

responsibility over wildlife. Another problem exposed is how the states assert wildlife ownership to challenge the constitutional powers, federal land laws, and supremacy of the United States. While the states do have a responsibility to manage wildlife as a sovereign trust for the benefit of their citizens, most states have not addressed the conservation obligations inherent in trust management; rather, states wish to use the notion of sovereign ownership as a one-way ratchet—a source of unilateral power but not of public responsibility. Furthermore, the states' trust responsibilities for wildlife are subordinate to the federal government's statutory and trust obligations over federal lands and their integral resources.

The Article finishes by reviewing the ample opportunities that already exist in federal land laws for constructive intergovernmental cooperation in wildlife management. Unfortunately, many of these processes are not used to their full potential and states sometimes use them solely as a means of challenging federal authority rather than a means of solving common problems. Intergovernmental cooperation must be a mutual and reciprocal process, meaning that state agencies need to constructively participate in existing federal processes, and federal agencies should be provided meaningful opportunities to participate in, and influence, state decision making affecting federal lands and wildlife. (emphasis added)

We also request a complete review of Attachment 7 - Wildlife Health and Public Trust Responsibilities for Wildlife Resources, 2016. The paper is directly related to the federal government's responsibilities regarding wildlife disease transmission.

Provided as Attachment 8 is the Wildlife Society's Technical Review 10-01 The Public Trust Doctrine: Implications for Wildlife Management and Conservation in the United States and Canada. This Technical Review provides an in-depth review of the government's Public Trust duties and responsibilities.

WGFD quotes that make solid arguments against elk feedgrounds

"Quite naturally, all the groups interested in these elk have not seen eye to eye as pertains to their management. In some instances disputes have arisen. Much of this disagreement, however, is because at times prejudices, distortions and emotions have been substituted for facts. At other times the available facts have not always been recognized in their proper perspective by everyone concerned. Unfortunately, all that is known is not common knowledge, nor have all the facts been brought to light."

-A.F.C. Greene, Wyoming State Game and Fish Commissioner, in the Forward to Chester C. Anderson's The Elk of Jackson Hole (1958)

"Feeding is most common in winter when well-intentioned people think wildlife need extra energy, but data collected over the last 50 years indicates that feeding causes a great deal of harm and may actually decrease winter survival. Feeding increases

disease transmission, causes habitat degradation, can upset the normal digestive process, interferes with wildlife social structure and may attract predators and other problem wildlife.”

“When animals are fed, they tend to congregate in unnaturally high numbers. This high density allows disease to be transmitted much more quickly.”

“TB should not only be a concern for wildlife enthusiasts. The disease may infect domestic livestock and well as humans...once this disease is well established, it is very difficult to completely eradicate it from a wild population. One of the best preventative steps in this effort is to not feed wildlife.”

“The evidence is undeniable. Wildlife are adapted to survive winter without supplemental feeding. Feeding causes many more problems to wildlife than it solves. Additionally it can be harmful to humans and domestic animals.”

“[Brucellosis] is virtually nonexistent in elk herds that are not fed or closely associated with herds that are fed. There is no doubt that feeding has allowed the disease to persist. Likewise, there is little doubt that if feeding were discontinued and elk used native winter ranges, the disease would eventually disappear over time.”

“Finally, it can be questioned whether feeding wildlife is even ethical.”

The Wyoming Game and Fish Department - Feeding Wildlife: A Recipe for Disaster

“The supplemental feeding of elk, or any big game species, is not recommended. Concentrating animals in such a manner increases the potential for disease transmission (including brucellosis and scabies), as well as dependence upon unnatural food sources. This may result in less healthy populations and reduced reproduction. Supplementary fed animals are less inclined to forage for themselves and can lose their natural wariness, increasing the chance of predation. Concentrating elk may result in range degradation to the area surrounding the feedground. Collisions with motor vehicles while elk are feeding near highways and elk grazing damage to fields and haystacks are other undesirable possibilities resulting from supplemental feeding.”

“Keep in mind that elk populations are neither stagnant nor constant. They fluctuate annually, higher in years of mild weather and/or plentiful forage and lower in years of severe weather and/or poor forage production. Big game herds do not, nor should they be expected to, remain at a constant level year after year. Though starvation of big game animals is not pleasant, it is a natural process that removes less fit animals the range simply cannot support at the time. To intervene in this process is to remove natural selection from elk population dynamics and jeopardize the future condition and capacity of the range to support elk.”

Landscape connectivity and big game winter ranges

There are vast areas of protected public lands in western Wyoming that allow for wildlife to free-range. The only counties in western Wyoming with elk feedgrounds are Sublette County, Lincoln County, and Teton County. These three counties' combined acreage is almost 8.6 million acres of which 83% is federal land. More than 7 million acres in these counties are managed by the National Park Service, the US Forest Service, the US Fish and Wildlife Service and the Bureau of Land Management. Very importantly, there are 1.74 million acres of big game winter range in these counties, as designated by the Wyoming Game and Fish Department.

In adjacent counties, well within migratory capabilities of elk, there are even more natural winter ranges acknowledged by wildlife management agencies. In the context of this large area (Sublette, Lincoln, and Teton Counties and surrounding counties), human settlement is relatively sparse on comparatively small acreages. These critical wildlife habitats have better protections for wildlife than they did during settlement times in the late 19th and early 20th centuries. Federal agencies and the WGFD restrict or prohibit many human activities on winter ranges to protect wildlife. Some elk, deer and other big game are known to undertake local and large-scale, long-distance migrations among their seasonal habitats throughout this region (Wyoming Migration Initiative 2016). The BTNF must consider the innate ability of elk to migrate between seasonal ranges in western Wyoming, and the fact that winter feedgrounds impede that ecologically beneficial behavior and harm the health of elk and the ecosystem. The BTNF must consider alternatives that do not bait elk onto disease-ridden small parcels for the winter months, but allow elk to naturally free-range among their natural, healthier seasonal habitats throughout the region. The BTNF must consider a healthier paradigm than feedgrounds to manage elk on the USFS lands.

Economics of sustainable wildlife management

Direct expenditures (plus a multiplier effect of expenditures) of wildlife watchers in Wyoming during 2011 were \$556 million dollars. A 2018 study found that people spent \$802.2 million in Wyoming on wildlife-based recreation in 2017. From that direct spending, the state saw the benefit of \$1.065 billion in total economic activity (Sweetwater Now, 2019). While the three counties in western Wyoming where elk feedgrounds are located are only a portion of the state of Wyoming, the annual revenue from wildlife-related recreation in Sublette, Teton and Lincoln counties is undoubtedly many millions of dollars annually. The allowance of elk feedgrounds that promulgate diseases in elk and other wildlife threatens the tourism and wildlife-based economies of western Wyoming and the Greater Yellowstone Ecosystem. The BTNF must consider these facts and must consider the impacts of diseased elk feedgrounds on the economy, and must consider a transition to a healthier more sustainable paradigm of wildlife and habitat management, which will better serve the regional economy in the future.

Climate change

Climate change is affecting the natural ecosystems of Wyoming and the Greater Yellowstone Ecosystem. "The frequent warm years coincide with a reduction in the frequency of extremely low (<-20 degrees C) January temperatures . . . " (Shuman, 2011).

Wildlife are affected by changes in climate. "The ecology of ungulates in the (Rocky Mountains and Upper Columbia Basin) is strongly influenced by climate" (NPS 2010:48). "One of the key issues for ungulate management is wildlife disease, the spread and virulence of which is likely to be exacerbated by climate change (Harvell, 2002)." (Id.) It is known that elk feedgrounds exacerbate the incidence of diseases in elk (Smith, 2001; Peterson, 2003). "Climate change will likely increase the range, frequency, severity, and impact of plant and wildlife disease (Harvell, et al., 2002)" (NPS 2010:17). "Plant communities and wildlife that are faced with multiple stressors are the least likely to resist the emergence of novel diseases" (Id.). The BTNF must consider the effects of climate change on elk and elk habitat and must consider alleviating stressors on elk (such as density dependent diseases and diseased habitats) and implementing less harmful alternatives to managing elk than confining them on feedgrounds every winter.

The BTNF must also consider available natural forage for elk on important habitats such as native winter ranges. The impacts of seasonal livestock grazing on USFS and BLM lands that also serve as big game winter ranges must be considered and managed to allow for residual forage to sustain wintering elk and other big game.

Separation from livestock

The BTNF must consider alternative ways (other than elk feedgrounds) to maintain separation between elk potentially exposed to or infected with brucellosis and livestock vulnerable to brucellosis infection on private lands adjacent to or near the BTNF. One method to maintain separation is to fence in the livestock with elk proof fences, or construct elk proof fences to prevent elk from entering into private land where vulnerable livestock are pastured, and allow elk to free range. There are already elk proof fences on USFS land (and other jurisdictions) in the area of Soda Lake near Pinedale, Muddy Creek near Boulder, and along the Star Valley Front south of Alpine to mitigate commingling. It is important to fence as little area as possible so as not to affect natural wildlife movements including wildlife migrations more than necessary to accomplish the goal. Another way to separate elk from livestock is to ship the livestock to winter elsewhere.

Conclusion

Elk that attend winter feedgrounds in western Wyoming, including on the BTNF, have elevated seroprevalence for exposure to *Brucella abortus*, which can cause brucellosis in elk, and elevated levels of other diseases, in comparison to elk that free range (Smith 2001). These are serious indicators that these elk herds are unhealthy and at risk of other diseases such as CWD, and that a change in the management paradigm for elk including those elk that use the BTNF is needed. Since deadly CWD is expanding throughout Wyoming at an alarming pace, time is of the essence to manage elk and habitat on the BTNF in a more holistic way. Rather than manage elk according to artificial objectives such as numbers of elk as determined by the

Wyoming Game and Fish Commission regardless of their health or the health of the habitat, the BTNF and other agencies must strive for a healthier ecosystem and more sustainable objectives to manage the public's wildlife. Extensive, connected habitats and the conservation of predators can serve as natural capital to improve the health of the elk herds that are currently sick, at high risk, and confined on small feedgrounds months at a time. Predators can, if conserved in abundance, steward the game herds, remove infected individuals, and help ensure healthy wildlife. Elk feedgrounds are an archaic method of wildlife management whose time has passed. We support **Alternative 1**, immediate closure, of **Forest Park Feedground** and **Alternative 2**, phase out within three years, for **Dell Creek Feedground**.

We are submitting this joint comment letter on behalf of the organizations listed below:

Sierra Club, a non-profit environmental organization founded in 1892, has 5,000 members and supporters in Wyoming and 3.8 million members and supporters nationwide. Its mission is to explore, enjoy, and protect the wild places of the Earth; to practice and promote the responsible use of the earth's ecosystems and resources; to educate and enlist humanity to protect and restore the quality of the natural and human environment; and to use all lawful means to carry out these objectives.

Wyoming Wildlife Advocates (WWA) is a non-profit organization focused on informing, educating, and empowering communities to preserve our wild legacy and protect our shared wildlife resources. WWA envisions a Wyoming that leads the nation in exceptional and innovative wildlife management; all stakeholders are valued equally, and management decisions are driven by the best available science. Headquartered in Jackson, Wyoming, WWA has thousands of supporters in Wyoming, the Greater Yellowstone Ecosystem, and nationwide.

Western Watersheds is a non-profit conservation organization founded in 1993 with the mission of protecting and restoring western watersheds and wildlife through education, public policy initiatives, and litigation. Headquartered in Hailey, Idaho, Western Watersheds Project has 2,000 members and field offices in Idaho, Montana, Oregon, Wyoming, Arizona and California.

Yellowstone to Uintas Connection is a 501c3 public interest organization whose staff and members have and will continue to work to protect the integrity of habitat for fish and wildlife as well as recreate in this region. We are concerned about the loss of integrity of the Regionally Significant Wildlife Corridor that connects the Greater Yellowstone Ecosystem and Northern Rockies to the Uinta Wilderness and Southern Rockies. Yellowstone to Uintas Connection is headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming.

Buffalo Roam Tours is a Greater Yellowstone Ecosystem guiding company founded in 2012 based out of Teton County Wyoming. We specialize in connecting 1000's of tourists annually, through experiential outdoor interpretation to the wonders of the natural world. Buffalo Roam's mission of Human and Nature Connection is founded on science based teaching to explain,

experience and re-connect visitors to the amazing interconnection of wildlife, landscapes and humans.

Gallatin Wildlife Association (GWA) is a non-profit volunteer wildlife organization of approximately fifty members. Headquartered in Montana, GWA is composed of dedicated hunters, anglers, and other wildlife advocates in Southwest Montana and beyond. GWA's mission is to protect habitat and conserve fish and wildlife for future generations. GWA has long standing interests in supporting the sustainable management of fish and wildlife populations through fair chase, public hunting and fishing opportunities that will ensure these traditions are passed on for future generations to enjoy.

Jackson Hole Conservation Alliance (JHCA) is a non-profit organization with the mission to protect the wildlife, wild places, and community character of Jackson Hole. JHCA represents thousands of Wyoming residents with an interest to protect our wildlife based on the best available and most accurate science, and through proactive community engagement. Since 1979 the Alliance has effectively worked as a watchdog to keep Jackson Hole wild and beautiful.

Thank you again for the opportunity to provide these scoping comments. We look forward to continuing to engage in this important decision-making process.

We incorporate by reference the comments submitted by:

- 1) Lloyd Dorsey
- 2) Dr. John Carter - Yellowstone to Uintas Connection
- 3) Clint Nagel - Gallatin Wildlife Association

Sincerely,

Kristin Combs
Executive Director
Wyoming Wildlife Advocates
PO Box 1772
Wilson, WY 83014
Kristin@wyowild.org

Jonathan Ratner
Wyoming Director
Western Watersheds Project
PO Box 171 Bondurant, WY 82922
jonathan@westernwatersheds.org

Kaycee Prevedel
Conservation Organizer
Sierra Club Wyoming Chapter
Laramie, WY 82070
kaycee.prevedel@sierraclub.org

Clinton Nagel
President
Gallatin Wildlife Association
P.O. Box 5317
Bozeman, MT 59717
clint_nagel@yahoo.com

Chelsea Carson
Conservation Program Manager
Jackson Hole Conservation Alliance
685 S. Cache St. / PO Box 2728
Jackson, WY 83001
chelsea@jhalliance.org

John Carter
Board Member
Yellowstone to Uintas Connection
PO Box 464
Bondurant, WY 82922

Matt Fagan
Owner/Guide
Buffalo Roam Tours
Jackson, WY 83001
info@buffaloroamtours.com

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Please see additional attachments

Attachment 1: 2016 Organizational scoping comments

Attachment 2: Western State Management of Wintering Elk

Attachment 3: Court Case Rulings

Attachment 4: What Happens When Elk Feeding Ends

Attachment 5: Chronic Wasting Disease Literature Review Technical Report

Attachment 6: Fish and Wildlife Management on Federal Lands

Attachment 7: Wildlife Health and Public Trust Responsibilities For Wildlife Resources

Attachment 8: The Public Trust Doctrine

[Link to Attachments](#)

September 7, 2023

Wyoming Game and Fish Department
5400 Bishop Blvd.
Cheyenne, Wy 82006



Re: Draft Wyoming Elk Feedgrounds Management Plan

Submitted To: wgf-elkfeedgroundinfo@wyo.gov

Elk Feedgrounds Steering Team:

These comments on the Draft Plan are submitted on behalf of Yellowstone to Uintas Connection. We are a 501c3 organization (NGO) dedicated to protecting and restoring wildlife habitats and migration corridors in and connecting to the Greater Yellowstone Ecosystem. We are headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming. We also participated as Kiesha's Preserve, which is also an NGO representing our wildlife preserve and land ownership interests in the GYE.

We have been engaged in the stakeholder process and meetings. We previously submitted comments and engaged in email communication with members of WGFD regarding our concerns. We are part of the NGO stakeholder group. We are hereby incorporating by reference the detailed comments provided by [Mr. Lloyd Dorsey](#) and the [Gallatin Wildlife Association](#). There is no need for us to repeat their excellent analyses.

In our prior [comments](#), which were jointly submitted by several NGOs, we provided an analysis of the management situation, including the science relating to elk populations, their history and distribution, land ownership factors, management in other states that either do not feed or have phased out feeding, and diseases. We provided recommendations, including:

1. Phase out feedgrounds over five years.
2. Protect carnivores and scavengers for their role in helping to maintain healthy big game herds.
3. The Plan should call for protection of migration corridors and restoration of migratory behavior where feedgrounds have disrupted those.
4. Identify and commit to strategies that maintain or improve the quality and productivity of elk winter ranges.
5. Reserve forage on public lands for wildlife, de-emphasize vegetation treatments and adjust livestock grazing and intensity on public lands so adequate forage is available to support elk herd objectives.

We summarized elements of a phase out plan to include:

1. Evaluate summer and winter forage on elk parturition and winter range for the period of occupancy to determine the population size that can be supported.
2. Evaluate integrity and habitat capability of migration corridors to allow movement and provide adequate forage during migrations.
3. Adjust elk objectives to maintain elk herds within the capacity of natural habitats that can sustain them on a long-term basis.
4. Identify funding sources for regulation fencing around winter livestock feeding areas and haystacks.
5. Adjust livestock grazing (stocking rates, timing and duration of grazing, pasture rest and rotation plans) in parturition and wintering areas on public land to ensure sufficient forage is present to support elk herds at objective numbers.
6. Identify funding for voluntary retirement of public lands grazing permits in important habitat areas for elk, mule deer, and moose.
7. Controlled hunting is used to reduce elk numbers to meet herd objectives that are aligned with available habitat and forage.
8. Commitment to reduce elk feeding seasons to zero over five years.
9. Identify strategies to encourage elk to resume natural migratory patterns.

During this stakeholder process, WGFD has emphasized the need for a “publicly supported” plan. Unfortunately, we are concerned that the process has not been designed to address this purpose. Two groups, the guide-outfitters, and ranchers, are the dominant entities this plan appears to be designed to appease to the exclusion of science, facts, and true wildlife interests. At the August 30, 2023 meeting in Pinedale a guide outfitter threatened a “firestorm” if there was any consideration of a phase-out. WGFD depends on revenues from hunting licenses. Apparently, the outfitters are interested in continuing the largesse of huge guide fees for killing elk at a rate double that of areas where there are no feedgrounds. The feedgrounds have created a semi-domestic elk situation where these elevated and artificial hunting success rates are made possible.

Likewise, the livestock industry is in control of this situation where they are paid for depredation or damage to hay crops by elk, yet they cut and harvest the hay and graze the valleys to the bone after their cattle come off the National Forest. So, where are elk and other animals to find forage except these stored crops and livestock feeding areas? Mr. Dorsey, in his comments, used an example of this control from the stakeholder meeting in Jackson. “It was never more apparent how intimidated the Department is by the livestock industry as during the July 23 public meeting when 2 cattle ranchers (including one who said he no longer owns cows) took over the meeting, time and again browbeating the Department for their ‘stupid’ plan. They claimed that elk can’t or won’t migrate, ‘don’t go to the mountains anymore’, and are only

‘in the river bottom.’ One rancher said this plan would destroy cattle ranching. The Department Regional Supervisors apologized repeatedly to the ranchers and said they didn’t intend the plan to harm livestock interests and told them, ‘we’ll fix it.’”

It is clear where this process is headed. The State Livestock Board has the final say on any plan and several members of the State Wildlife Commission are ranchers, so clearly WGFD is placed in a position to placate the livestock industry as well as the guide-outfitters. WGFD should be free to use science to address this issue in a valid phase-out and setting of population objectives within the carrying capacity of the habitat but are prevented from doing so by these powerful interests. Perhaps the State Wildlife Commission and Livestock Board will relent and allow WGFD to pursue a valid process as we have outlined above in our Recommendations.

The plan did not conduct the analysis we requested, an analysis that would have provided the necessary facts to design an effective solution for naturally and free ranging elk herds as well as other big game animals, or for that matter, protecting predators and scavengers. We believe the collection of data and evaluation of habitat quality would provide the basis for determining the current and potential carrying capacity for elk, mule deer and moose. The public was given no set of options, no phase-out plan. The process was a top-down driven exercise in deflecting hard decisions for years or decades as diseases will likely accelerate. Without this analysis and a phase-out plan, our organization cannot support the current Draft Plan.

The 2004 WEST report¹ provided some guidance in addressing the capacity issue without reducing elk numbers, increasing damage to private property, or increasing brucellosis risk to livestock. Their analysis considered:

1. The average number of elk at each feedground,
2. the duration of feeding,
3. the amount of potential native range on public land within 5 miles,
4. potential damage to private property without the feedground, and
5. the potential of brucellosis transmission.

Our view is that determining the current carrying capacity for elk range is critical in setting elk population objectives and developing information that informs the process so that it is data based, rather than political.

¹ WEST. 2004. Summary of Elk Feedgrounds Operated by the Wyoming Game and Fish Department. Prepared for: Northern Rockies Natural Resource Center and National Wildlife Federation. Prepared by: Western EcoSystems Technology, Inc. Cheyenne, WY.

Our Current Forage Assessment Example

Over the past two years, we have been assessing the amount of forage and the levels of livestock use on the Bridger-Teton NF allotments in the Upper Green River area. These studies are in the Elk Ridge, Fisherman Creek, and Upper Green allotments.² They can be downloaded at the link provided to learn the details and methodology.

Figure 1 illustrates these allotments and their proximity to the elk feedgrounds. Note the five-mile buffer as described in the WEST report. Figure 2 shows the elk feedgrounds, elk parturition areas, allotments, and allotment status (active, vacant, or closed) on the Bridger Teton NF.

In our study, we clipped and weighed grazed and ungrazed paired plots which gave us an accurate estimate of use by livestock as well as the current production of forage. The purpose of the study was to obtain accurate determinations of utilization to compare with the data collected by the Forest Service, Sublette County Conservation District, and Permittees (SCCD).

Assessment of Current Production: The Elk Ridge Allotments were vacated from livestock grazing in 2016 and have not been grazed by livestock since. We were interested in determining how current production of herbaceous vegetation (forage) would compare with site potential. We found these sites were producing less than 25% of potential after five years' rest. The dominant bunchgrass which should be present was absent. According to the NRCS Ecological Site Descriptions, it should comprise a significant portion of forage production. In the actively grazed Upper Green allotment our ungrazed plots were producing less than 40% of potential. Bluebunch wheatgrass was also absent there.

Assessment of Utilization: Our measurement of paired plots in the Upper Green and Fisherman Creek allotments found 73.1% upland utilization and 75.5% riparian utilization. This is much greater than the 50% utilization standard provided in the 2019 Upper Green Record of Decision³ or the 25% recommended⁴ by range science. See our report for references and details.

² Carter, J. and Ratner, J. 2023. Surveys of Upper Green, Fisherman Creek, and Elk Ridge Allotment Complexes. Western Watersheds Project and Yellowstone to Uintas Connection.

<https://app.box.com/s/3duxx7o4fml2aqnmqkwpg00ayy6hkxpd>

³ Bridger Teton National Forest. 2019. Record of Decision Upper Green River Area Rangeland Project. Pinedale Ranger District. <https://www.fs.usda.gov/project/?project=3049>

⁴ Carter, J. 2013. Utilization, Rest and Grazing Systems – A Review. Yellowstone to Uintas Connection. <https://app.box.com/s/ngw6723dx52quxw2rd8u>

The SCCD, Forest Service and Permittee (SCCD) joint monitoring of the Upper Green allotment in 2020 found an average of 9% utilization using stubble height of Idaho fescue, an increaser, as a key species. We calculated that forage production would need to be greater than 5,000 lb/acre to result in this low level of utilization. This is over three times the current level of production claimed by the BTNF in the Upper Green FEIS. The SCCD green line results in 2020 were 11.7" average height for ungrazed sedges and 9.4" for grazed sedges. This is approximately 8% utilization for the riparian areas. SCCD data was collected in dense willow stands where the sedges are protected from grazing.

Study Summary: According to our understanding of range science and plant physiology, the lowered production in these allotments is due to lack of rest, turning in livestock a month earlier than actual range ready time of mid- to late July, underestimating the forage consumption by cattle, over allocating forage to livestock, failing to collect forage production data, and failure to adjust stocking rates. Incorporating range science, representative, and accurate monitoring into management would result in a major reduction in season and numbers. We estimated that would be 31% of the current stocking rate. We proposed a data validation study to compare methods, key areas, and determine forage production and are awaiting a response from the BTNF, SCCD and Permittees.

The Draft Plan (p12) states, "The Commission recognizes the importance of supplying supplemental feed to elk at existing State feedgrounds and the NER and recognizes that without such feeding, the elk populations would have to be decreased to levels that could be supported by the limited native range forage." But, nowhere in the Draft Plan or in our stakeholder meetings has anyone addressed the elephant (or cow) in the room. That is that livestock, particularly cattle, are severely depleting the available forage base that could support wildlife.

Throughout, the plan emphasizes reducing damage to private property, i.e. elk foraging on private property or haystacks. While haystacks can be protected by fencing, the remaining area is depleted of forage by the harvest of hay and then by livestock coming off the Forest or BLM and eating what is left before it snows. There is little to nothing left for wildlife other than stored hay crops. One has to ask, when are the ranchers going to step up and provide forage?

There is another comparison one can make. Take the Upper Green allotments in which over 8,000 cow/calf pairs of cattle are grazed from June to October. Current forage consumption for today's cow and calf is approximately 50 pounds of air-dry forage per day.⁵ This is based on a 1,200 pound cow and 400 pound calf consuming 3% of body weight per day. An average elk runs about 400 lbs. This approximation is based on the Rocky Mountain Elk Foundation weight

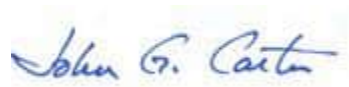
⁵ Carter, J. 2016. Updating the Animal Unit Month. Yellowstone to Uintas Connection.
<https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk>

for cow elk of 500 pounds⁶, assuming the calves would bring the average down. If they consume the same 3% of body weight, this means that each cow/calf pair of cattle are consuming forage equivalent to about 4 elk. Extrapolating, this means the 8,000 cow/calf pairs of cattle grazing in the Upper Green allotments are equivalent to or displacing four times that, or 32,000 elk.

Regardless of the math, these figures point out an extraordinary fact. That there should be sufficient forage to support wildlife if livestock weren't consuming nearly all of it and it illustrates that the Forest Service, in particular, could easily support the numbers of elk that are being fed at feedgrounds if livestock use were controlled, rest was incorporated to restore production and stocking rates reduced.

These are the sad facts of our situation. Since the WGFD works with the Forest Service, BLM and Private landowners, there should be a study implemented to actually measure the amount of forage available for wildlife in the migration corridors, crucial ranges, parturition ranges and then set a scientifically defensible elk objective. If hunters want a higher number, then they need to come up with a funding plan to incentivize private landowners to provide what is needed.

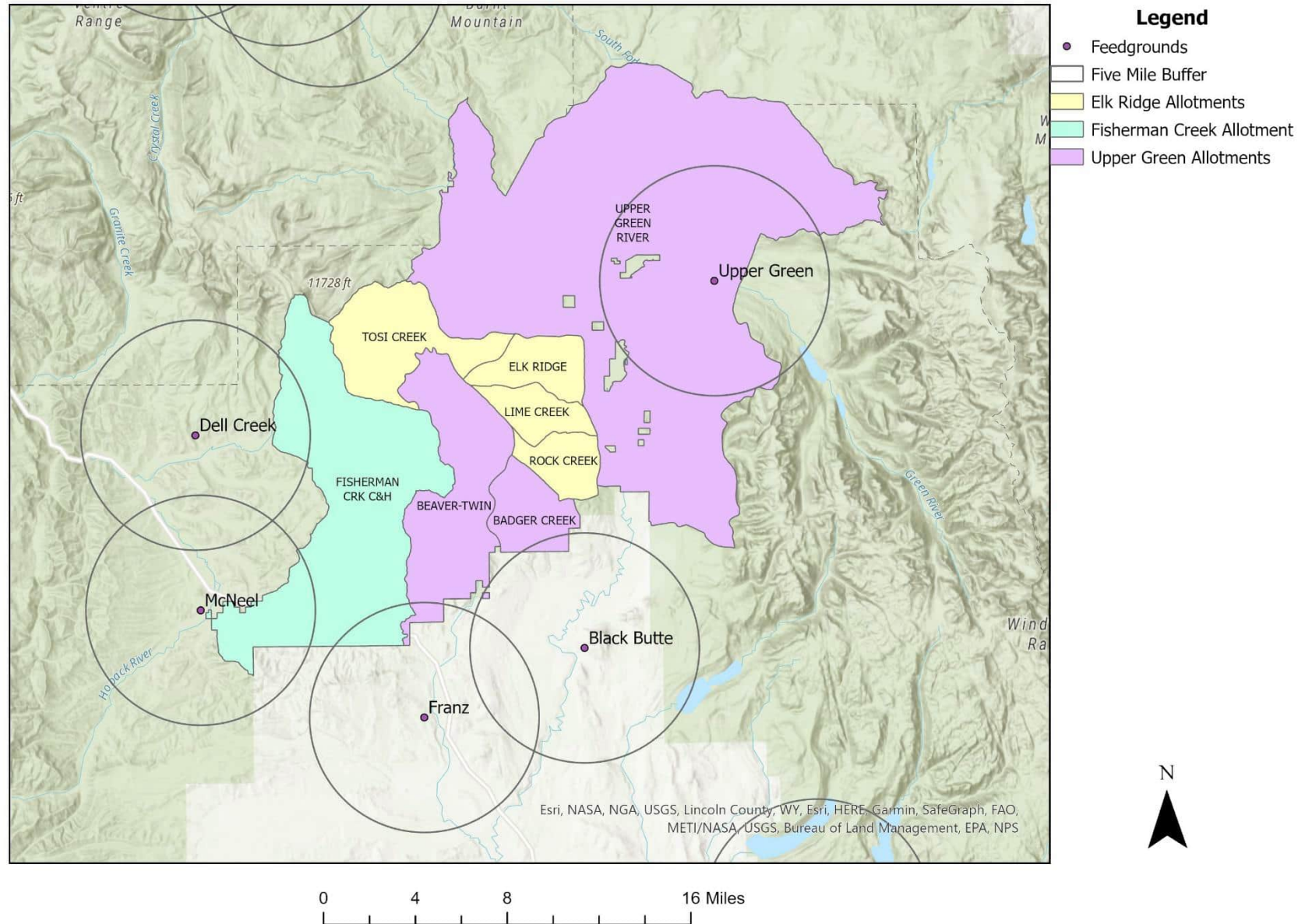
Sincerely,

A handwritten signature in blue ink that reads "John G. Carter". The signature is fluid and cursive, with the first name "John" being the most prominent.

John Carter
Yellowstone to Uintas Connection
Kiesha's Preserve
PO Box 464
Bondurant, Wy 82922

⁶ <https://www.rmef.org/elk-facts/>

Figure 1. Elk Feedgrounds with Five Mile Buffers, and Allotments



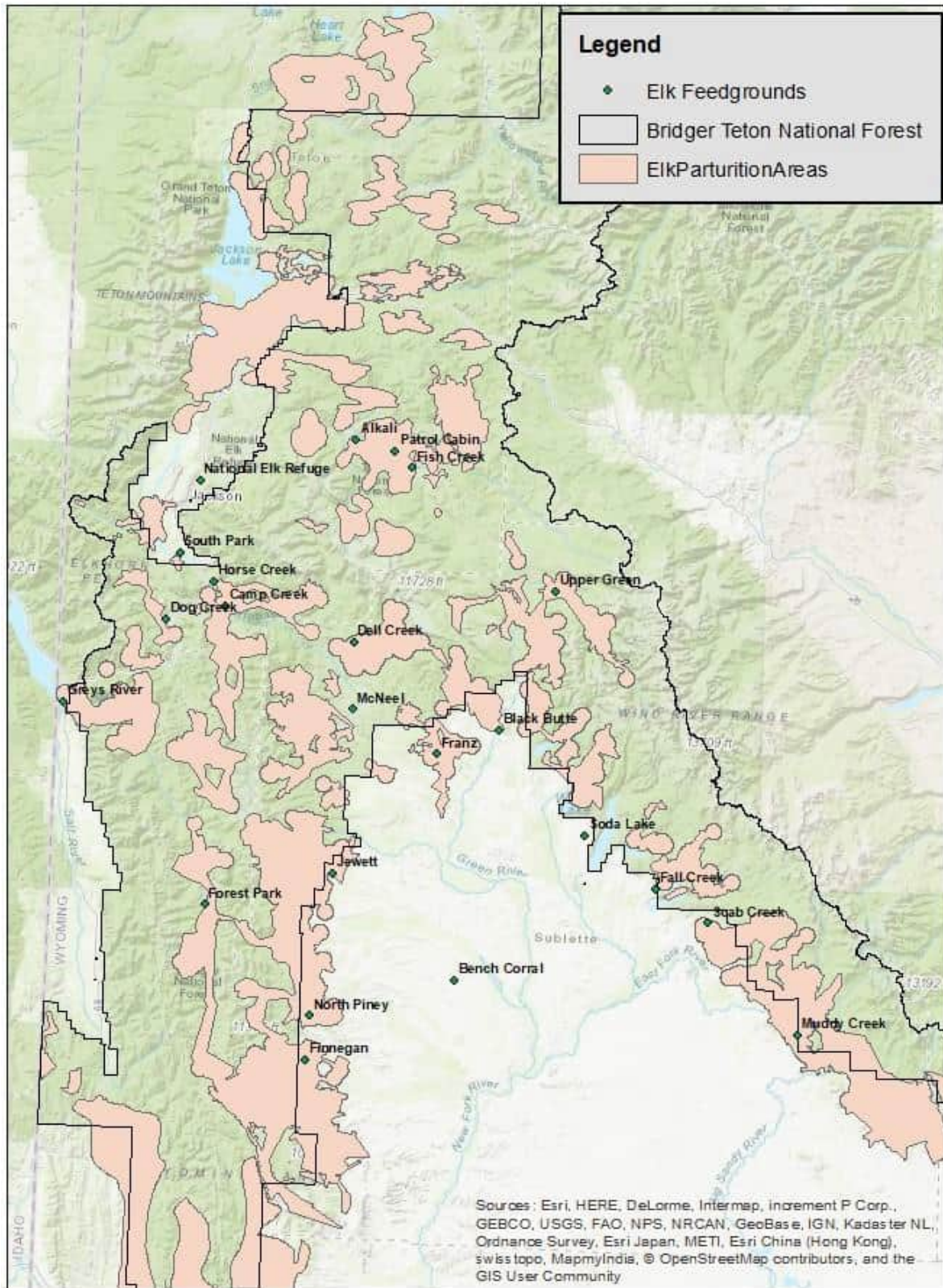


Figure 2. Location of Elk Feedgrounds and Parturition Areas

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Survival of Adult Female Elk in Yellowstone Following Wolf Restoration

Article in *Journal of Wildlife Management* · January 2010

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Shaney Evans*

L. David Mech[†]

P. J. White[‡]

Glen A. Sergeant**

*Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota, St. Paul, MN

[†]Biological Resources Division, United States Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, ND 58401, USA

[‡]National Park Service, Yellowstone National Park, Mammoth, WY 82190, USA

**Biological Resources Division, United States Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, ND 58401, USA

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Survival of Adult Female Elk in Yellowstone Following Wolf Restoration

SHANEY B. EVANS, Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota, St. Paul, MN 55108, USA

L. DAVID MECH,^{1,2} Biological Resources Division, United States Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, ND 58401, USA

P. J. WHITE, National Park Service, Yellowstone National Park, Mammoth, WY 82190, USA

GLEN A. SARGEANT, Biological Resources Division, United States Geological Survey, Northern Prairie Wildlife Research Center, Jamestown, ND 58401, USA

Abstract

Counts of northern Yellowstone elk (*Cervus elaphus*) in northwestern Wyoming and adjacent Montana, USA, have decreased at an average rate of 6–8% per year since wolves (*Canis lupus*) were reintroduced in 1995. Population growth rates of elk are typically sensitive to variations in adult female survival; populations that are stable or increasing exhibit high adult female survival. We used survival records for 85 radiocollared adult female elk 1–19 years old to estimate annual survival from March 2000 to February 2004. Weighted average annual survival rates were approximately 0.83 (95% CI = 0.77–0.89) for females 1–15 years old and 0.80 (95% CI = 0.73–0.86) for all females. Our estimates were much lower than the rate of 0.99 observed during 1969–1975 when fewer elk were harvested by hunters, wolves were not present, and other predators were less numerous. Of 33 documented deaths included in our analysis, we attributed 11 to hunter harvest, 14 to predation (10 wolf, 2 unknown, 1 cougar [*Puma concolor*], and 1 bear [*Ursus sp.*]), 6 to unknown causes, and 2 to winter-kill. Most deaths occurred from December through March. Estimates of cause-specific annual mortality rates were 0.09 (0.05–0.14) for all predators, 0.08 (0.04–0.13) for hunting, and 0.07 (0.03–0.11) for wolves specifically. Wolf-killed elk were typically older (median = 12 yr) than hunter-killed elk (median = 9 yr, $P = 0.03$). However, elk that winter outside the park where they were exposed to hunting were also younger (median = 7 yr) than elk that we did not observe outside the park (median = 9 yr, $P < 0.01$). Consequently, differences in ages of elk killed by wolves and hunters may reflect characteristics of elk exposed to various causes of mortality, as well as differences in susceptibility. Unless survival rates of adult females increase, elk numbers are likely to continue declining. Hunter harvest is the only cause of mortality that is amenable to management at the present time. (JOURNAL OF WILDLIFE MANAGEMENT 70(5):1372–1378; 2006)

Key words

Canis lupus, *Cervus elaphus*, elk, hunting, mortality, predator–prey, radiotelemetry, survival, wolves, Yellowstone.

Of population processes affecting large mammals, mortality rates of prime-aged animals have by far the dominant impact on population growth (Eberhardt 2002). Prior to the restoration of wolves into Yellowstone National Park, USA, during 1995, survival of adult female Yellowstone elk was typically high (>0.90) and relatively constant (Houston 1982, Taper and Gogan 2002, Garrott et al. 2003). The primary causes of mortality for adult female elk were hunter harvests of elk that migrated out of the park and winter-kill. Survival of older females decreased as snow-pack severity increased, but severity did not directly affect survival of prime-aged females, except during the most extreme winters (Singer et al. 1989, Coughenour and Singer 1996, Garrott et al. 2003). However, increasing snow pack indirectly influenced the survival of prime-aged females by increasing the number of elk wintering at relatively lower elevations outside the park and, in turn, the number of elk harvested (Nat'l. Res. Council 2002, White et al. 2003). For example, the number of northern Yellowstone elk harvested during the Gardiner Late Elk Hunt in Montana, USA, had a positive correlation with winter severity and hunter success

approximated 95% during years with high snow water equivalent.

Trend counts indicate that the abundance of northern Yellowstone elk has decreased at an average rate of approximately 6–8% per year since 1994, from approximately 17,000 elk counted during winter 1995, when wolves were first reintroduced, to 8,335 elk counted in winter 2004 (Fig. 1). Predation by wolves and human harvests were the dominant causes of mortality for adult female elk during this period (White et al. 2003, Wright et al. 2005). The extent to which wolf predation was an additive component of elk mortality or simply compensated for winter starvation, hunting, and mortality by other predators was unknown.

One analysis of the northern Yellowstone herd concluded that wolf predation was primarily compensatory (Vucetich et al. 2005), whereas others concluded that it was additive (White and Garrott 2005, Varley and Boyce 2006). Although assessments have been made of the effect of wolf predation on other Yellowstone elk herds, the results have been inconsistent (Garrott et al. 2005) in keeping with long-standing cautions that the effects of predators on prey are highly variable over time, space, and species (Mech 1970:268). The consequences of additive mortality for adult females would be to decrease the growth rate of the population, resulting either in less pronounced growth or a decrease in abundance.

¹ E-mail: mechx002@umn.edu

² Mailing address: The Raptor Center, University of Minnesota, St. Paul, MN 55108, USA

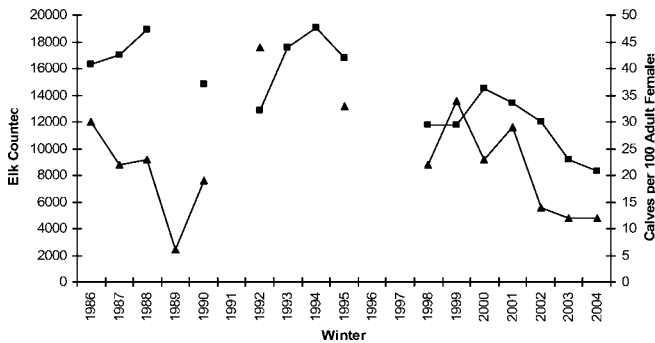


Figure 1. Annual winter counts (squares) and calves per 100 adult females (triangles) of northern Yellowstone elk in Yellowstone National Park and adjacent areas of Montana, USA, 1986–2004 (Northern Yellowstone Cooperative Wildlife Working Group 2003). We did not adjust counts for uncertain detection.

Our study objectives were to 1) estimate survival rates of northern Yellowstone adult female elk, 2) compare survival and causes of death to estimates obtained prior to wolf restoration, and 3) assess the likely effects of observed survival rates and limiting factors on population trends.

Study Area

The high mountains and plateaus of Yellowstone provided summer range for an estimated 20,000–25,000 elk from 7 to 8 herds (i.e., northern Yellowstone, Madison–Firehole, Clarks Fork, Cody [i.e., North Fork Shoshone, Carter Mountain], Jackson, Sand Creek/Bechler, and Gallatin River). Elk from different herds intermingled during summer, but migrated to separate winter ranges located primarily outside the park owing to snowfalls that accumulated more than 3 m in depth on interior plateaus. Only the Madison–Firehole and northern herds wintered primarily within the park.

Northern Yellowstone elk constituted the largest elk population in Yellowstone National Park, with maximum counts of >19,000 during the mid-1990s. These elk wintered on approximately 1,500 km² of foothills and valley

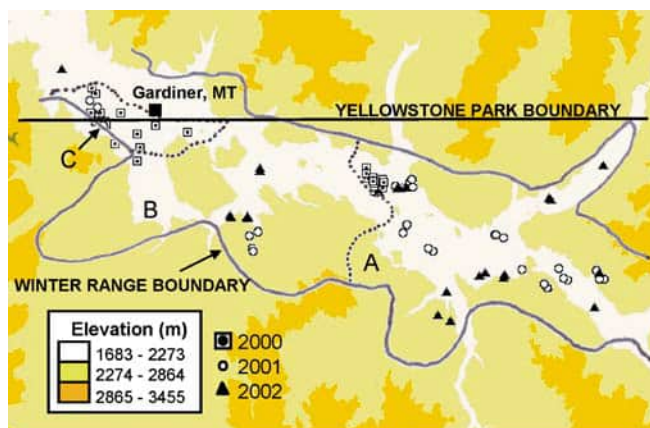


Figure 2. Locations of cow elk captured during 2000–2002 in the northern winter range of Yellowstone National Park, USA, illustrating park boundary. (A) Upper winter range, (B) lower winter range, and (C) boundary area by Gardiner, Montana, USA (Houston 1982). We excluded locations of 16 elk captured in 2000 because we did not record their precise capture locations (Cook et al. 2004).

bottoms along the Gardiner, Lamar, and Yellowstone rivers in the northern portion of the park and adjacent areas of Montana (Lemke et al. 1998; Fig. 2). Relatively few elk remained on the northern range throughout the year. The majority of northern Yellowstone elk migrated to summer ranges along the east-central boundary of the park, north of the park onto the Buffalo Plateau, and as far south as Lewis Lake (approx. 50 km; S. B. Evans, University of Minnesota, unpublished data).

Elevations within the northern wintering area ranged from 1,500 m in river drainages to 3,400 m on mountaintops. The lower-elevation vegetation was primarily open grassland–sagebrush steppe (37%) with interspersed upland grasslands, wet meadows, and non-vegetated areas (19%; Houston 1982, Despain 1990). Dominant plant species included Idaho fescue (*Festuca idahoensis*), blue-bunch wheatgrass (*Pseudoroegneria spicata*), and big sagebrush (*Artemisia tridentata*). However, coniferous forests of Douglas-fir (*Pseudotsuga menziesii*), Engelmann spruce (*Picea engelmannii*), lodgepole pine (*Pinus contorta*), sub-alpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulis*) were interspersed (44%) and occurred at higher elevations (Houston 1982, Despain 1990). Coniferous forests were more prevalent throughout the summer range. Large-scale fires during 1988 burned approximately 40% of these ranges, creating a complex mosaic of burned and unburned forests at different stages of succession (Singer et al. 1989, Despain 1990).

Short, cool summers and long, cold winters with a mean annual temperature of 1.8°C on the northern range characterized the climate of Yellowstone National Park (Houston 1982). Mean annual precipitation varied from approximately 25 cm in the Gardiner basin to 35 cm in the upper Lamar River valley (Coughenour and Singer 1996). During this study, the winters of 2000–2003 were relatively mild, as indexed by estimating daily snow water equivalent (SWE) from the Tower Falls Climate Impact Meteorological station (located in the mid-elevation zone [1,909 m] of the winter range) and summing daily estimates from 1 October through 31 April (SWE_{ACC}). The SWE_{ACC} for winter 2000 was 1,109 cm, which was close to the historic average of 1,009 cm during 1949–2004 (Farnes et al. 1999; unpublished data). However, SWE_{ACC} for winters during 2001–2003 were well below the historic average at 467, 656, and 541 cm, respectively. The northern range experienced a drought during the study, and April–July precipitation during 2000–2003 (13.8–17.2 cm) was below the historic average of 17.6 cm during 1949–2004 (Farnes et al. 1999; unpublished data).

The northern range supported an intact, diverse predator–prey complex, with 8 ungulate species and 6 large predators. Midwinter aerial counts of northern Yellowstone elk decreased from approximately 14,500 elk to 9,200 elk during 2000–2003. Ungulates that were sympatric with northern Yellowstone elk included approximately 175–225 bighorn sheep (*Ovis canadensis*), 700–1,000 bison (*Bison bison*), <200 moose (*Alces alces*), 100 mountain goats

(*Oreamnos americanus*), 2,000–2,500 mule deer (*Odocoileus hemionus*), 225–250 pronghorn (*Antilocapra americana*), and a few white-tailed deer (*Odocoileus virginianus*). The number of wolves residing on the northern range (not including the Sheep Mountain pack outside the park) during early winter 1999–2003 increased from approximately 35 to 98 animals (Smith et al. 2004b). Coyotes (*Canis latrans*; about 225 animals) were common on the northern range (Crabtree and Sheldon 1999), while grizzly bears (*Ursus arctos*; about 60–70 animals) and black bears (*Ursus americanus*; unknown abundance) were seasonally abundant during autumn and spring (Haroldson and Frey 2003). Cougars (about 20 adult animals) occurred mostly in the rocky canyons of the Yellowstone River and adjacent drainages and slopes along the Blacktail Deer Plateau and Hellroaring area (Murphy 1998; T. K. Ruth and P. C. Buotte, Wildlife Conservation Society, unpublished data).

Part of the northern Yellowstone elk population migrated outside the park during winter, the extent of which depended on winter severity (Houston 1982). It was legal to harvest these elk during 4 hunts managed by the Montana Department of Fish, Wildlife, and Parks. An archery season, early season backcountry rifle hunt, and general autumn rifle hunt occurred during September through November and focused primarily on bulls. Hunters harvested few adult females during these hunts, which occurred prior to the winter migration of northern Yellowstone elk. In contrast, a limited-access (i.e., permit drawing) late rifle hunt in January–February was highly biased towards harvesting females, with an average of 1,226 antlerless elk (range = 648–2,221) legally harvested each year during 1996–2003 (Lemke 2003).

Methods

We captured adult female elk across the portion of the northern range within Yellowstone National Park using net guns from helicopters (Hawkins and Powers Aviation, Greybull, Wyoming) on 15–16 March 2000, 6–8 February 2001, and 4–5 February 2002. We hobbled, blindfolded, and fit captured elk with either a very high frequency (VHF) or releasable Global Positioning System (GPS) radiocollar equipped with a motion-sensitive mortality sensor that changed pulse rate when the animal was motionless for >4 hours. We estimated ages of captured elk using cementum analyses of extracted incisors (2000) or upper canines (2001, 2002; Matson's Laboratory, Milltown, Montana) and used 1-tailed Mann–Whitney tests to compare median ages. We collected blood from elk at time of capture and used pregnancy-specific protein B assays to assess pregnancy status (Wyoming State Veterinary Laboratory, Laramie). We estimated nutritional condition (percent body fat) at capture using ultrasonography and body condition scoring, examining fat, mass, and the thickness of the loin muscle (Cook et al. 2004).

We used a combination of ground-based and aerial radiotelemetry to monitor the survival of radiomarked elk. When we detected a mortality signal, we located the animal and performed a field necropsy to determine cause of death

based on condition of the carcass, presence of wounds and subcutaneous hemorrhaging, blood trails, signs of struggle, and evidence of predators such as tracks, scat, predator-specific wounds, canine spacing, distinctive consumption patterns, bed sites, or guard hairs.

We used an estimator based on 5 monitoring intervals (Jan–Feb, Mar–Apr, May–Jun, Jul–Sep, and Oct–Dec) per year (1 Jun–31 May) to estimate annual survival rates because 1) these intervals corresponded with biologically meaningful periods for elk, 2) we could not assign fates to shorter intervals with certainty, 3) we expected probabilities of survival to vary, not only among animals and intervals, but also over time within the intervals we chose, and 4) longer intervals would have necessitated more extensive censoring of our data.

Elk marked prior to an interval and elk marked partway through an interval experienced unequal exposure to risks, and adjustments for unequal exposure would have required an assumption (constant daily survival) that was not justified. Conversely, capture and handling may have caused temporary increases in mortality risks. We eliminated these potential biases by excluding newly marked elk from our risk set until the beginning of the interval succeeding capture and by truncating records for elk with GPS collars at the ends of intervals prior to scheduled collar-recovery dates. Because survival rates tend to be relatively high and consistent for adult female elk ≤ 15 years of age (White et al. 2003) and our sample included a modest number of very old animals, we computed weighted-average survival rates (years weighted equally) for all elk and for elk ≤ 15 years of age for the duration of our study. We right-censored survival records for missing elk at the end of the last interval survived to compute maximum survival estimates. We treated missing elk as deaths occurring on the last date observed to compute minimum survival estimates.

When computing survival estimates, we let i and j index intervals (Jan–Feb, Mar–Apr, ..., Oct–Dec) and years (2000, 2001, ..., 2004), respectively. We tallied numbers of elk at risk (n_{ij}) and numbers of elk that died (d_{ij}) for each combination of interval and year. We then estimated interval survival as $\hat{s}_{ij} = 1 - (d_{ij}/n_{ij})$ and the weighted average of interval survival rates as $\hat{s}_i = \sum_j w_j \cdot \hat{s}_{ij}$. We specified weights to afford equal influence to each interval estimate contributing to the weighted average. Average annual survival was the product of weighted-average interval estimates. We estimated confidence intervals from percentiles of 1,000 bootstrap replicates with individual elk as resampling units. We used the R software environment (R Development Core Team 2005) for statistical analyses.

Results

We captured and radiomarked 93 individual adult female elk, including 45 during March 2000, 28 during February 2001, and 20 (+ 4 recaptures) during February 2002. We excluded 8 elk from our analysis because they did not survive to the start of the interval following capture. Two of these 8 elk died as a direct result of capture; proximate causes of death for the remainder included wolves (4) and cougars (2). Ages of elk when captured ranged from 1 to 18 years (median = 8).

Table 1. Interval survival rates and causes of death for adult female elk radiocollared in Yellowstone National Park, USA, Mar 2000–Feb 2004.

Elk-intervals			Mortalities caused by predators				Other documented mortalities				Interval survival	
			Wolf	Cougar	Bear	Unknown	Hunting	Winter-kill	Unknown	Missing	rate	SE
Interval	Years	of exposure										
Fates of all marked elk												
Jan–Feb	4	148	3	0	0	1	11	1	0	2	0.89	0.026
Mar–Apr	3	150	1	1	0	0	0	1	1	1	0.97	0.015
May–Jun	4	186	2	0	1	0	0	0	2	0	0.97	0.013
Jul–Sep	4	181	1	0	0	1	0	0	0	0	0.99	0.007
Oct–Dec	4	159	3	0	0	0	0	0	3	1	0.96	0.016
Fates of only elk <16 yr old												
Jan–Feb	4	133	1	0	0	0	11	0	0	2	0.91	0.024
Mar–Apr	3	138	1	1	0	0	0	1	1	1	0.97	0.016
May–Jun	4	175	1	0	0	0	0	0	2	0	0.98	0.012
Jul–Sep	4	161	1	0	0	1	0	0	0	0	0.99	0.012
Oct–Dec	4	142	3	0	0	0	0	0	1	1	0.98	0.015

Of 85 elk tested, 69 were pregnant (81%, SE = 4.3%). The 16 elk that were not pregnant included 2 of 3 yearlings and 8 of 15 that were ≥ 15 years of age (Cook et al. 2004).

At least 33 of 85 elk included in our analysis died during our study, most (81%) between December and March (Table 1). We attributed 14 deaths to predation (10 wolf, 2 unknown, 1 cougar, and 1 bear), 11 to hunter harvest, 6 to unknown causes, and 2 to winter-kill. We were unable to determine the fates of 4 elk. All of the deaths attributed to predators and 3 attributed to unknown causes occurred inside Yellowstone National Park. The 11 hunter kills and 1 death attributed to unknown causes occurred outside the park.

Weighted average annual survival rates ranged from 0.81 (missing animals counted as deaths; 95% CI = 0.74–0.87) to 0.83 (missing animals censored; 95% CI = 0.77–0.89) for females 1–15 years old and from 0.77 (95% CI = 0.70–0.83) to 0.80 (95% CI = 0.73–0.86) for all females. Interval survival rates (Table 1) were lower during January and February than during other months. Cause-specific rates of annual mortality (deaths per individual) for adult female elk, based on documented causes of death, were 0.09 (0.05–0.14) for predators (including wolves), 0.08 (0.04–0.13) for hunting, and 0.07 (0.03–0.11) for wolves; however, these estimates are conservative and should be interpreted cautiously because fates of study animals and causes of death were not always known.

Elk killed by hunters were younger (median age = 9 yr, range = 4–11) than elk killed by wolves (median age = 12 yr, range = 9–18; $U = 85$, $P < 0.02$). However, median ages at capture were also younger ($U = 562$, $P < 0.01$) for elk known to winter primarily outside the park (median = 7 yr, $n = 11$), where they were exposed to hunting, than for elk that we did not observe outside the park (median = 9 yr, $n = 71$).

Discussion

Annual survival of the northern Yellowstone elk we studied from 2000 to 2004 was relatively low, and the major mortality factors were human hunting and wolves. Even our highest estimate of survival for prime-aged females (0.83) was substantially lower than the estimated survival rate for 1969–1975 (0.99) when human harvest was low (i.e., <210

elk per year) and wolves were not present (Eberhardt 2002: table 3 using data from Houston [1982]). It was also lower than adult female survival rates (0.91–0.97) reported for other non-hunted elk herds where predator populations were low or nonexistent (e.g., White 1985, Eberhardt et al. 1996, Ballard et al. 2000). Mack and Singer (1993a,b) used estimates of mortality rate based on Houston's (1982) data in their POP-II model predicting the effects of wolf predation and hunter harvests on northern Yellowstone elk. They predicted that with 100 wolves and antlerless harvests reduced by 27%, elk population estimates would be 11–30% smaller than population estimates without wolves. However, our much lower survival estimate suggests that their model may overestimate population estimates for elk with harvests and wolves.

Our estimates are within the range of survival rates (0.67 to 0.90) reported for other hunted elk populations in the western United States (e.g., Freddy 1987, Leptich and Zager 1991, Unsworth et al. 1993, Cole et al. 1997, Ballard et al. 2000, Hamlin and Ross 2002). For example, estimates of annual survival for adult female elk were 0.75–0.83 in and near Glacier National Park, Montana, USA, during 1990–1996, following recolonization by wolves (Bureau 1992, Kunkel and Pletscher 1999). In that multiple-prey ecosystem, where wolves selected white-tailed deer over elk, studies attributed mortality to mountain lions (13%), hunters (5%), wolves (4%), and bears (1.5%; Boyd et al. 1994, Kunkel et al. 1999).

Our cause-specific mortality data suggested that the primary factors limiting the survival of adult female elk during 2000–2003 were human harvest and wolf predation. Prior to wolf restoration in 1995, the primary causes of mortality for adult female northern Yellowstone elk were hunter harvest and winter-kill (Singer et al. 1989, Coughenour and Singer 1996, Taper and Gogan 2002). Predation on adult elk by coyotes, cougars, and grizzly bears was minimal with no detectable limitation on elk abundance (Houston 1982, Gese and Grothe 1995, Murphy 1998, Crabtree and Sheldon 1999, Knight et al. 1999). Winter-kill was not a significant cause of mortality during our study, likely due to relatively mild snow conditions, reduced elk

densities well below estimated carrying capacity, and high densities of wolves and other predators that removed weakened animals before they succumbed to prolonged undernutrition (Mech et al. 2001). The Montana Department of Fish, Wildlife, and Parks increased antlerless elk permits during the 1990s, owing to increased migrations of elk north of the park during and following the winter of 1989 (Lemke 2003). Harvests of antlerless elk during the post-wolf restoration years of 1996–2004 (mean = 1,297; range = 717–2,465) remained similar to removals during the pre-wolf restoration years of 1987–1995 (mean = 1,148; range = 273–2,409), although antlerless permits for the late-season hunt incrementally dropped from 2,882 in 2000 to 1,400 in 2004, owing to decreasing abundance and low recruitment of elk (Lemke 2003). Thus, harvests of prime-aged females have continued to be a primary limiting factor for northern Yellowstone elk since the restoration of wolves.

In addition, the restoration of wolves to Yellowstone National Park has been quite complete, with virtually all winter range of northern Yellowstone elk now occupied by wolves (Smith et al. 2003). The wolf population on the portion of the northern range within the park increased from 31 animals released there in 1995 and 1996 to approximately 98 wolves by December 2003 (Smith et al. 2004b). Elk are the primary year-round prey for wolves in the park, representing 92% of kills during winters of 1995–2000 (Smith et al. 2004a). Wolf predation has been highly selective, with the age and sex of wolf-killed elk approximating 43% calves, 28% adult females, and 21% adult males (Mech et al. 2001, Smith et al. 2004a). Assuming that 64% of 12,000 animals were adult females (Houston 1982), the annual offtake by wolves suggested by our radiocollared sample of elk was 230–845 adult female elk/year. This may be a high estimate, given that we only radiocollared elk within the park, where the age structure of adult females tends to be older than animals that migrate to lower elevations near the park boundary or outside the park (Houston 1982, Coughenour and Singer 1996, Cook et al. 2004). Thus, our sample may have included a disproportionate number of older animals. Adult female elk killed by wolves on the northern range have been relatively old, with a mean age of approximately 16 years (Wright et al. 2005).

However, given the high survival rates of prime-aged females in the absence of hunting and major predators and at population levels well below carrying capacity, some of this offtake by wolves was likely additive to pre-wolf restoration mortality factors (White et al. 2003). Just how much of the wolf offtake on the northern herd is additive is still open to conjecture. Recent literature disagrees on the subject (cf. White and Garrott 2005, Vucetich et al. 2005, Varley and Boyce 2006).

Our annual offtake estimate of 230–845 adult female elk translates into approximately 3–10 adult female elk killed per wolf per year for the approximately 85 wolves that resided on the northern range during 2002–2003. This estimate is similar to the 4–7 adult female elk killed per wolf per year predicted by Mack and Singer (1993a:55–58) and

the maximum rate of 7 adult female elk killed per wolf per year envisioned by Boyce (1993:241), assuming that 28% of Boyce's 25 total kills per wolf per year were adult female elk. Comparing our annual kill rate estimates to reported kill rates (kg/wolf/d) of various species can check the accuracy of our estimations. The estimated number of adult female elk killed by wolves each year during our study translates to approximately 95,410 kg biomass/year, or 261 kg/day. This amounts to 3.08 ± 1.95 kg/wolf/day for the approximately 85 wolves that resided on the northern range during 2002–2003. Adult female elk biomass would constitute approximately 48% of this total based on the composition of kills. Thus, total kill rate for all age and sex classes would amount to 6.4 ± 4.1 kg/wolf/day. These figures are similar to those found in Yellowstone National Park during 1998, but less than in 1997, a year of extreme winter severity with an expected above average kill rate (Mech et al. 2001). The figures are also well within the range of those reported elsewhere for several prey species (Mech and Peterson 2003:144). The estimated food requirement for wolves is only 3.25 kg/day (Peterson and Ciucci 2003), and Smith et al. (2003) estimated that northern range wolves had an average of 3.3 kg/wolf/day of consumable biomass available to them, excluding removal by scavengers. However, a wolf can eat 10 kg at a feeding (L. D. Mech, United States Geological Survey, unpublished data) and captive wolves consumed an average of 6.3–6.9 kg/wolf/day after fasting (Kreeger et al. 1997). Our estimated kill rates, even when reduced by 10–20% for scavenger removal and remains, fall within the range of these values.

Our cause-specific mortality data suggest that the predominant mortality forces are different for elk primarily wintering within the park, where wolf densities are the highest, compared with elk wintering outside the park. These findings are similar to those of White et al. (2003) and Wright et al. (2005) based on analyses of harvest data from the Gardiner Late Elk Hunt and wolf-kill data during 1996–2002 (Mech et al. 2001, Lemke 2003, Smith et al. 2004a). Our result can be explained by the fact that radiocollared adult female elk wintering within the park experienced no hunter-induced mortality, but strong predation pressure by wolves and other predators affected the older age classes (i.e., median age = 12 yr). This older age distribution of wolf kills was similar to those in other areas (Carbyn 1983, Huggard 1993a,b, Boyd et al. 1994, Kunkel and Pletscher 1999). In contrast, wolf densities outside the park were substantially lower, reducing potential for predator mortality. However, radiocollared elk occupying the area outside the park during winter were subject to relatively intense hunting mortality, which reduced survival rates and thus reduced the numbers of old animals in the population. The result was that wolves and hunters selected elk from subsets of the population with different age structures.

During our study, mortality removed almost 20% of adult females annually from the northern Yellowstone population. Consequently, stability of the elk population would have required the annual recruitment of some 34 calves per 100

adult females, assuming an even calf sex ratio. In contrast, White et al. (2003) reported the recruitment of only 12–14 calves per 100 adult females during 2002–2004 (Fig. 1). In the future, recruitment rates are likely to remain lower than required for population stability, given current adult survival rates. Pregnancy rates of prime-aged northern Yellowstone elk are already high and unlikely to increase substantially (White et al. 2003, Cook et al. 2004). Juvenile survival is likely to remain low in the face of moderate to high predator densities (White et al. 2003, Barber et al. 2005).

Management Implications

An increase in adult female elk survival could increase the growth rate of the northern Yellowstone elk population. Reducing predation is not feasible because most predation was attributable to wolves within the park, where they are protected. However, managers could manipulate the harvest of northern Yellowstone elk, which occurs outside the park and focuses on prime-aged females. White et al. (2003) concluded that nearly all harvest of adult female elk during 1996–2003 was likely additive because hunters primarily removed prime-aged females with otherwise high survival rates. If hunting is superadditive (elk decline more than harvest rate increases) as one model found (Vucetich et al. 2005), then reducing harvest would have even greater effect. Reducing harvests could be problematic, just as reducing wolves would be. Both park provisions and the Endangered Species Act protect the wolf. Elsewhere, the same problems would plague resource managers, even when wolves are no longer on the Endangered Species List (Boitani 2003:339).

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Our study provides no solutions to these problems, but rather offers decision-makers sound biological information on which to base decisions.

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Open-File Report 2023–1015
Version 2.0, November 2023

**U.S. Department of the Interior
U.S. Geological Survey**

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Conversion Factors

U.S. customary units to International System of Units

Multiply	By	To obtain
Length		
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
yard (yd)	0.9144	meter (m)
Area		
acre	4,047	square meter (m ²)
acre	0.4047	hectare (ha)
acre	0.4047	square hectometer (hm ²)
acre	0.004047	square kilometer (km ²)
square foot (ft ²)	0.09290	square meter (m ²)
section (640 acres or 1 square mile)	259.0	square hectometer (hm ²)
square mile (mi ²)	259.0	hectare (ha)
square mile (mi ²)	2.590	square kilometer (km ²)

Abbreviations

CF	continued feeding alternative
CWD	chronic wasting disease
EF	emergency feeding alternative
EIS	environmental impact statement
FS	U.S. Department of Agriculture Forest Service
FWS	U.S. Fish and Wildlife Service
HU	herd unit
NEPA	National Environmental Policy Act
NF	no feeding alternative
MDCR	mule deer critical winter range
MOCR	moose critical winter range
PO	phaseout alternative
PM	performance metric
PrP ^{CWD}	misfolded prion protein that causes chronic wasting disease
RSF	resource selection function
SD	standard deviation
WGFC	Wyoming Game and Fish Commission
WGFD	Wyoming Game and Fish Department

Evaluating Management Alternatives for Wyoming Elk Feedgrounds in Consideration of Chronic Wasting Disease

By Jonathan D. Cook,¹ Paul C. Cross,¹ Emma M. Tomaszewski,¹ Eric K. Cole,² Evan H. Campbell Grant,¹ James M. Wilder,³ Michael C. Runge¹

1. Executive Summary

The authors used decision and modeling analyses to evaluate management alternatives for a decision on whether to permit *Cervus canadensis* (elk) feeding on two sites on Bridger-Teton National Forest, Dell Creek and Forest Park. Supplemental feeding of elk could increase the transmission of chronic wasting disease (CWD) locally and disease spread regionally, potentially impacting elk populations over time with wider implications for *Odocoileus hemionus* (mule deer) and *Odocoileus virginianus* (white-tailed deer) populations and hunting, tourism, and regional revenue. Supplemental feeding is thought to improve overwinter elk survival and reduce the commingling of elk with cattle during months when brucellosis transmission risk is highest. We worked with the U.S. Department of Agriculture Forest Service to identify their fundamental objectives and associated performance metrics related to this feedground decision. We then developed disease and habitat selection models to quantify the effect of four management alternatives on select performance metrics. The four alternatives were to continue to permit feeding, phaseout permits to feed in three years, permit feeding on an emergency basis, or stop permitting feeding. In this report, we present methods and summarized results on disease and habitat selection models and summaries of other performance metrics analyzed by BIO-WEST, Inc. and Cirrus Ecological Solutions as part of an Environmental Impact Statement.

Data from Wyoming Game and Fish Department (WGFD) supported the assumption that supplemental elk feeding allows for larger elk populations in a region. We documented that herd units (HU) without feedgrounds had 23 percent lower densities of elk per area of winter range when compared against HUs with feedgrounds, after accounting for differences in sightability of elk during counts on and off feedgrounds. Thus, throughout our analyses, we assumed feedground closures would reduce elk carrying capacity

resulting in an average decline of previously fed elk population segments by 23 percent (5th and 95th percentiles = [11 percent, 35 percent]) by year 20. Most of that decline occurred within the first few years after a feedground ceases to operate. We used a panel of CWD experts to help estimate CWD transmission in fed and unfed elk population segments. In aggregate, the expert panel estimated that median values of direct and indirect transmission of CWD are expected to be 1.9 and 4 times higher, respectively, in fed elk populations compared to unfed elk. We used these disease transmission estimates in combination with local elk demographic rates and carrying capacity estimates to project disease and population dynamics.

In year 20, we predicted CWD prevalence would increase to 42 percent (5th and 95th percentiles = [29 percent, 55 percent]), and 13 percent (5th and 95th percentiles = [4 percent, 26 percent]) on average for fed and unfed elk population segments, respectively, given a starting prevalence of 1.6 percent. The prevalence estimates for the unfed elk population segments are in the range of previous observations of CWD in elk in the western United States. The average CWD prevalence from 2016 to 2018 in the unfed elk population of Wind Cave National Park in South Dakota was 18 percent overall but up to 30 percent in some regions (Sargeant and others, 2021). Meanwhile, CWD prevalence in the Iron Mountain and Laramie Peak elk herds in Wyoming from 2016 to 2018 was 14 percent and 7 percent, respectively, despite being present since at least 2002 (Wyoming Game and Fish Department, 2020b).

From 2016 to 2020, elk that were fed at Dell Creek and Forest Park constituted on average 12–20 percent of the total elk on their respective HUs. As a result, the differences between management alternatives are modest when considering the closure of only one feedground on a HU. The no feeding alternative for Forest Park resulted in a CWD prevalence of 17 percent (SD = 7 percent) in the Afton HU compared to 20 percent (SD = 7 percent) with continued feeding by year 20. In the Upper Green River HU, no feeding on Dell Creek resulted in a CWD prevalence of 27 percent (SD = 6 percent) compared to 30 percent (SD = 5 percent) with continued feeding. In terms of disease-associated mortality, we predicted the closure of Forest Park and Dell Creek

¹U.S. Geological Survey.

²U.S. Fish and Wildlife Service.

³U.S. Department of Agriculture Forest Service.

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feedgrounds would reduce the total number of CWD mortalities by 9 percent in the Upper Green River HU and 26 percent in the Afton HU during the 20-year timespan.

Our spatial analyses predicted that management alternative effects vary by HU as a function of private property and other wildlife winter ranges proximity relative to feedground location. The predicted number of elk abortions on private land, as a proxy for brucellosis risk to cattle, may increase by 8–21 percent in the absence of feeding at Dell Creek and Forest Park.

Eight feedgrounds are located on Bridger-Teton National Forest, all of which have permits that have expired or will expire prior to 2028. In addition, WGFD could change their management of feedgrounds given new information; therefore, we also assessed the cumulative effects of continued feeding, phaseout, and no feeding management alternatives across five HUs south of Jackson, Wyoming (Afton HU, Fall Creek HU, Piney HU, Pinedale HU, and Upper Green River HU). These five HUs ranged from about 41 to 85 percent of the elk herd using feedgrounds, which corresponded to a CWD prevalence at year 20 of 23–34 percent if all feedgrounds in those five HUs remained open relative to 12 to 14 percent if all feedgrounds were closed. We predicted feedground closures may result in immediate reductions in population size relative to alternatives that continue feeding (for example, continued feeding and emergency feeding alternatives); however, over longer periods of time, CWD-associated mortality leads to larger population reductions. The no feeding alternative resulted in higher elk population sizes compared to the continued feeding alternative after about 10 years of implementation. Delayed action under a phaseout alternative resulted in increasing the CWD prevalence to 20 percent relative to 12 to 14 percent, on average, without feeding on HUs with a large population of fed elk such as the Upper Green River HU.

Summarizing our cumulative results across all five of the analyzed HUs, we predicted continued feeding will lead to fewer elk by year 20 (mean = 8,300, standard deviation [SD] = 740) compared to no feeding at U.S. Department of Agriculture Forest Service sites (10,700, SD = 890). The closure of all feedgrounds was projected to result in the largest elk populations at year 20 (12,500, SD = 980). No feeding at all sites also resulted in the largest cumulative harvest of 57,700 (SD = 2,600) compared to 51,100 (SD = 3,800) for continued feeding at all current feedground sites on the five HUs. Continued feeding also resulted in the lowest brucellosis costs to producers (\$194,600, SD = \$11,500) compared to no feeding on all feedgrounds (\$243,000, SD = \$13,700). Assuming moderate reductions in hunter interest because of increasing CWD prevalence in elk, we predicted that no feeding resulted in regional revenues generated by hunting activities of \$190 million (SD = \$10 million) compared to \$173 million (SD = \$10 million) for continued feeding over the 20-year timeframe.

Recent CWD detections in mule deer and elk in Grand Teton National Park has elevated the importance of the current decision on whether, and how, to permit elk feeding on

Dell Creek and Forest Park and the management of the other feedgrounds. Aggressive male harvest has slowed, but not stopped, the increasing prevalence of CWD in mule deer (Conner and others, 2021). It is unclear whether harvest management can be an effective tool to slow the spread of CWD in elk. There are also no effective treatments or vaccines for CWD, and it is unlikely that any will be developed that can be easily deployed in the near future. Thus, reducing artificial aggregations is one of the few management approaches suggested by the Western Association of Fish and Wildlife Agencies (Almberg and others, 2017).

Future surveillance and monitoring can be designed to resolve uncertainties that can improve future decision-making. If feedgrounds close, research could quantify elk population reductions in the absence of feeding, the redistribution of fed elk to other places, or the consequences of elk movement on private property. If feedgrounds remain open, research could assess how rapidly CWD spreads in artificial aggregations of elk; however, surveillance programs would need to be designed with sufficient power to detect initial changes of CWD prevalence. Delaying action on feedground management was projected to be costly. Results of the phaseout alternative relative to the no feeding alternative suggested a 3-year delay was enough for substantial long-term changes in CWD prevalence. The long-term persistence of infectious CWD prions in the environment suggests that feedground management decisions may have long-lasting consequences.

Our results indicated tradeoffs in the ability of a management agency to achieve all their objectives, and all management alternatives resulted in significant reductions in elk population size. This report contains the foundational elements for formal decision analysis methods, which can be implemented to help decision makers transparently evaluate the consequences of decision alternatives and identify the set of actions that best achieve agency and stakeholder priorities.

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2. Introduction

This report documents a structured decision-making process and supporting analyses developed to inform a National Environmental Policy Act (NEPA, 42 U.S.C. 4321-4347) Environmental Impact Statement (EIS). The assessment centered around a decision by the U.S. Department of Agriculture Forest Service (FS) on whether to permit the State of Wyoming to continue supplemental feeding of *Cervus canadensis* (elk) on two State-run feedgrounds, Dell Creek and Forest Park, located on Bridger-Teton National Forest (fig. 1, table 1). Although we framed the decision to evaluate the outcomes of management alternatives on these two feedgrounds, our analytical methods and approach are useful to evaluate feedground operations across western Wyoming.

Supplemental feeding of ungulates is a common practice and ranges in scale from agricultural mineral licks to State and federally operated feeding on an emergency or seasonal basis across several western States. Supplemental feeding of elk and *Bison bison* (bison) in Wyoming are some of the longest running programs, with feeding of elk beginning in the Jackson area around 1907. The National Elk Refuge, operated by the U.S. Fish and Wildlife Service (FWS), was established in 1912 and one of the first locations supplemental feeding of elk occurred (Smith, 2001). The State of Wyoming established 22 additional feedgrounds in western Wyoming from 1930 to 1980. Eight of those feedgrounds operated by the State of Wyoming are on FS property in the Bridger-Teton National Forest (table 1).

Feedgrounds in Wyoming usually operate from December to April depending on the location and severity of annual snowpack (Cross and others, 2007). Feedgrounds were created for a variety of reasons, including reducing wildlife

damage, addressing public concerns about winter mortality of elk, supporting higher populations for increased hunting opportunities, and mitigating the loss of winter range to human development. Wyoming's wildlife damage law imposes liability on the Wyoming Game and Fish Commission (WGFC) to pay for damages to agriculture producers caused by big game animals (Wyo. Stat. § 23-1-901). When feedgrounds were established, wildlife managers found it easier and less expensive to feed elk in some areas during winter rather than maintain hazing operations or mitigate private property damage caused by elk (McWhirter and others, 2021).

Supplemental feedgrounds create denser aggregations of elk than native winter ranges (Cross and others, 2015; Janousek and others, 2021); thus, facilitating higher rates of disease transmission among elk (National Academies of Sciences, Engineering and Medicine, 2017). Brucellosis is a common, zoonotic disease globally (Pappas and others, 2006). In the early 1900s, it was widespread in the U.S. cattle population (Ragan, 2002) and probably spilled over to neighboring elk and bison populations. However, because of a long-term eradication program in cattle organized by the U.S. Department of Agriculture, the incidence of brucellosis cases in cattle and humans in the United States is now low (Ragan, 2002; Rhyan and others, 2013). The Greater Yellowstone Ecosystem is the last remaining wildlife reservoir of bovine brucellosis in the United States, where it is enzootic among elk and bison with occasional spillovers to cattle (Rhyan and others, 2013).

Historically, elk were not considered maintenance hosts for brucellosis in the absence of supplemental feeding; however, recent increases in brucellosis seroprevalence in elk populations that do not overwinter on feedgrounds suggests halting supplemental feeding is unlikely to eradicate the disease (Cross, Cole, and others, 2010; Cross, Heisey, and others, 2010; Brennan and others, 2017; National Academies of Sciences, 2017). Brucellosis seroprevalence and spatial extent in elk increased in the early 2000s, coincident with changes in elk density (Cross, Cole, and others, 2010; Cross, Heisey, and others, 2010; Proffitt and others, 2015). Earlier analyses of brucellosis seroprevalence suggested feedgrounds with longer feeding seasons had higher seroprevalence (Cross and others, 2007). Results of attempts to shorten the feeding seasons were less clear (Cotterill and others, 2020), potentially highlighting that even when feeding seasons are shortened, elk continue to remain at higher local densities in winter. Although feedgrounds serve as the primary management approach to limit brucellosis transmission from elk to cattle, this may have led to a cycle of increased aggregations and brucellosis transmission in fed elk.

Recent detections of chronic wasting disease (CWD) in mule deer and elk in Grand Teton National Park have raised additional concerns about disease impacts on elk populations if supplemental feeding continues. Chronic wasting disease affects members of the Cervidae family and is caused by a misfolded prion protein (PrP^{CWD}) that can persist in the environment for many years (Williams and Young, 1980; Williams and Miller, 2002; Miller and others, 2004). The disease is always fatal, but some elk genotypes are

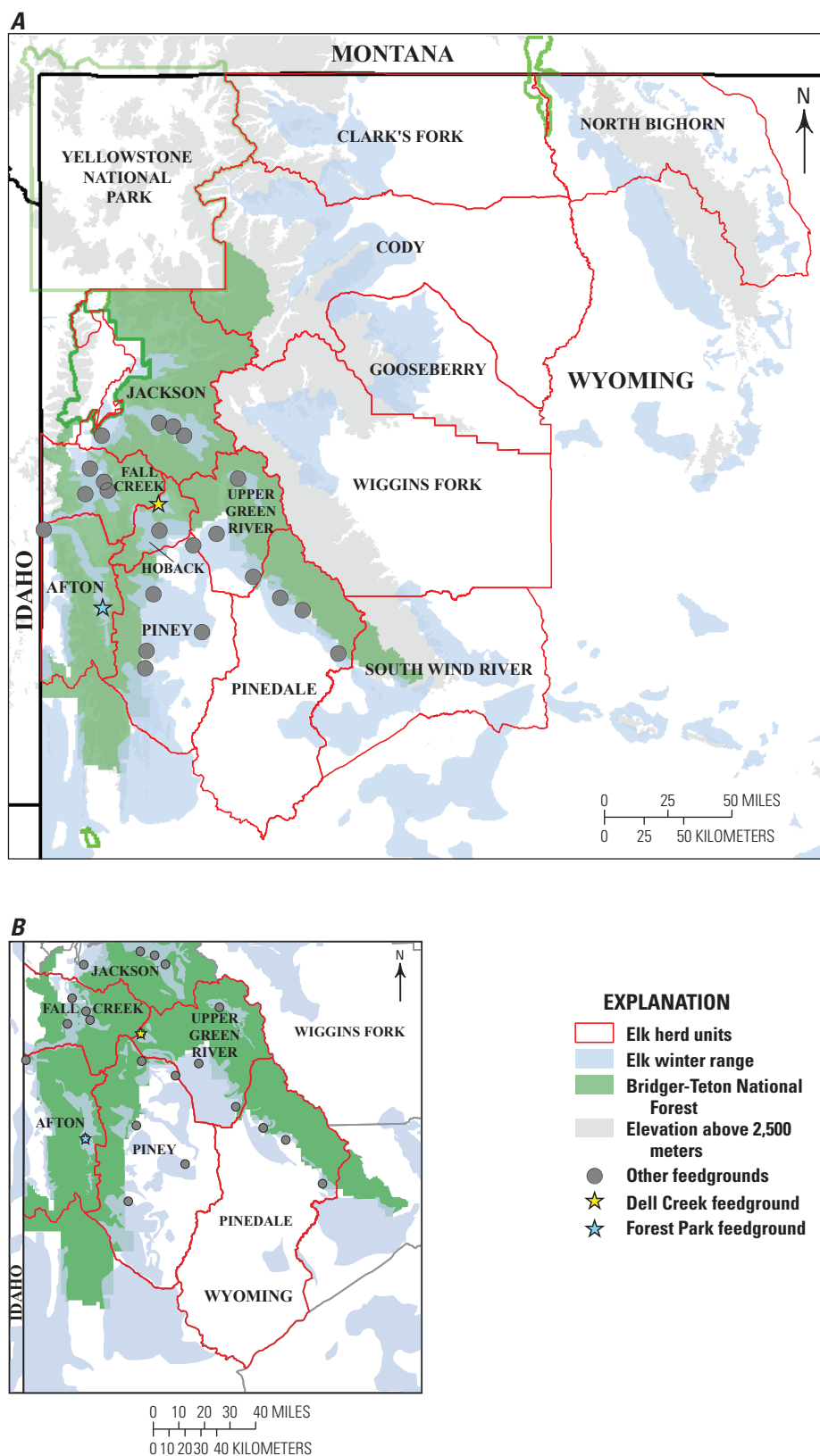


Figure 1. *A*, the supplemental elk feedgrounds in western Wyoming and associated elk herd units used to assess winter elk density in fed and unfed herd units; and *B*, the Hoback herd unit was incorporated into the Piney and Upper Green River herd units in 2020.

Table 1. Average counts of elk on Wyoming supplemental feedgrounds from 2016 through 2020, which feedgrounds are located on U.S. Department of Agriculture Forest Service (FS) property, and the year their supplemental feeding permit expires.

[SD, standard deviation; FWS, U.S. Fish and Wildlife Service; —, no data]

Feedground	Herd unit ¹	Herd unit ²	FS	Expiration	Elk	SD
Greys River	Afton	Afton	FALSE	—	552	104
Forest Park	Afton	Afton	TRUE	³ 2016	550	161
Camp Creek	Fall Creek	Fall Creek	FALSE	—	791	277
Horse Creek	Fall Creek	Fall Creek	FALSE	—	1,297	290
South Park	Fall Creek	Fall Creek	FALSE	—	910	122
Dog Creek	Fall Creek	Fall Creek	TRUE	2028	374	151
National Elk Refuge	Jackson	Jackson	FWS	—	8,413	1,375
Patrol Cabin ⁴	Jackson	Jackson	FALSE	—	—	—
Alkali ⁴	Jackson	Jackson	TRUE	2024	—	—
Fish Creek ⁴	Jackson	Jackson	TRUE	2028	—	—
Gros Ventre Total ⁴	Jackson	Jackson	—	—	1,102	709
Scab Creek	Pinedale	Pinedale	FALSE	—	698	85
Fall Creek	Pinedale	Pinedale	TRUE	2028	558	323
Muddy Creek	Pinedale	Pinedale	TRUE	2028	516	73
McNeel	Piney	Hoback	FALSE	—	665	134
Bench Corral	Piney	Piney	FALSE	—	696	441
Finnegan	Piney	Piney	FALSE	—	436	41
Franz	Piney	Piney	FALSE	—	238	164
Jewett	Piney	Piney	FALSE	—	474	118
North Piney ⁵	Piney	Piney	FALSE	—	—	—
Dell Creek	Upper Green River	Hoback	TRUE	³ 2016	409	94
Black Butte	Upper Green River	Upper Green River	FALSE	—	794	212
Soda Lake	Upper Green River	Upper Green River	FALSE	—	952	564
Green River Lakes	Upper Green River	Upper Green River	TRUE	2028	636	122

¹Herd unit membership after 2020 without the Hoback unit.

²Herd unit membership before 2020 with the Hoback unit.

³Operating on a special-use permit.

⁴Historically elk frequently moved among the three Gros Ventre feedgrounds (Patrol Cabin, Alkali, Fish Creek), so the total for these three feedgrounds is shown as Gros Ventre Total.

⁵North Piney is a staging area where elk are fed for short periods of time before moving onwards to Bench Corral.

associated with a slower progression of disease (Robinson and others, 2012; Monello and others, 2017). Chronic wasting disease is transmitted through direct contact with an infectious individual and indirectly by contact with a PrP^{CWD} contaminated environment (Miller and others, 2004). In Wyoming, CWD-induced population declines have been observed in mule deer and white-tailed deer (Edmunds and others, 2016; DeVivo and others, 2017). Elk populations are predicted to decline when prevalence reaches 7–13 percent (Monello and others, 2014; Galloway and others, 2021). The impacts of CWD may be more severe in less productive, arid ecosystems with lower elk and deer densities and recruitment

(Foley and others, 2015). As of 2023, there are no effective treatments for CWD at the individual, population, or landscape level.

Beyond disease issues, natural resource managers are balancing other ecological, social, and economic benefits associated with Greater Yellowstone Ecosystem elk and feedground programs. Elk are important prey for the predator guild of the Greater Yellowstone Ecosystem, including *Canis lupus* (wolves), *Ursus horribilis* (grizzly bears), and *Puma concolor* (mountain lions). For humans, elk are a valuable big game animal, which support local resource-associated economies and have valuable, non-consumptive uses associated

with wildlife viewing and other forms of ecotourism. Local communities host elk festivals that draw in thousands of visitors, and shed antlers are collected for sale at the annual Jackson Hole Boy Scout elk antler auction.

To evaluate the environmental impact of a natural resource decision, NEPA requires an evaluation of environmental effects (in other words, objectives) in relation to the proposed alternatives. In practice, the evaluations are typically qualitative and narrative in structure, but require many, or all, of the same assumptions as the quantitative evaluations required by more formal decision analytical methods. A potential downside to qualitative assessments is the decision process is less transparent about assumptions made, how issues are weighed, and ultimately, how the lead agency arrived at the preferred alternative. We designed this report and analysis to support a quantitative assessment of effects, which can facilitate future decision analysis and transparent decision making.

This feedground permitting decision would benefit from a more rigorous evaluation of meeting agency objectives in relation to the selected alternatives. To guide such a process, the U.S. Geological Survey (USGS), in partnership with the U.S. Department of Agriculture Forest Service (FS) and Wyoming Game and Fish Department (WGFD), led a formal decision analysis process and developed quantitative models to evaluate the effects of alternatives on the objectives the lead agency, cooperating agencies, and stakeholders were interested in (and, in some cases, mandated to) achieving. This report captured the important technical elements of the decision context, the analytical methods, and is intended to inform the NEPA EIS process.

Overall, the report has three primary goals:

- 1. To describe the decision problem as defined by the FS with the support of cooperating agencies, stakeholders, and members of the public as part of the NEPA EIS process;

- 2. To develop and describe the modeling approaches used to project the effect of management alternatives on objectives; and
- 3. To provide results for use in agency deliberation, including a consequence table summarizing predicted performance of each alternative relative to objectives.

2.1. Report Structure

We organized the report into four primary sections (table 2). The first section focused on decision framing and included a description of the problem, fundamental and strategic objectives, performance metrics, and the management alternatives selected for evaluation. Following the description of the decision framing (Section 3), we presented two analytical sections used to estimate the effects of the alternatives on several of the fundamental objectives.

Section 4 used a sex- and age-structured population model to analyze the effects of alternatives on CWD prevalence and disease-induced mortality, elk population size, and elk harvest. Section 5 built on those results and used population sizes in a spatial model to project space use patterns of elk, human-elk conflict, and elk use of mule deer and moose ranges under the different alternatives. In total, the analytical sections provided effects estimates for 5 of 11 performance metrics associated with the six fundamental objectives. The fundamental objectives related to socioeconomic effects were evaluated by a separate team working on the NEPA EIS; thus, these methods and results will be presented therein.

The analytical sections on CWD, population size, and harvest projections (Section 4) and spatio-temporal analysis of elk distributions (Section 5) grappled with predictions about what would happen in the future under different management

Table 2. Fundamental objectives, associated performance metrics, and their sources in this report or the Environmental Impact Statement (U.S. Department of Agriculture Forest Service, in press).

[CWD, chronic wasting disease ; EIS, environmental impact statement]

Fundamental objectives	Performance metric(s)	Source
Minimize CWD in elk	CWD mortalities	Section 4
Maintain elk population numbers	Elk population size	Section 4
Maximize elk hunting opportunities	Number of harvested elk	Section 4
Maintain other big game populations	Elk use of mule deer range	Sections 4 and 5
	Elk use of moose range	Sections 4 and 5
Minimize conflict with agricultural and public stakeholders	Cost of brucellosis spillover	EIS
	Elk depredation costs	EIS
	Hay sales revenue (HAYS)	EIS
Maximize the prosperity of resource-supported economies	Revenue from harvest tag sales	EIS
	Regional economic inputs	EIS
	Revenue of outfitters	EIS

alternatives. These types of questions typically cannot be answered based upon empirical evidence alone. For example, we cannot compare what elk density would be in a herd unit (HU) with and without feeding because we only have comparable data from times when feeding occurred. We do not have data on how rapidly CWD spreads in comparable elk populations on supplemental feedgrounds. We constructed statistical and mechanistic mathematical models that incorporate prior knowledge and, in some cases, multiple hypotheses about future system dynamics to simulate scenarios that represent outcomes of management alternatives. These models required simplifying assumptions, which we attempted to make clear. The transparency of assumptions behind the models and use of decision analysis techniques are valuable because the alternative is a mental model of how the complex ecosystem interacts with unstated assumptions, biases, and weights.

The Bridger-Teton National Forest is currently faced with management decisions specific to the Dell Creek and Forest Park feedgrounds. The permits for six additional feedgrounds on the Bridger-Teton National Forest will expire in the next several years (table 1). Therefore, we also simulated the effects of management alternatives if they are implemented across all feedgrounds; however, State-run feedgrounds outside of FS lands are outside of the FS authority to manage. A 2021 Wyoming law House Bill 101 required an order of the governor to close an elk feedground and required WGFD to develop plans for alternative feedground sites (State of Wyoming, 2021). Therefore, we also analyzed the potential closure of all feedgrounds on FS-managed properties to inform this process. In these cumulative analyses, we included the Afton, Fall Creek, Piney, Pinedale, and Upper Green River HUs. We excluded the Jackson HU because the National Elk Refuge is developing their own feedground management plan that would likely have different alternatives than alternatives assessed here. Additionally, the proximity of the city to the National Elk Refuge and elk-proof fencing makes this HU a unique case.

3. Decision Framing

Structured decision making is a formal and transparent process by which decision makers break down complex problems into constituent parts (problem statement, objectives, alternatives, consequences, and tradeoffs) and then analyze using various methods, including decision analysis methodology and quantitative models. In the past, structured decision making has been successfully used to inform complex natural resource decisions that allow agencies to consider multiple management objectives and system uncertainties, which would otherwise challenge their ability to select the best course of action (Runge and others, 2013, 2015). The result is a transparent and deliberative process that leads to rational decisions, which can be effectively communicated to stakeholders and members of the public.

3.1. Problem Statement

The Bridger-Teton National Forest, located in western Wyoming, is part of the larger Greater Yellowstone Ecosystem. In total, the Bridger-Teton National Forest comprises more than 3.4 million acres of public lands, including 1.2 million acres that are designated wilderness. The cultural, biological, and physical resources on Bridger-Teton National Forest are managed and preserved to maximize their continued use and sustainability as guided by the 1990 Bridger-Teton Land and Resource Management Plan (hereafter Forest Plan) and based on the National Forest Management Act of 1976 (16 U.S.C. 1600) and Multiple-Use Sustained Yield Act of 1960 (16 U.S.C. 528-531). Decisions on Bridger-Teton National Forest resources and lands management are under the direct authority of the forest supervisor; however, the Bridger-Teton National Forest maintains close partnerships with many State and Federal agencies.

One of the premier biological resources in the Greater Yellowstone Ecosystem are Rocky Mountain elk. Elk are valued as a cultural resource for public viewing and tourism and a game animal that supports hunters, outfitters, and hunting guides. In recent years, CWD has emerged as an imminent threat to elk health on Bridger-Teton National Forest lands. The first detection of CWD in the feedground region occurred in the fall of 2020 when a cow elk tested positive in Grand Teton National Park. The migratory movements of elk within Bridger-Teton National Forest and among adjacent lands may serve as a direct route of CWD introduction onto Bridger-Teton National Forest. Chronic wasting disease has the potential to affect population productivity, hunting opportunities, and elk viewing opportunities for the public. Thus, recent CWD detection and potential spread onto the Bridger-Teton National Forest created concern about potential disease effects on elk populations, the Greater Yellowstone Ecosystem, public enjoyment, and local economies.

Many wildlife diseases are best managed in the early stages of an outbreak by implementing proactive measures that prevent introduction or limit the spread and growth (Langwig and others, 2015). Because of the diverse management responsibilities and objectives of the Bridger-Teton National Forest and the interests of stakeholders, a transparent and deliberative decision-making approach that considers system uncertainties is necessary to inform management of elk under threat of CWD. In the coming months, decisions that consider multiple potential benefits and risks of permitting elk feeding activities on Dell Creek and Forest Park sites are required. In the long-term, decisions on permitting other feedground sites on Bridger-Teton National Forest are also required and will consider multiple objectives of the Bridger-Teton National Forest by considering any tradeoffs in achieving Forest Plan objectives and diverse stakeholder interests.

Historically, FS issued special-use permits to WGFD to allow supplemental feeding of elk during winter at eight locations on Bridger-Teton National Forest. The permits include a use authorization and site-specific stipulations. Two of these locations, Dell Creek and Forest Park, have been in operation

for at least 40 years. Both special-use permits expired in 2016, but the WGFD has been allowed to continue feeding using shorter, 1-year permits. To determine a 20-year long permit request for both feedgrounds, the Bridger-Teton National Forest is assessing the environmental impacts of elk feeding activities by producing an EIS and subsequent Record of Decision under NEPA. An EIS was determined necessary because of the uncertainty of management alternatives on elk populations, disease threats, and economic effects.

3.2. Fundamental Objectives and Performance Metrics

Fundamental objectives describe the set of system attributes a decision maker is motivated (or mandated) to achieve (Gregory and others, 2012). Under NEPA, the fundamental objectives are often referred to as “resource goals.” For a decision maker, the set of fundamental objectives is a comprehensive description of the full range of independent concerns related to a decision and should be sensitive enough to differentiate among the range of alternatives under consideration (Gregory and others, 2012; Runge and others, 2015). Bridger-Teton National Forest used U.S. Geological Survey-facilitated meetings, feedback from cooperating agencies and stakeholders, and public comments to identify six fundamental objectives and two strategic objectives that were important to consider when making permitting decisions on Dell Creek and Forest Park. Strategic objectives are higher level objectives that go beyond the scope of the immediate decision to help achieve or preserve other linked opportunities or relations (Keeney, 1996). Several objectives are drawn directly from an interpretation of the Bridger-Teton National Forest’s enabling legislation, the Forest Plan, the National Forest Management Act of 1976, and the Multiple-Use Sustained Yield Act of 1960. Other objectives were considered based on public and stakeholder concerns and evaluated as part of these fundamental objectives or as narratives described in the EIS. The FS completed the final selection of issues and concerns carried forward as fundamental objectives in this report.

Fundamental Objective 1.—Minimize Disease Prevalence in Elk. According to Land and Resource Management Objective 2.1(b) of the Forest Plan, Bridger-Teton National Forest is directed to provide suitable and adequate habitat to support game and fish populations established by the WGFD, as agreed to by the FS. The introduction and spread of diseases in elk that overwinter and are fed on feedgrounds could lead to faster disease spread and reductions in population size. Further, if elk aggregations occur repeatedly in the same geographic location, like at elk feeding sites, Bridger-Teton National Forest lands may be contaminated by pathogens, leading to locally elevated, indirect disease transmission. Thus, decisions on whether and how to permit elk feeding at Dell Creek and Forest Park could affect the suitability of Bridger-Teton National Forest habitats to support healthy elk populations (Objective 2.1[b]). The effect of alternatives on Fundamental Objective 1

will be measured by the cumulative number of elk mortalities attributed to CWD across the 20-year permitting period on the Afton (Forest Park) and Upper Green River (Dell Creek) HUs (performance metric 1, PM1).

Fundamental Objective 2.—Maintain Big Game Populations (Elk). According to Land and Resource Management Objective 2.1(b) of the Forest Plan, Bridger-Teton National Forest will provide suitable and adequate habitat to support game and fish populations established by the WGFD, as agreed to by the FS. Elk populations in the Greater Yellowstone Ecosystem may be limited in the amount of suitable and naturally occurring winter forage, particularly during harsh winter conditions and high snowpack. Supplemental feeding may help to improve overwinter elk body condition and survival. Conversely, the continuation of feedground operations may increase elk mortality by increasing CWD prevalence in elk that overwinter on feedgrounds. A decrease in the health and size of elk herds would negatively affect hunting and wildlife viewing opportunities. The effect of alternatives on Fundamental Objective 2 will be measured by elk population size on the Afton (Forest Park) and Upper Green River (Dell Creek) HUs in the last year of the 20-year permitting period (performance metric 2, PM2).

Fundamental Objective 3.—Maximize Elk Hunting Opportunities. Several goals as described in the Forest Plan support maximizing elk hunting opportunities and hunter satisfaction. Of relevance is Forest Challenge Goal 2.1, which aims to ensure adequate supplies of products and experiences related to wildlife, fish, and edible vegetation to meet human food needs. Forest Challenge Goal 2.1 is supported by Objectives 2.1(b) and 2.1(c), which requires suitable and adequate habitat to support game populations and the maintenance of forest-user opportunity (including recreational, enjoyment, play, and subsistence uses). Further, maintaining disease free elk populations is an important consideration. According to a 2019 Wyoming Hunter Perspective survey, a majority of hunters were concerned about the potential for CWD to reduce deer hunting opportunity and future generations’ ability to enjoy deer hunting (Wyoming Game and Fish Department, 2020b). Needham and others (2006) documented similar opinions in Wyoming elk hunters. The effect of alternatives on Fundamental Objective 3 will be measured by the number of elk available for harvest on the Afton (Forest Park) and Upper Green River (Dell Creek) HUs across the 20-year permitting period (performance metric 3, PM3).

Fundamental Objective 4.—Maintain Other Big Game Populations (Mule Deer and Moose). Similar to Fundamental Objective 2, the Bridger-Teton National Forest aims to provide suitable and adequate habitat to support mule deer and moose populations. Permitting decisions on the use of Dell Creek and Forest Park sites for supplemental feeding activities may affect the space use patterns and behavior of elk overwintering on Bridger-Teton National Forest lands; thus, changes in feeding may affect competitive interactions among mule deer, moose, and elk on critical summer, transitional,

or winter ranges for these species. The effect of alternatives on Fundamental Objective 4 will be measured by the total number of elk-use days of mule deer critical winter range (MDCR) and moose critical winter range (MOCR) within the Afton (Forest Park) and Upper Green River (Dell Creek) HUs over 20 years (performance metrics 4a and 4b, respectively, PM4a and PM4b).

Fundamental Objective 5.—Minimize Conflict with Agricultural and Public Stakeholders. Elk feeding on Bridger-Teton National Forest and other feedgrounds in the Greater Yellowstone Ecosystem have been maintained, in part, to reduce human-elk conflicts. Feedgrounds help mitigate potential conflicts including the spillover of brucellosis to cattle, elk depredation on private agricultural products (for example, stored hay), and elk overwintering in suburban areas leading to wildlife-vehicle collisions and destruction of developed areas. The effect of alternatives on Fundamental Objective 5 will be measured by the cost of elk depredation on privately owned hay stackyards (performance metric 5a, PM5a), the number of elk abortions on private lands during the high-risk brucellosis transmission period, and projected costs to livestock producers within the Afton (Forest Park) and Upper Green River (Dell Creek) HUs (performance metric 5b, PM5b).

Fundamental Objective 6.—Maximize the Prosperity of Resource-Supported Economies. Elk hunting and viewing opportunities in the Greater Yellowstone Ecosystem rely on healthy and abundant populations. In combination, hunting and wildlife viewing supports many economic and social benefits in and around the Bridger-Teton National Forest. Many business owners and clientele (outfitters, guides, lodges, restaurants, and others) may suffer without healthy game populations to harvest, view, and enjoy. The effect of alternatives on Fundamental Objective 6 will be measured by the loss of potential hay sales revenue (performance metric 6a, PM6a), revenue generated by elk harvest tag sales to residents and nonresidents (performance metric 6b, PM 6b), regional revenues generated by hunting activities (performance metric 6c, PM6c), and revenue of elk outfitters and guides (performance metric 6d, PM6d). We calculated all performance metrics for Fundamental Objective 6 as cumulative costs or revenues across the 20-year permitting period. BIO-WEST, Inc. and Cirrus Ecological Services developed the methods to calculate costs and revenues and the methods are described in the EIS.

Beyond the set of fundamental objectives, the Bridger-Teton National Forest was motivated to minimize administrative and legal costs and maintain close partnerships with agencies located in the Greater Yellowstone Ecosystem (in other words, strategic objectives). Dell Creek and Forest Park feedgrounds cost a total of \$1,392 or 45 h/yr per feedground to administer. For NEPA litigation, the past two lawsuits have cost the FS an average of \$174,500 each [(1) Alkali cost \$145,000 in plaintiff attorney fees and \$22,000 in FS salary costs, and (2) Alkali, Dell Creek, and Forest Park cost \$160,000 in plaintiff attorney fees and \$22,000 in FS salary costs]. For

partnerships, managing the cultural, biological, and physical resources of the Greater Yellowstone Ecosystem requires close collaborations and joint decision making across State and Federal jurisdictions. Bridger-Teton National Forest has long maintained productive and healthy relations with the State of Wyoming (for example, WGFD and Wyoming Department of Agriculture) and Federal land managers (for example, FWS and National Park Service).

3.3. Management Alternatives

Based on a series of meetings among the Bridger-Teton National Forest, the FWS, National Park Service, and the WGFD, and comments during the NEPA EIS scoping period, the Bridger-Teton National Forest developed four management alternatives. The alternatives evaluated whether to continue permitting the WGFD to feed on Bridger-Teton National Forest at Dell Creek and Forest Park and consider changes in feeding frequency and duration according to feedground specific triggers or a phaseout period.

In detail, the four management alternatives are:

1. Provide special use authorization (hereafter referred to as continued feeding or CF): The WGFC proposal is to continue long-term use (20 years) of the Dell Creek feedground (35 acres), Forest Park feedground (100 acres), and existing facilities for their winter elk management program.
2. No special use authorization (hereafter referred to as no feeding or NF): Use of National Forest System lands for the WGFC's winter elk management activities would not be permitted at Dell Creek and Forest Park feedgrounds.
3. Phaseout alternative (PO): Use of National Forest System lands for the WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds for three feeding seasons.
4. Emergency feeding only (EF): Use of National Forest system lands for the WGFC's winter elk management activities would be permitted at Dell Creek and Forest Park feedgrounds or the designated trailing route for emergency use over a 20-year period. Dell Creek and Forest Park would have different emergency triggers. For Dell Creek, most of the concern surrounding a feedground closure relates to the physical location's proximity to private land and the high likelihood elk would seek out alternative sources of food on those private lands. Increased use of private lands would lead to increased depredation of agricultural products and close contact with cattle during the high-risk brucellosis transmission period (January 15–April 30). Thus, for the Dell Creek emergency trigger, there would be no feeding in early winter months; however, feeding could occur from January 15 to April 15 if elk were on private lands. For Forest Park, the primary concern is overwinter

reductions in calf survival from a lack of naturally occurring winter range in areas on and adjacent to the feeding location. As a result, emergency feeding could occur on Forest Park when the natural winter mortality rate in calves exceeded 5 percent of the previous year's calf population estimate in Hunt Area 90 (includes Forest Park feedground). If either criterion were met, feeding would occur immediately. As part of this alternative, a 200-m wide trailing route to alternative winter forage areas would also be included to allow the WGFC to feed elk at other sites outside of the established feedground location (see map in Section 2 of the draft EIS).

3.4. Performance Metric Scaling

We analyzed the fundamental objectives and associated performance metrics (five total in this report and additional socioeconomic indicators are described in the draft EIS) primarily at the elk HU level, which is a spatial scale that defines the area most elk management decisions are made (fig. 1). The HUs are designated with consideration of the natural distribution and movement patterns of elk, their seasonal ranges, and human developments (fig. 1). The Dell Creek and Forest Park feedgrounds occur in the Upper Green River and Afton HUs, respectively; therefore, performance metrics are primarily summarized at the herd-unit spatial scale. However, it is important to recognize that although summaries at the Upper Green River and Afton HU level aligns best with regional management decisions, the alternatives under consideration in this EIS (specifically, whether and how to permit Dell Creek and Forest Park feedgrounds) would act on a much smaller and localized population around the feedgrounds. For Dell Creek (Upper Green River HU), the management alternatives would directly affect only about 12 percent of elk in the HU based on feedground counts from 2016 to 2020 and our reported projections. For Forest Park (Afton HU), the estimated affected elk would be 20 percent. Thus, wherever possible, we also presented metrics at the feedground level to provide important context to the reader and decision maker.

4. Chronic Wasting Disease, Population Size, and Harvest Projections

4.1. Overview

We combined empirical data and expert knowledge in a model to project elk population size, CWD prevalence and mortality, and hunter harvest in the Afton and Upper Green River HUs under the four management alternatives and across the 20-year permitting period. We expanded on an existing sex- and age-structured disease model and included density-dependent calf survival and reductions in harvest at

low populations. Density-dependent calf survival is included to model projected declines in elk populations without continued feeding. For parameter values, we used existing empirical data from regional elk populations and a formal process of expert judgment.

4.2. Methods

We modified a sex- and age-structured stochastic simulation model previously developed by Cross and Almborg (2019) and later expanded by Rogers and others (2022) to project the effects of CWD and management alternatives (Cross and others, 2023). Each simulation begins in May and iterates on a monthly timestep, with transitions accounting for aging; reproduction; natural, harvest, and disease associated mortality; and disease transmission. The model structure included male and female sex classes and 12 age classes where harvest and vital rates are structured according to i categories: calves (0–1 years, $i = 1$), yearling males (1–2 years, $i = 2$), yearling females (1–2 years, $i = 3$), adult males (>2 years, $i = 4$), and adult females (>2 years, $i = 5$). Individuals transition between stages according to sex- and age-specific survival, ϕ_i reproductive, γ_i , and harvest, h_i , probabilities. Individuals older than age 12 remain in the 12th age class until they die.

We modeled CWD dynamics at the HU scale. Each HU consisted of feedground and native winter range elk that intermix during summer months but separate during winter months. The fed elk population segment may be further subdivided during winter to include the target feedground, such as Dell Creek or Forest Park, versus any other feedground(s) in the HU. We constructed two different models for our hypotheses about how CWD may transmit among fed and unfed elk population segments (eqs. 1 and 2). Our first hypothesis was that CWD transmission occurs during winter when elk tend to be the most concentrated, and feedground and native winter range elk do not intermingle during summer. For this hypothesis, we assume that fed and native winter range elk are independent, and the monthly probability of infection for a susceptible individual can be written as:

$$\lambda_{jtk} = 1 - \exp\left(-\frac{\beta_k I_{jtk}}{N_{jtk} \theta_k}\right), \quad (1)$$

where

- k is an indicator variable for fed ($k = 1$), unfed ($k = 2$), and target feedground ($k = 3$) elk;
- t represents the year;
- j represents the month of the year;
- β_k is the CWD transmission coefficient for fed ($k = 1$ or 3) and unfed ($k = 2$) elk;
- I_{jtk} is the number of CWD infectious elk;
- N_{jtk} is the population size; and
- θ_k describes the density-dependent transmission.

In the formulation of [equation 1](#), the exponent to population size, θ , controls the strength of the density dependence in disease transmission. When θ is zero, the risk of infection per susceptible individual depends only on the number of infectious individuals, so-called density dependent transmission, whereas when θ is equal to one, the per-susceptible risk is proportional to I/N , so-called frequency dependent transmission (Getz and Pickering, 1983).

Our second hypothesis was that feedground and native winter range elk intermix for the nonfeeding months of May–November and that disease transmission is not highly seasonal. We model this possibility by assuming individuals from all populations can contribute toward the probability of CWD infection during the summer months but at a different transmission coefficient β' a density-dependence θ' given as:

$$\lambda_{ijk}(j) = \begin{cases} j \in \{1, 2, 3, 4, 12\}, 1 - \exp\left(-\frac{\beta_k I_{jtk}}{N_{jtk}^{\theta_k}}\right) \\ j \in \{5, 6, 7, 8, 9, 10, 11\}, 1 - \exp\left(-\frac{\beta' \sum_k I_{jtk}}{\sum_k N_{jtk}^{\theta'}}\right) \end{cases}, (2)$$

where the transmission coefficient β' and strength of density dependence θ' for May–November in [equation 2](#) are estimated from mixture distributions defined by the fed and unfed parameters. We used the R package `distr` version 2.8 to calculate the mixture distribution and draw random deviates (R Core Team, 2022; Ruckdeschel and others, 2006). The mixture distribution was weighted according to the proportion of the population at the start of the simulation that was fed or unfed.

We considered direct and indirect CWD transmission pathways. We defined direct transmission as direct contact between an infectious individual and a susceptible individual that results in CWD infection. We defined indirect transmission as infections that result from contact with a contaminated environment. The Pr^{PCWD} are stable outside of hosts and may remain infectious in the environment for months to years following external shedding (Miller and others, 2004). The stability of Pr^{PCWD} in the environment suggests indirect transmission through a contaminated environment may become more important to disease dynamics over time (Almberg and others, 2011). However, it remains difficult to quantify the dynamics and importance of environmental contamination and indirect transmission because of limitations in diagnostic techniques. Thus, we modeled probability of infection from the environment as a simple linear relationship that increases over time, starting at zero in the first-time step and ending at some maximum in year 20. Using expert judgment, we obtained the final probability of becoming infected from the environment at year 20 as described below.

For post-infection CWD survival, we transitioned elk through 10 infectious stages, which produced a stochastic, bell-shaped time-to-death Gamma distribution. We set the probability of progressing through infectious stages at 0.28, which results in a median time-to-death of 34 months ([fig. 2](#), Brandell and others, 2022). Thus, the performance metric of CWD mortalities included only elk that progressed to the last infectious stage and did not include individuals that may be CWD infected but died from hunting or natural mortality. We assumed no difference in CWD transmission between sexes or ages of individuals.

The simulation model included two additional processes specific to the feedground CWD situation: density-dependent calf survival and harvest reductions in declining populations. Previous work by Singer and others (1997) indicated calf survival on winter range declines as density increases, which is similar to the broader literature which found calf survival more variable than adult survival (Gaillard and others, 1998; Lubow and others, 2002). Density-dependent calf survival follows from an assumption that halting feedgrounds will reduce elk carrying capacity as mediated through calf survival. Thus, the annual calf survival rate, ϕ_1 , varied between a minimum (0.1) and maximum annual survival rate (0.8) according to a density-dependent response to the previous year's annual population size on each HU ([fig. 1.4](#)), given by

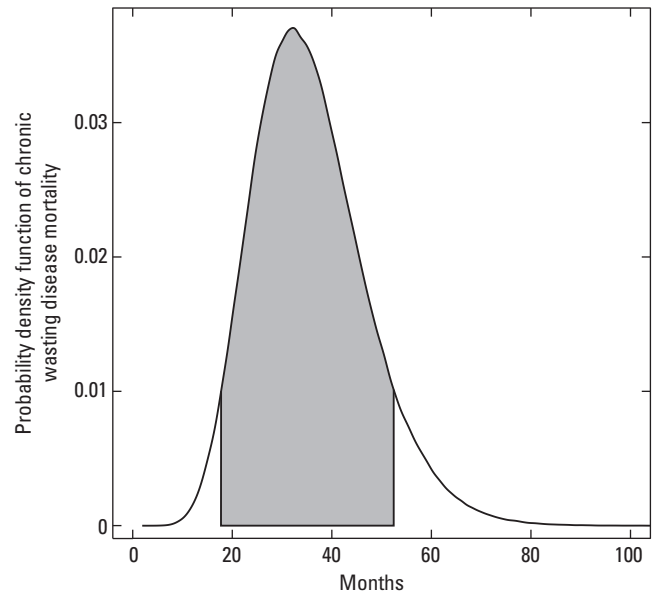


Figure 2. Probability density function of the time-to-death because of chronic wasting disease in the absence of other mortality hazards (for example, harvest and natural mortality). The gray area represents the highest density interval containing 90 percent of the distribution.

$$\phi_{A,t,k} = \max \left(\phi_{\max} \left(1 - c \left(\frac{N_{J-1,k}}{K_{HU,k}} \right)^\delta \right), \phi_{\min} \right), \quad (3)$$

where

- $N_{J-1,k}$ is the January population size from the previous year for fed or unfed elk;
- k is an indicator variable as in [equation 1](#);
- $K_{HU,k}$ is a parameter related to the carrying capacity of fed and native winter range elk in each HU;
- c is the proportion reduction when population was at carrying capacity;
- δ controls the shape of the density-dependence;
- $\phi_{\max}$ is the maximum calf survival rate; and
- $\phi_{\min}$ is the minimum calf survival rate.

We based our estimates of K on the starting population sizes such that

$$K_{HU,k} = N_{0,k} \times v, \quad (4)$$

where

- $N_{0,k}$ is the starting population size of fed or native winter range elk; and
- v is a calibration constant used to stabilize the population at carrying capacity.

We calibrated density dependence parameters $K_{HU,k}$, and v for [equations 3](#) and [4](#) such that elk populations remained stable given current harvest rate estimates and no CWD transmission. This stability occurred when $v = 3.0$. We assumed fed elk segments and unfed segments could be supported at their current densities; however, when a feedground was subject to closure, we assumed the fed elk population associated with that feedground would be reduced to densities measured on other HUs without feedgrounds in the Greater Yellowstone Ecosystem. Thus, we calculated the average elk density on fed and unfed units and based on those estimates reduced $K_{HU,3}$ according to the percent decline in average elk density on fed and unfed units.

Based on previous management of other big game populations in Wyoming, we assumed a reduction in female elk harvest rates as a function of herd-unit specific population objectives. When populations fell to below half of the population objective (in other words, $\sum_{j=3}^J \sum_{k=1}^3 N_{t,k} / 3 < 0.5 \times P_{HU}$), we eliminated adult female harvest. The WGFD has made similar adjustments in western mule deer regions in response to CWD-driven population declines.

4.2.1. Parameter Estimation

For vital and harvest rate estimates ([table 3](#)), we used a combination of Galloway and others (2021), Raithel and others (2007), Cotterill and others (2018), and WGFD data (Wyoming Game and Fish Department, 2020a), and references therein; unpublished data are available from Wyoming Game and Fish Department; contact Wyoming Game and Fish Department for further information). Adult elk have the highest annual survival rates whereas juvenile and calf survival is lower. Annual reproduction rates are higher in adult females when compared against juvenile females. The probability of harvest per year per sex and age class was set in rough agreement with proportions harvested in the Jackson HU from 1993 to 2021. Harvest rates were higher in males than females with adults harvested at higher rates than juveniles and calves. We assumed feedground and native winter range elk have the same vital rates when populations are at stable equilibria (in other words, growth rate equal to one).

There are no data to estimate CWD transmission dynamics in fed and unfed elk. Therefore, we used a process of formal expert elicitation to parameterize the rates and modes (in other words, frequency- or density-dependent) of CWD transmission. We invited a panel of eight experts with diverse professional expertise, training, and backgrounds in disease ecology, ungulate ecology, population management, and epidemiological modeling to use their expert judgment and provide estimates of necessary parameters and associated uncertainty ([table 1.1](#) in [appendix 1](#)). We used a modified Delphi process (Hanea and others, 2017) and four-point Speirs-Bridge elicitation protocol to develop estimates for fed and unfed disease transmission dynamics (Speirs-Bridge and others, 2010). The four-point estimates are described by an expert's low, high, and best estimate of a parameter and confidence the true value falls within their low and high values. The quantiles of each expert (based on their four-point responses) were first used to fit a probability distribution by finding the parameters for a beta or log-normal distribution, which minimized the sum of square differences between the elicited and fitted quantiles. The choice of beta or log-normal distributions reflected the range of values appropriate for each parameter of interest. We aggregated individual distributions into a single probability distribution for each parameter using an unweighted Vincent average. Our Vincent average was calculated by averaging the 2.5 and 97.5 quantiles from each fitted individual distribution to develop a single aggregate distribution of the same family (for example, beta or log-normal; Conroy and Peterson, 2013).

Most of the empirical and theoretical modeling work on CWD in deer suggested frequency-dependent transmission best explains trends in prevalence (Jennelle and others, 2014). However, these studies were evaluated at regional spatial scales where changes in population size may not reflect changes in local group sizes. We expect changes in local group sizes to be heterogeneous, particularly for elk populations in which some portion of the population aggregate on

feedgrounds. Therefore, we asked experts to estimate CWD transmission modes (θ , eq. 1) in elk on native winter range and feedgrounds separately. To inform their estimates of density- or frequency-dependent transmission strength, we provided experts with an interactive version of the simulation model and asked them to provide four-point estimates based on simulated CWD prevalence trends and population sizes. Individual distributions can be found in [appendix 1 figs. 1.1, 1.2, 1.3](#). The aggregate estimate for CWD transmission mode on feedgrounds was more density-dependent (fig. 3, aggregate median estimate, $\theta_{k=1} = 0.57 \pm 0.12$) than unfed elk that overwinter on native winter range (aggregate median estimate, $\theta_{k=2} = 0.72 \pm 0.1$). Similarly, we elicited four-point estimates for direct and indirect transmission for fed and unfed elk population segments (figs. 4, 5). Scaling of the transmission coefficient, β , is not intuitive even for experts. Meanwhile, R_0 , the average number of infections that result from a single infectious individual in a fully susceptible population, depends on the transmission coefficient, infectious period, and survival rates. Therefore, we elicited an annual R_0 —the average number of infections an initially infected individual would cause given they survive and remain infectious for a year. We then calculated monthly transmission coefficients for fed and

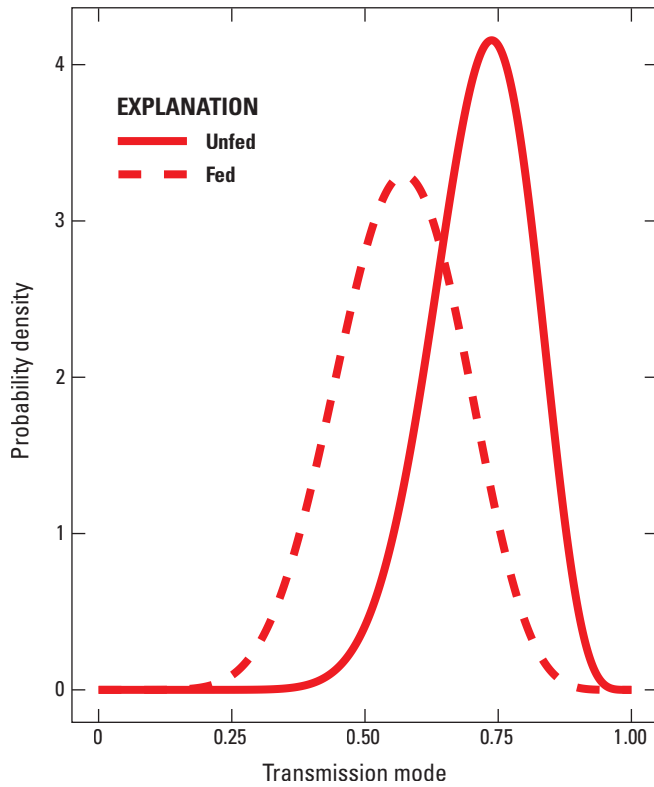


Figure 3. Aggregate distributions of the mode of chronic wasting disease transmission for fed and unfed elk population segments. Transmission is density dependent when the mode, θ equals zero, frequency dependent when the mode is equal to one, or some intermediate form when $0 < \theta < 1$.

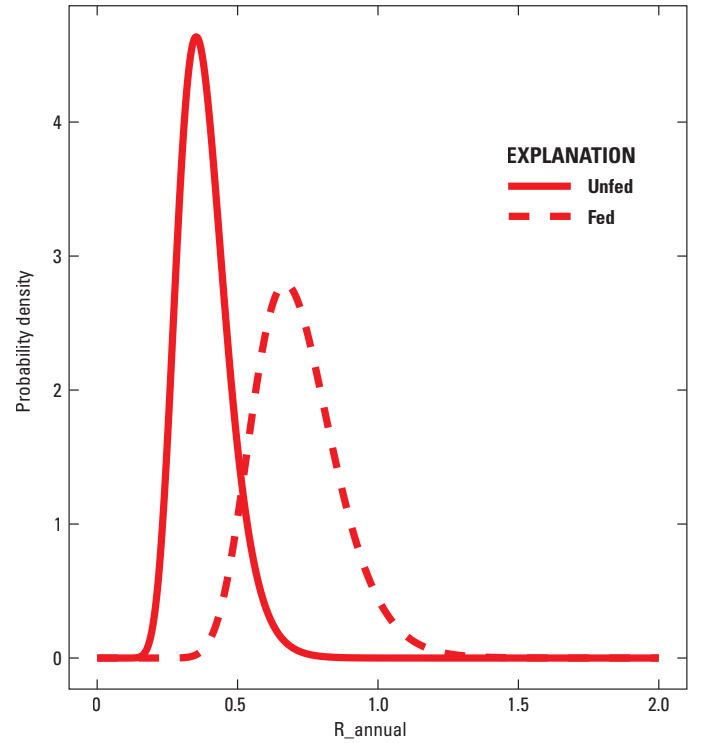


Figure 4. Aggregate distributions of the number of chronic wasting disease infections that result from a single infectious individual, R_{annual} , under fed and unfed scenarios.

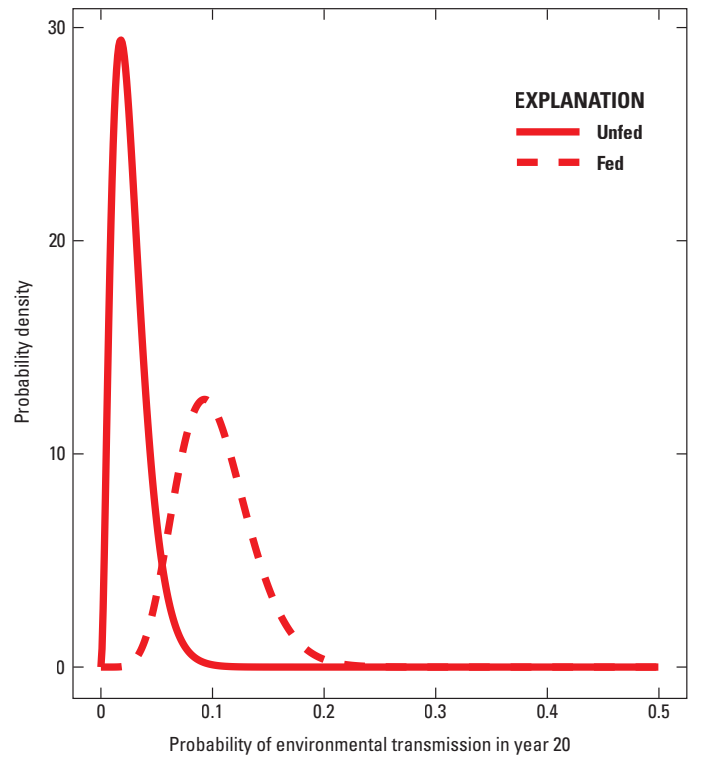


Figure 5. Aggregate distributions of the probability of environmental transmission in year 20 in a completely susceptible population on native winter range and feedgrounds under fed and unfed scenarios.

unfed population segments assuming $\beta_k = R_{k,0_annual} N_{0,k}^{\theta-1} / 12$, where $N_{0,k}$ was the starting population size. For direct transmission, the aggregated expert estimates for the mean number of annual infections from a single infectious individual were 0.39 (standard deviation [SD] = 0.09) and 0.71 (SD = 0.14) for native winter range elk and fed elk, respectively (fig. 4). For indirect transmission, the aggregate estimates for the expected annual probability of infection following 20 years of spread in a completely susceptible elk population were 0.03 (SD = 0.02) and 0.10 (SD = 0.03) on native winter range and feedgrounds, respectively (fig. 5).

According to trend counts for fed and unfed elk population segments and estimates of available winter range on each HU, we estimated HUs with feedgrounds supported an average density of 6.21 elk/km² on available winter range, whereas unfed HUs supported an average of 4.79 elk/km² on available winter range (Wyoming Game and Fish Department, 2020a). Based on these averages, we assumed previously fed elk population segments would decline by approximately 23 percent in the absence of feeding (table 4).

At the beginning of each simulation, we drew each vital rate from a stochastic distribution based on the reported average and parametric uncertainty. This random value served as the mean of a beta distribution representing temporal variation in the vital rate from year to year, with process variance reported in table 3; the resulting annual values ranged between zero and one. We also incorporated parametric uncertainty

in the expert elicited CWD transmission modes and rates but did not allow for the parameter to vary within simulations (in other words, no temporal or process variance).

4.2.2. Initial Conditions

To initialize each of our model projections, we required a starting population size and an estimate of CWD prevalence in each HU. To estimate initial conditions, we made four important assumptions. First, we assumed elk that occur on native winter range during winter counts are undercounted and thus, should be corrected by a sightability factor (Lubow and Smith, 2004). Second, we further adjusted the starting population sizes so that the resulting number of harvested elk approximates the number harvested in WGFD reports for that HU. This accounted for potential immigration and emigration of elk among HUs between the hunting season and winter counts and how sightability may vary by region. Third, we treated the initial elk population size as a random variable estimated by the average adjusted elk population counts from 2016 to 2020 and the coefficient of variation in these annual counts. We assumed that the fed and unfed populations counts for each projection were completely correlated so the percentage of fed elk in a HU was held constant. Finally, we assumed initial CWD prevalence matches WGFD reports (McWhirter and others, 2021), and there are no initial CWD prevalence differences between feedground and winter range elk.

Table 3. Elk vital and harvest rate estimates used in the sex- and age-structured stochastic simulation model.

[SD, standard deviation]

Vital rate	Notation	Mean	Parametric SD ¹	Process SD ²
Maximum calf survival ^{3,4}	ϕ_1	0.8	0.103	0.0385
Juvenile survival ^{3,4}	ϕ_{2-3}	0.88	0.0085	0.0042
Adult male survival ^{3,4}	$\phi_{m,4}$	0.95	0.017	0.0034
Adult female survival ^{3,4}	$\phi_{f,5}$	0.93	0.0085	0.0034
Calf reproduction ^{3,4}	γ_1	0	0	0
Yearling female reproduction ⁵	γ_3	0.25	0.033	0.035
Adult female reproduction ⁵	γ_5	0.93	0.033	0.035
Harvest mortality calf ⁶	h_1	0.09	0.007	0.005
Harvest mortality yearling male ⁶	$h_{m,2}$	0.18	0.007	0.005
Harvest mortality yearling female ⁶	$h_{f,3}$	0.10	0.007	0.005
Harvest mortality adult female ⁶	$h_{f,5}$	0.10	0.007	0.005
Harvest mortality adult male ⁶	$h_{m,4}$	0.46	0.007	0.005

¹Parametric variation created different mean values across simulations.

²Process variation resulted in parameter variation between years within a simulation.

³Approximated from Galloway and others, 2021.

⁴Approximated from Raithel and others, 2007.

⁵Approximated from Cotterill and others, 2018.

⁶Approximated from the Jackson herd unit from 1993 to 2020 (Wyoming Game and Fish Department, 2020a, and references therein).

Table 4. Average elk population sizes from 2011 to 2020 in 13 Wyoming herd units around the Greater Yellowstone Ecosystem.

[Population estimate, accounts for the 67.3-percent sightability of unfed elk in the herd unit; winter range, critical elk winter range defined by Wyoming Game and Fish Department in square kilometers; elk density, estimated by the population estimate divided by the critical winter range; km², square kilometers; —, no data]

Herd unit	Feedgrounds	Fed elk	Trend count	Hunted elk	Population estimate	Winter range km ²	Elk density
North Bighorn	FALSE	—	5,649	1,481	8,394	1,073	7.82
Clark’s Fork	FALSE	—	3,130	452	4,652	1,305	3.56
Cody	FALSE	—	5,421	1,394	8,055	1,805	4.46
Gooseberry	FALSE	—	2,553	728	3,793	1,416	2.68
Wiggins Fork	FALSE	—	6,012	1,012	8,934	1,110	8.05
South Wind River	FALSE	—	2,907	633	4,319	1,991	2.17
Jackson	TRUE	9,536	10,828	1,275	12,748	837	15.23
Fall Creek	TRUE	3,425	4,154	603	5,236	499	10.49
Upper Green River	TRUE	2,466	2,734	420	3,132	666	4.70
Hoback	TRUE	989	1,063	216	1,172	355	3.30
Afton	TRUE	1,276	2,106	811	3,338	667	5.00
Piney	TRUE	2,174	2,466	908	2,934	1,998	1.47
Pinedale	TRUE	1,869	2,094	480	2,428	739	3.28

Based on these assumptions, we used the trend counts for each HU and count data from WGFD feedground surveys (Wyoming Game and Fish Department, 2020a, and references therein) and adjusted them using a sightability constant and adjustment factor. Thus, initial populations for the Afton and Upper Green River HUs are given by $y_i^{\text{count}} = (y_i^{\text{fed}} + \frac{y_i^{\text{unfed}}}{\psi})\omega$, where ψ is a sightability constant (0.673 estimated from Lubow and Smith, 2004) and ω is the HU-specific adjustment factor. The adjustment factor is 1.73 for the Afton HU and 0.81 for the Upper Green River HU (table 5).

The Hoback HU was dissolved in 2020–21 (fig. 1). Based on WGFD estimates, we assumed 36 percent of the previous Hoback HU elk were associated with the redrawn Upper Green River HU, and 64 percent were associated with Piney HU elk. We accounted for these HU changes in our calculations of the 2016–20 counts, which we used as initial conditions for the model. For the Afton HU, the average total initial population size estimate was 2,729 (SD = 568) elk, with an average of 1,101 elk overwintering on two feedgrounds: Forest Park and Greys River. Between 2016 and 2020, Forest Park had 550 (SD = 161) individuals, and Greys River had 552 (SD = 104) individuals on average. Our total initial population size for the Upper Green River HU was 3,332 (SD = 346) after

accounting for elk from the Hoback unit and those counted on feedgrounds (Black Butte, Dell Creek, Green River Lakes, and Soda Lake).

Wyoming Game and Fish Department (McWhirter and others, 2021) estimated CWD prevalence in 2020 was 1.6 percent (95 percent Bayesian credible interval = 0.2–5.8 percent) for the Afton elk population and 2.4 percent (95 percent Bayesian credible interval = 0.4–6.4 percent) for the Hoback/Upper Green River HU elk population. Based on these data, we set initial CWD prevalence for juveniles and adults as the median of the Afton and Upper Green River HU estimates (2 percent) and half of that value for calves (1 percent).

4.2.3. Implementation of Management Alternatives

The purpose of the disease model is to forecast effects of the different alternatives on three fundamental objectives (performance metrics 1, 2, and 3). To better understand the effects the management alternatives have on long-term CWD trends and hunting opportunities, our models tracked the total number of CWD mortalities (performance metric 1), elk population size in year 20 (performance metric 2), and the cumulative harvest (performance metric 3) across the 20-year

permitting period. Each alternative (defined in Section 3.3) required a corresponding set of changes under the four alternatives and across the 20-year permitting period.

For simulation under the continued feeding alternative, the distribution of elk on feedgrounds and native winter range is maintained as it was from 2016 to 2020. For the simulation under the no feeding alternative, elk are redistributed from Forest Park and Dell Creek to native winter range population segments. For the phaseout alternative, the first three simulated years maintained feedground and native winter range distributions after which, Forest Park and Dell Creek feedgrounds are redistributed to native winter ranges and simulated for the remaining 17 years of the permitted period. Figure 6 illustrates the phaseout of the Dell Creek feedground and subsequent elk decline because of a lack of feeding in a model without CWD. For the emergency feeding alternative, all elk are maintained on feedgrounds and winter ranges with no reduction in the carrying capacity (fig. 6). However, elk on Forest Park and Dell Creek are treated as distinct from other elk on

feedgrounds because of the emergency triggers considered under this alternative. On Forest Park, the emergency feeding criteria required overwinter elk calf mortality to exceed five percent of the previous year's calf population estimate in Hunt Area 90 before feeding activities can occur (for an example of model behavior without disease, see fig. 6). We estimated that this trigger was likely to result in emergency feeding in around 70 percent of years based on Singer and others (1997), which documented calf winter mortality in excess of 5 percent in 13 out of 19 studied years. Thus, we considered the frequency of not feeding on Forest Park to operate according to a stochastic process defined by a beta distribution with shape equal to 7 and scale equal to 14.

On Dell Creek, the EF alternative was designed to reduce elk-to-cattle brucellosis transmission during the high-risk period of February–May. Because of the proximity of Dell Creek to adjacent private rangelands, we assumed elk would commingle with cattle annually during winter months unless provided supplemental feed. Therefore, there were no

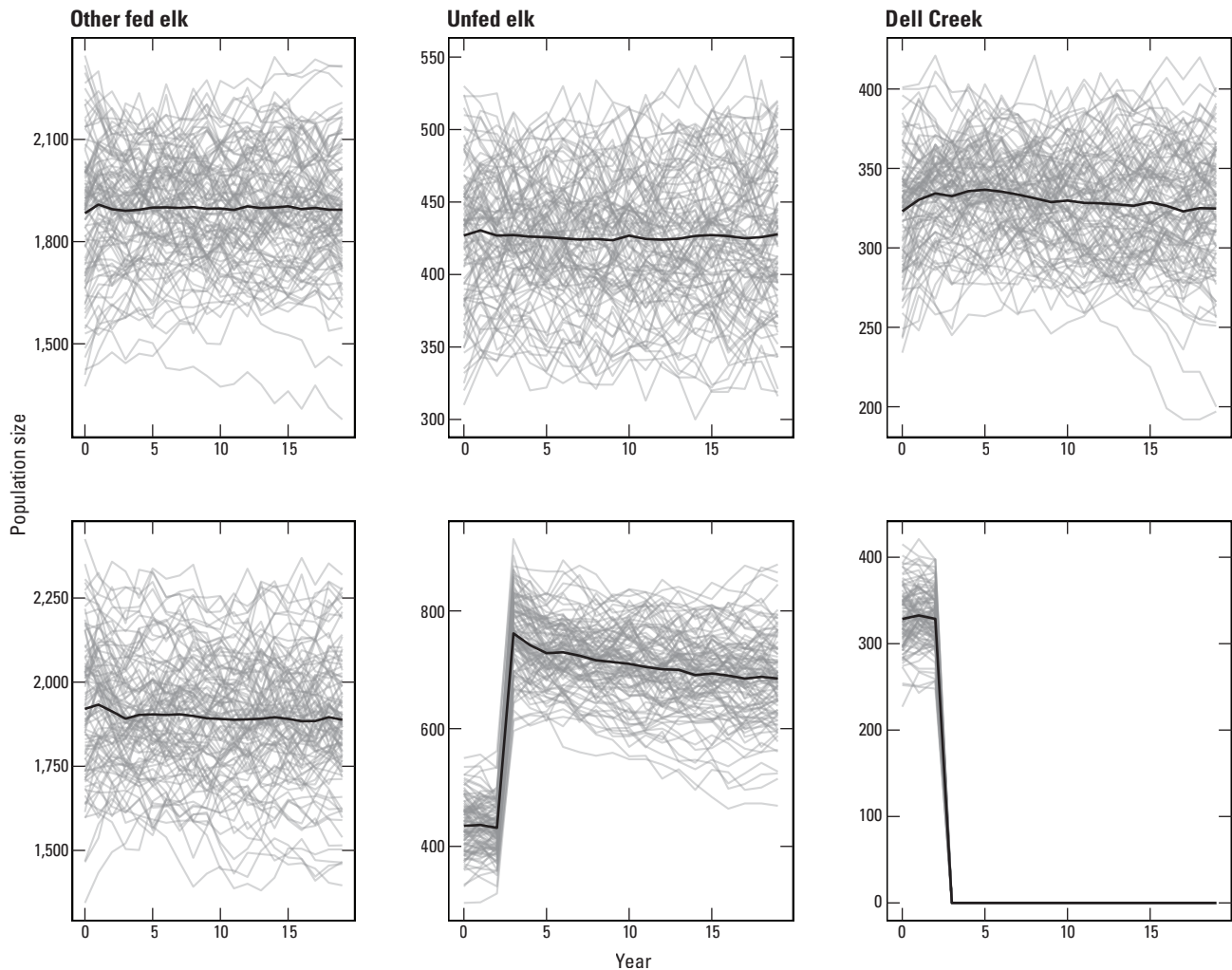


Figure 6. One hundred simulations (gray lines) and the average population size (black lines) of the Upper Green River herd unit in the absence of any chronic wasting disease effects for the emergency feeding (top row) and phaseout alternative (bottom row) alternatives. For the phaseout alternative, the target feedground Dell Creek, is added into the unfed population in year 3 and then assumed to have a 23-percent reduction in carrying capacity.

Table 5. Average elk counts from 2016 to 2020 for the six modeled herd units in Wyoming. Hoback was combined with Upper Green River and the Piney herd units.

[Average hunt, the average number of elk hunted from 2016 to 2020; Simulated hunt, the average number hunted per year in the chronic wasting disease model prior to corrections when disease is excluded; Correction factor, the average 2016–20 hunt divided by the simulated hunt. The Upper Green River and Piney herd unit corrections account for the incorporation of the Hoback unit; est., estimate; SD, standard deviation; —, no data]

Herd unit	Trend count	Hunted elk	Fed elk	Unfed elk	Population est.	SD	Percent fed	Simulated hunt	Correction factor
Afton	2,197	870	1,101	1,628	2,729	568	0.41	503	1.73
Fall Creek	4,241	523	3,372	1,291	4,663	389	0.72	858	0.61
Jackson	10,598	1,240	9,515	1,610	11,124	465	0.85	—	—
Pinedale	2,036	452	1,772	393	2,165	208	0.83	407	1.11
Piney	2,976	957	2,508	696	3,204	608	0.78	604	1.58
Upper Green River	3,155	501	2,791	541	3,332	346	0.85	617	0.81

differences considered in the frequency of feeding. However, we assumed the seasonal duration of feeding would be reduced by one month, and this reduction would reduce CWD transmission. We assumed that the feeding started on February 1 under emergency conditions rather than January 1, since both the CWD and habitat models operate on a monthly basis. As a result, for the EF alternative on Dell Creek, we used $\beta_{k=2}$ for January.

In addition to the unique conditions for each of the four alternatives, we incorporated our two hypotheses about CWD transmission occurring among and between fed and unfed population segments. We considered each hypothesis as equally likely to occur (in other words, 50 percent of the weight placed on each) based on the considerable uncertainty in elk space use patterns, social behaviors, relatedness, and other factors that might affect CWD spread within populations. Thus, for each simulation, the CWD transmission mode and rate estimates for elk outside of winter months (May–November) were estimated as a group-weighted mixture distribution of the fed and unfed parameter estimates, where groups were defined as the proportion of elk in fed and unfed segments at the beginning of each simulation.

4.2.4. Cumulative Effects

In addition to analyzing the alternative actions for Dell Creek and Forest Park, we ran simulations where the CF, PO, and NF alternatives were implemented across all feedgrounds in a HU or all feedgrounds located on FS property. We did not model an EF alternative because we were unable to identify feedground-specific triggers (for example, brucellosis risk and calf mortality) that could be used for each location. We further assumed the management action would occur simultaneously across all feedgrounds. In practice, however, management actions (for example, closures) are expected to occur over time, perhaps in accordance with the expiration of permits for feedgrounds on FS property. We used the same vital rate parameters as in Section 5, which are the same for each HU.

4.3. Results

4.3.1. Dell Creek and Forest Park

Population sizes were projected to decline and CWD prevalence was projected to increase on the Afton and Upper Green River HUs across the four alternatives (figs. 6–11; table 6). Figures 6–11 illustrate fed and unfed elk population and CWD prevalence trajectories over time for the CF, PO, and NF alternatives. Population size estimates after 20 years indicated projected declines on average of 25–35 percent of average population sizes from 2016 to 2020 on the Afton HU and 53–57 percent on the Upper Green River HU. Corresponding to the population size, we predicted declines in available harvest on average between 12 and 14 percent in the Afton HU and 23–25 percent in the Upper Green River HU. We predicted CWD prevalence increases across the same 20-year period from an initial mean of 1.6 percent to 17–20 percent on average in the Afton HU and 27–30 percent on the Upper Green River HU.

For both HUs, the no feeding alternative had higher projected population sizes after 20 years compared to phaseout, emergency feeding, and continued feeding alternatives (figs. 10 and 11, table 6). In both HUs, the no feeding alternative had the lowest projected CWD prevalence estimates in year 20 (figs. 10 and 11, table 6). Emergency feeding and continued feeding resulted in the highest CWD prevalence and the phaseout alternative was intermediate. Finally, the no feeding alternative had the highest projected cumulative harvest in the Afton HU, and phaseout had the lowest cumulative harvest. On the Upper Green HU, emergency feeding had the highest cumulative harvest, and phaseout had the lowest. The average differences in CWD prevalence, population size, and cumulative harvest were smaller than the projected standard deviations (table 6).

The no feeding alternative was projected to have lower CWD mortalities and higher population sizes at year 20, but there is significant overlap among simulations when we account for uncertainty (figs. 12, 13). Interestingly,

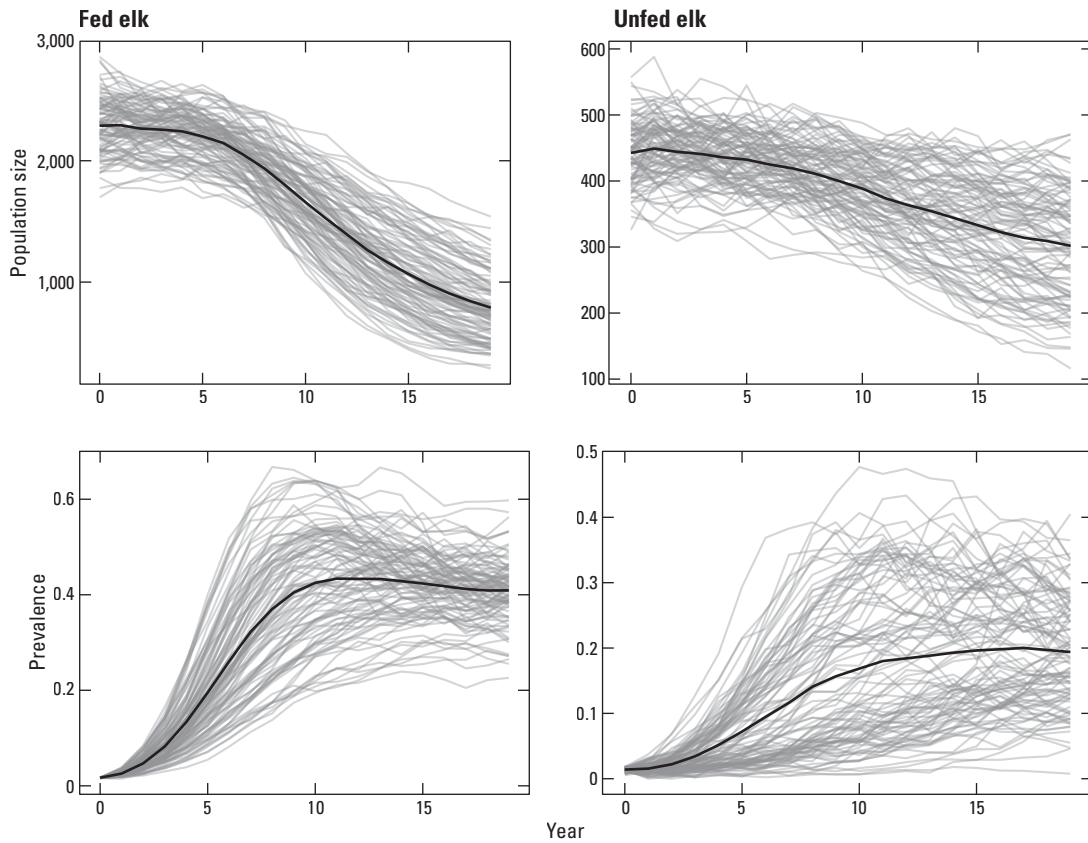


Figure 7. Elk counts and chronic wasting disease prevalence for fed elk and unfed elk in the Upper Green River herd unit for the continued feeding alternative.

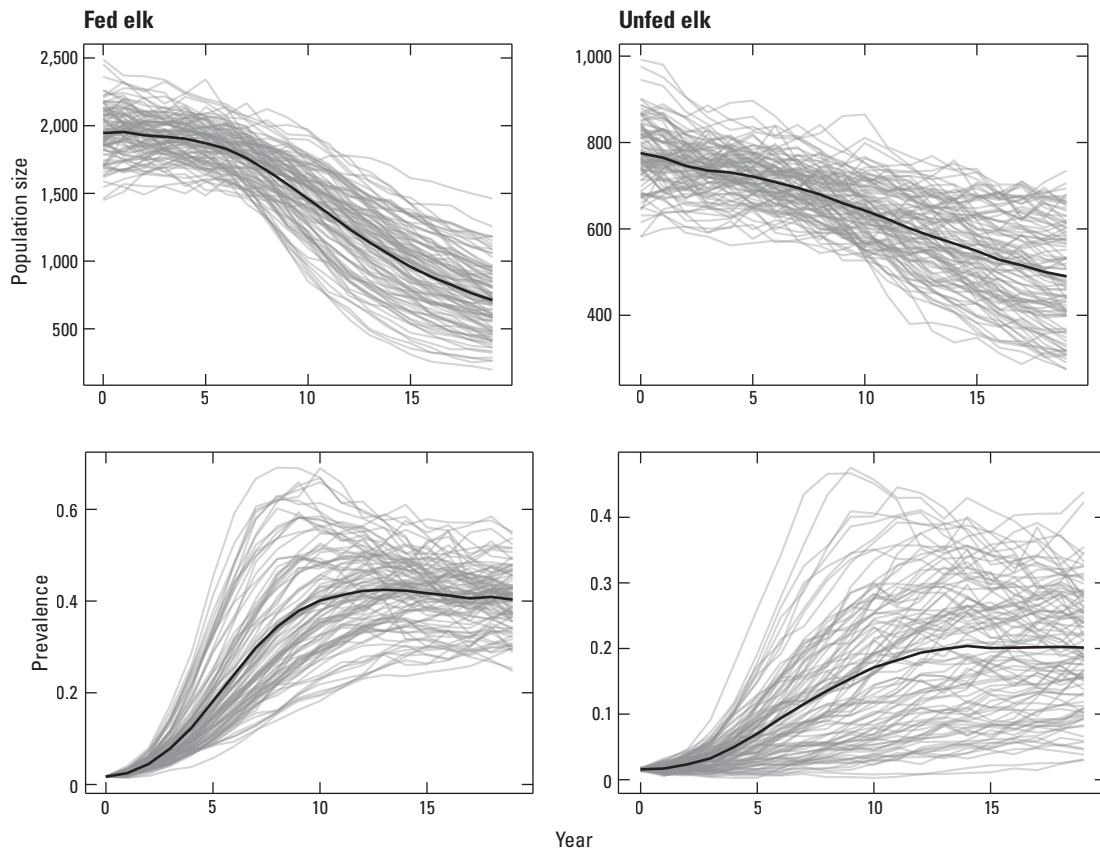


Figure 8. Elk counts and chronic wasting disease prevalence for fed elk and unfed elk in the Upper Green River herd unit for the no feeding alternative.

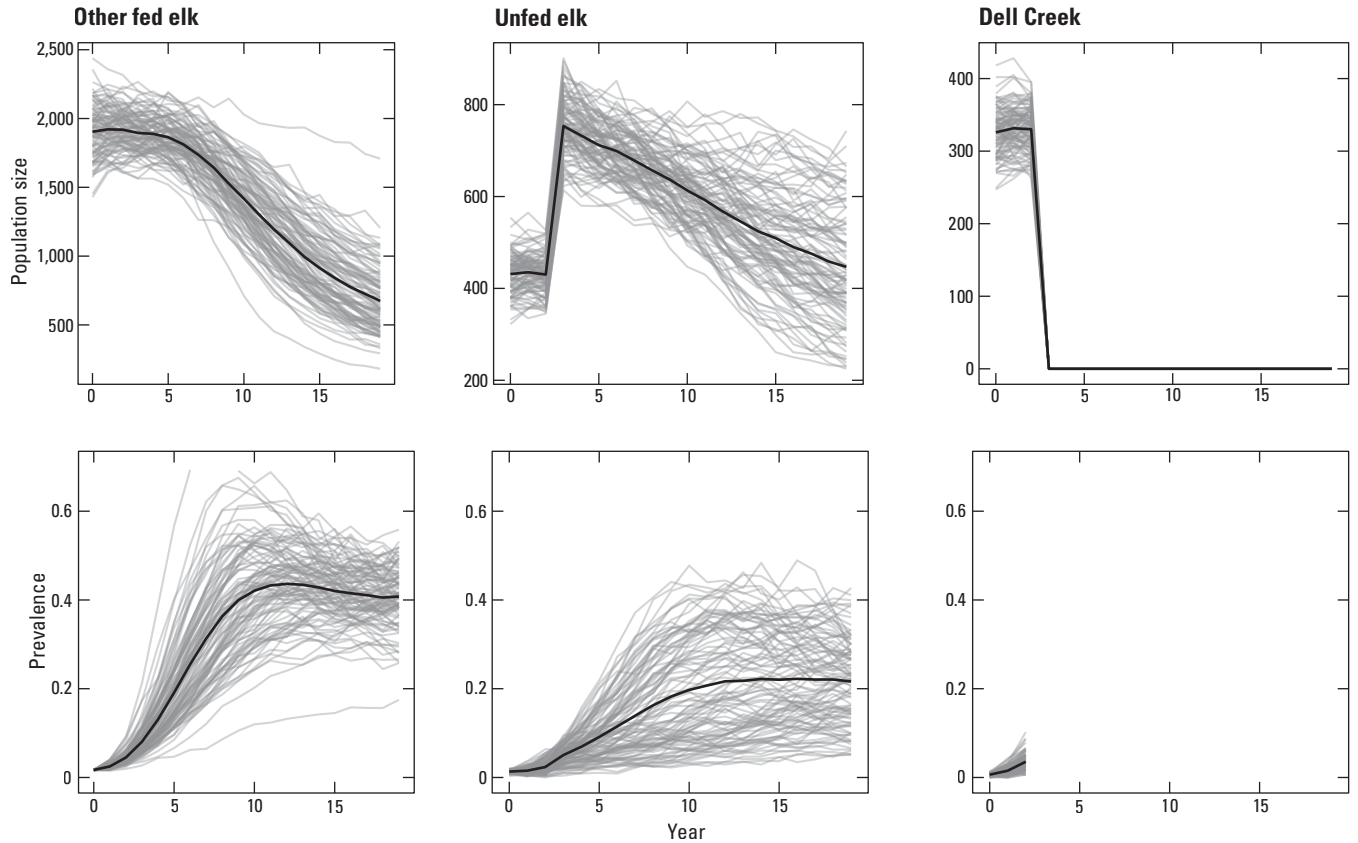


Figure 9. Elk counts and chronic wasting disease prevalence for other fed elk, unfed elk, and the target feedground of Dell Creek in the Upper Green River herd unit for the phaseout alternative. Elk on the Dell Creek feedground are added to the unfed elk population in year 3.

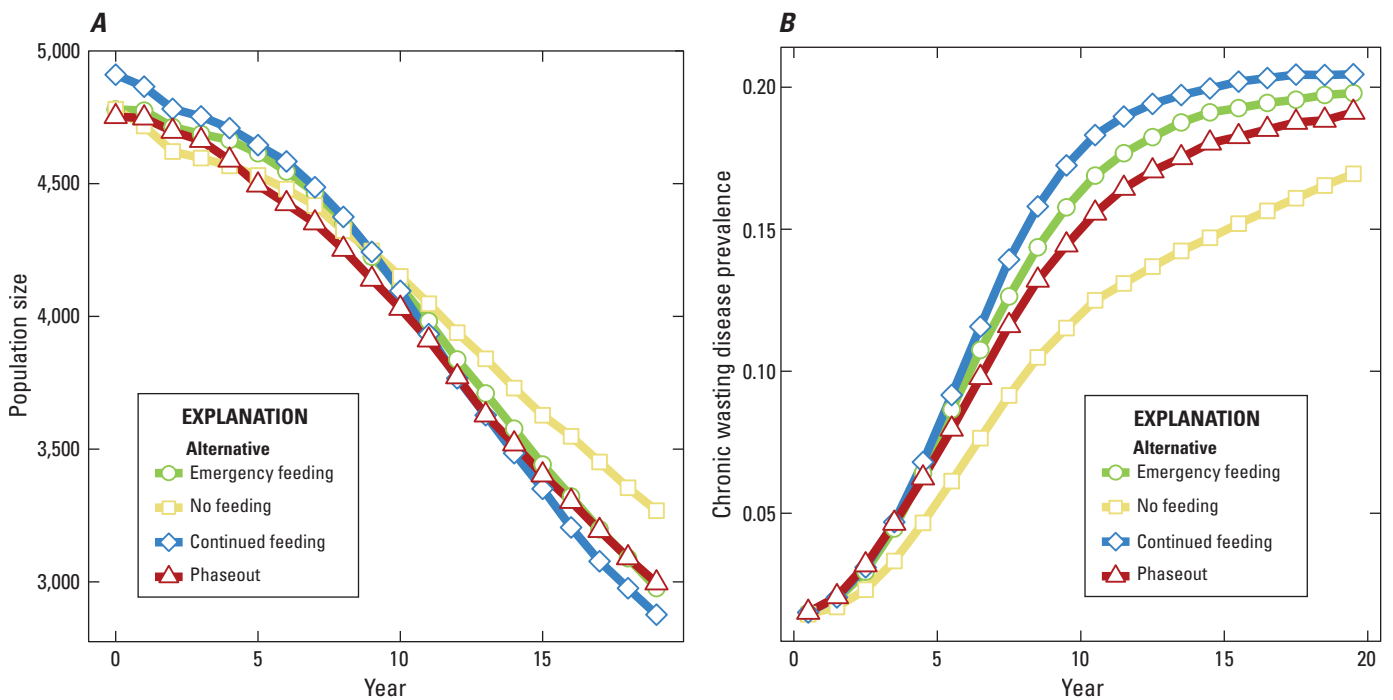


Figure 10. A, Average population size and B, chronic wasting disease prevalence over time for the four alternatives in the Afton herd unit.

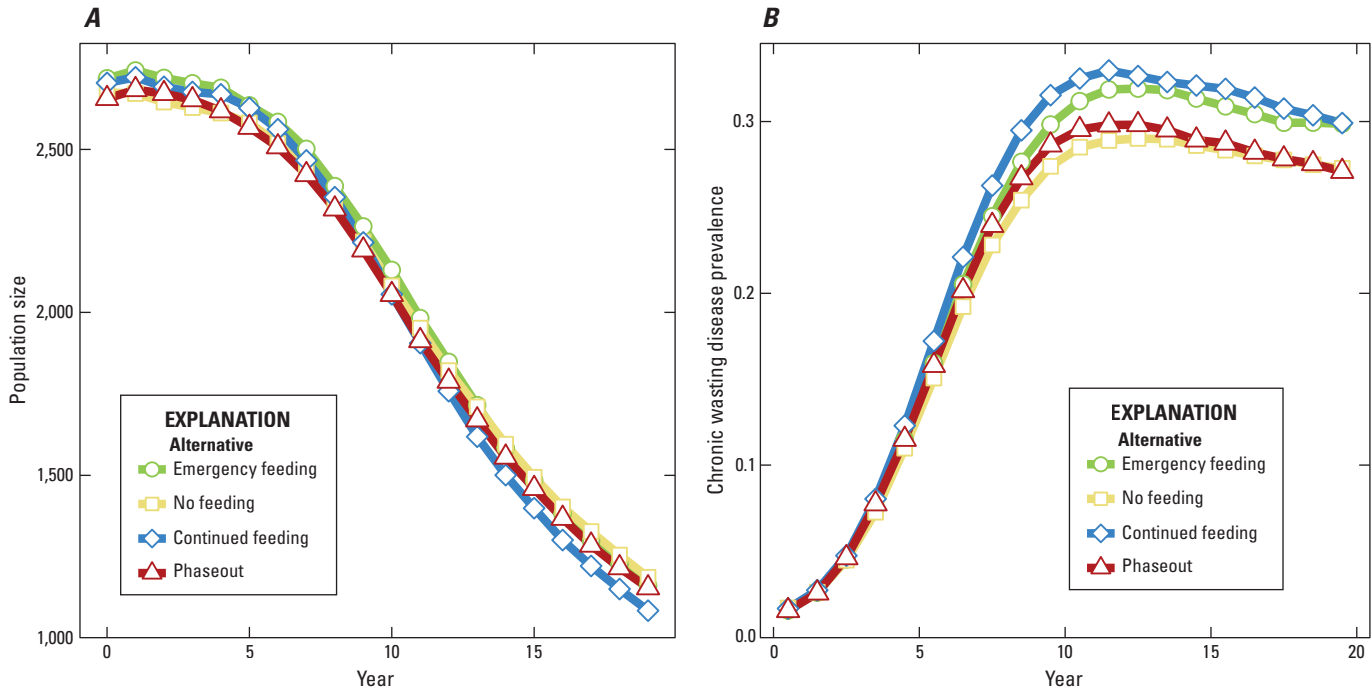


Figure 11. A, Average population size and B, chronic wasting disease prevalence over time for the four alternatives in the Upper Green River herd unit.

Table 6. Chronic wasting disease prevalence in year 20, cumulative chronic wasting disease mortalities, population size, and cumulative harvest of elk under the four alternatives and two herd units (Afton and Upper Green River).

[CWD, chronic wasting disease; SD, standard deviation]

Alternatives	Herd unit	CWD prevalence	SD	CWD mortalities	SD	Population size	SD	Harvest	SD
Continued feeding	Afton	0.20	0.07	2,598	702	3,091	659	14,959	1,826
Emergency feeding	Afton	0.20	0.06	2,490	607	3,221	568	14,938	1,637
Phaseout	Afton	0.19	0.08	2,251	820	3,251	749	14,923	1,824
No feeding	Afton	0.17	0.07	1,930	687	3,551	668	15,249	1,665
Continued feeding	Upper Green River	0.30	0.05	2,106	407	1,158	288	7,562	970
Emergency feeding	Upper Green River	0.30	0.05	2,100	336	1,241	289	7,765	845
Phaseout	Upper Green River	0.27	0.06	1,942	391	1,234	316	7,598	835
No feeding	Upper Green River	0.27	0.06	1,910	367	1,267	337	7,679	1,005

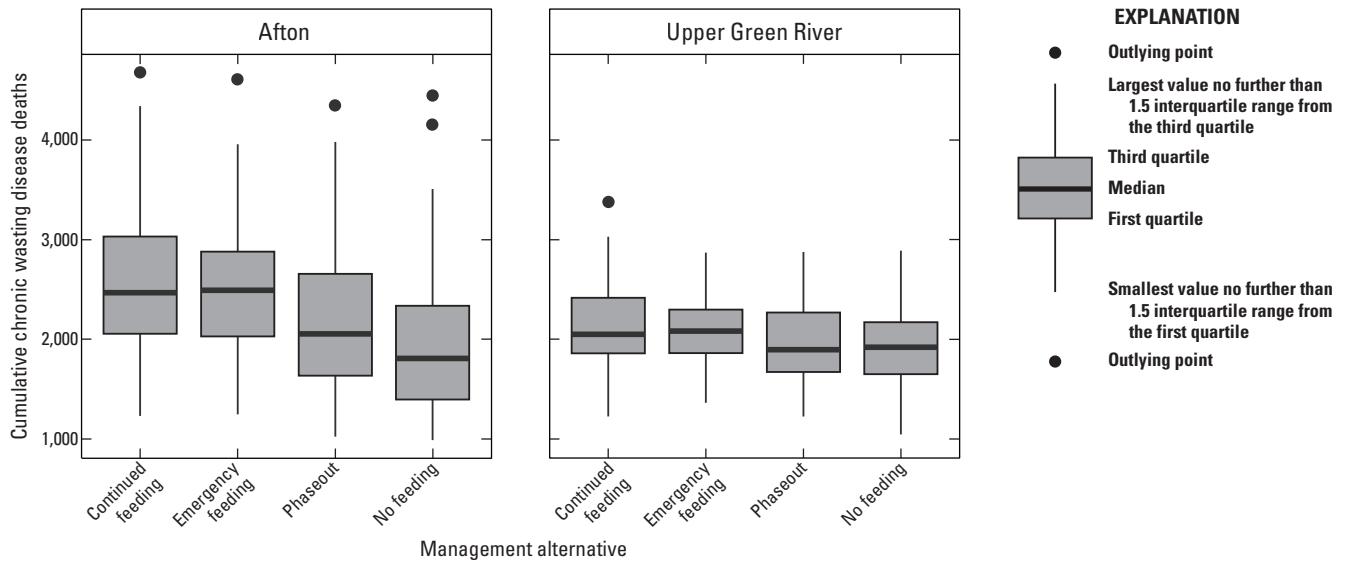


Figure 12. Boxplots of the cumulative number of chronic wasting disease mortalities for the four management alternatives in the Afton and Upper Green River herd units. Chronic wasting disease mortalities include only terminal cases and did not include other forms of mortality.

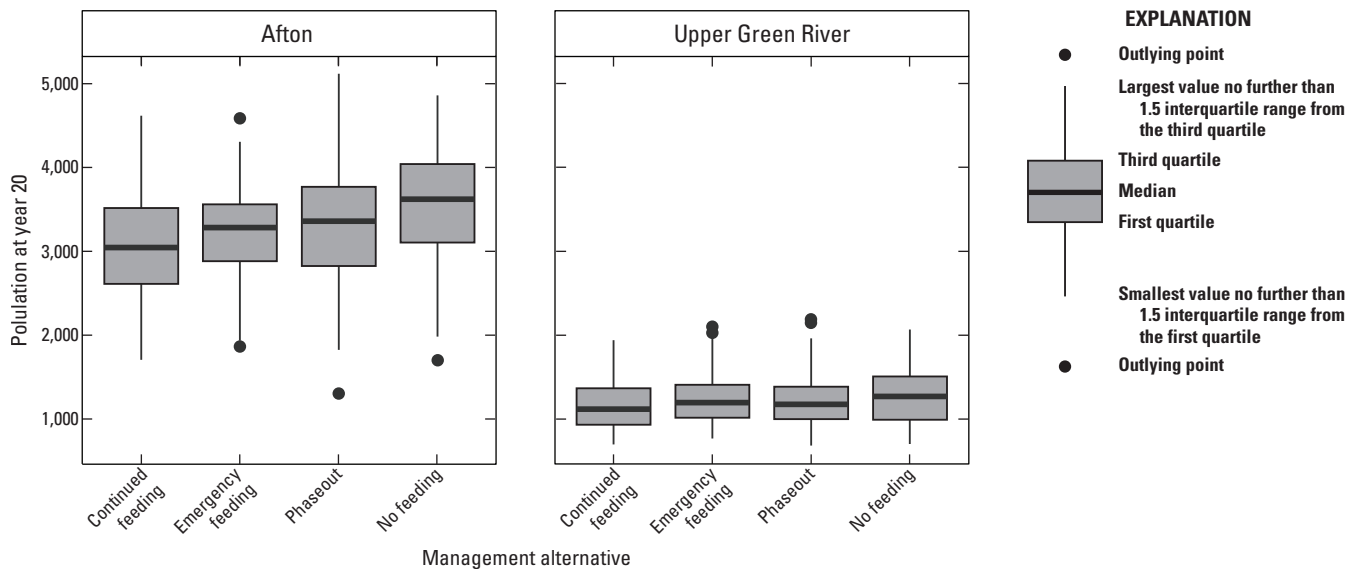


Figure 13. Boxplots of elk population size at year 20 for the four management alternatives in the Afton and Upper Green River herd units.

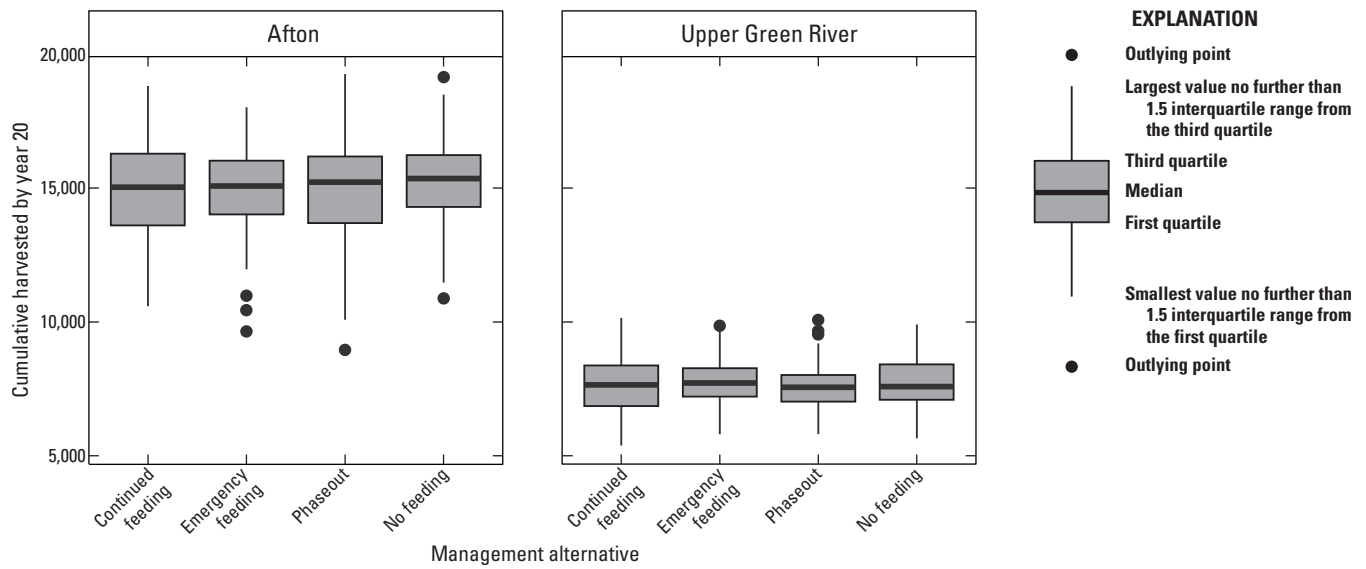


Figure 14. Boxplots of the cumulative number of harvested elk for the four different management alternatives in the Afton and Upper Green River herd units.

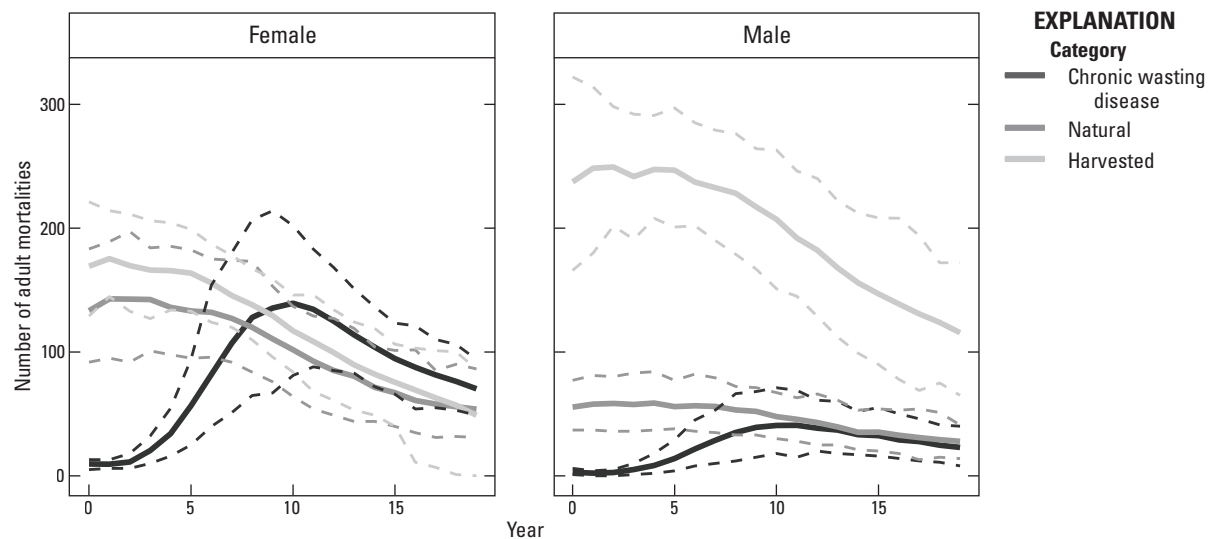


Figure 15. Predicted cause of mortalities for females and males over time in the Upper Green River herd unit for the feeding alternative. Dotted lines represent the 5th and 95th percentiles of 100 simulations.

the cumulative number harvested was similar across all alternatives relative to the variation in model projection (fig. 14). Simulation results suggested CWD will become the dominant cause of death for adult female elk around year 10 but remains low in adult male elk because the harvest rate of adult males is higher; therefore, a smaller fraction of males reach an age where they acquire and succumb to the disease (fig. 15). Although we assumed female elk harvest would be halted if the population reached half of the population objective, this was seldom triggered in our analyses (fig. 15).

4.3.2. Cumulative Effects

Many differences among the management alternatives became significant relative to our uncertainty when we evaluated all feedgrounds on FS property or within an HU. We did not include emergency feeding in our cumulative effects analysis because we lacked information on site-specific feeding triggers.

Elk populations are predicted to decline in all management alternatives (fig. 16). The Afton no feeding alternative on all feedgrounds had the smallest average decline of 33 percent, whereas the Upper Green River HU continued feeding alternative had the largest average decline of 66 percent by year 20 (fig. 16). The no feeding alternative resulted in early population declines, particularly if applied across all feedgrounds, but is predicted to have higher elk populations around year 10 onward (fig. 16). The phaseout alternative was intermediate on population declines compared to continued feeding or no feeding.

The projected CWD prevalence under continued feeding was lowest in the Afton HU (23 percent), which had the lowest proportion of elk that are fed compared

to other HUs (figs. 17, 18). In Fall Creek, closure of FS feedgrounds are predicted to have limited impacts on CWD prevalence compared to continued feeding (28 and 31 percent, respectively) because of the low percentage of fed elk on FS feedgrounds in that HU; however, if all feedgrounds on Fall Creek were closed, the prevalence in year 20 was predicted to be much lower (14 percent). Phaseout of all feedgrounds after only 3 years results in a CWD prevalence of 16 to 20 percent, depending on the proportion of the HU that was fed (fig. 17). In the Upper Green River HU, 3 years of feeding resulted in a prevalence of 20 percent compared to 12 percent in year 20 without feeding. The projected CWD prevalence under continued feeding was lowest in the Afton HU (23 percent), which had the lowest proportion of elk that are fed compared to other HUs (figs. 17, 18). In Fall Creek, closure of FS feedgrounds are predicted to have limited impacts on CWD prevalence compared to continued feeding (28 and 31 percent, respectively) because of the low percentage of fed elk on FS feedgrounds in that HU; however, if all feedgrounds on Fall Creek were closed, the prevalence in year 20 was predicted to be much lower (14 percent). Phaseout of all feedgrounds after only 3 years results in a CWD prevalence of 16 to 20 percent, depending on the proportion of the HU that was fed (fig. 17). In the Upper Green River HU, 3 years of feeding resulted in a prevalence of 20 percent compared to 12 percent in year 20 without feeding.

Generally, the no feeding alternatives tended to have higher numbers of elk harvested over the course of 20 years particularly if all feedgrounds are closed (fig. 19). In contrast, the continued feeding alternatives generally had the lowest number of harvested elk after 20 years because of high CWD prevalence in fed populations and associated reductions in population performance. The phaseout alternative tended to be intermediate in terms of harvest (fig. 19).

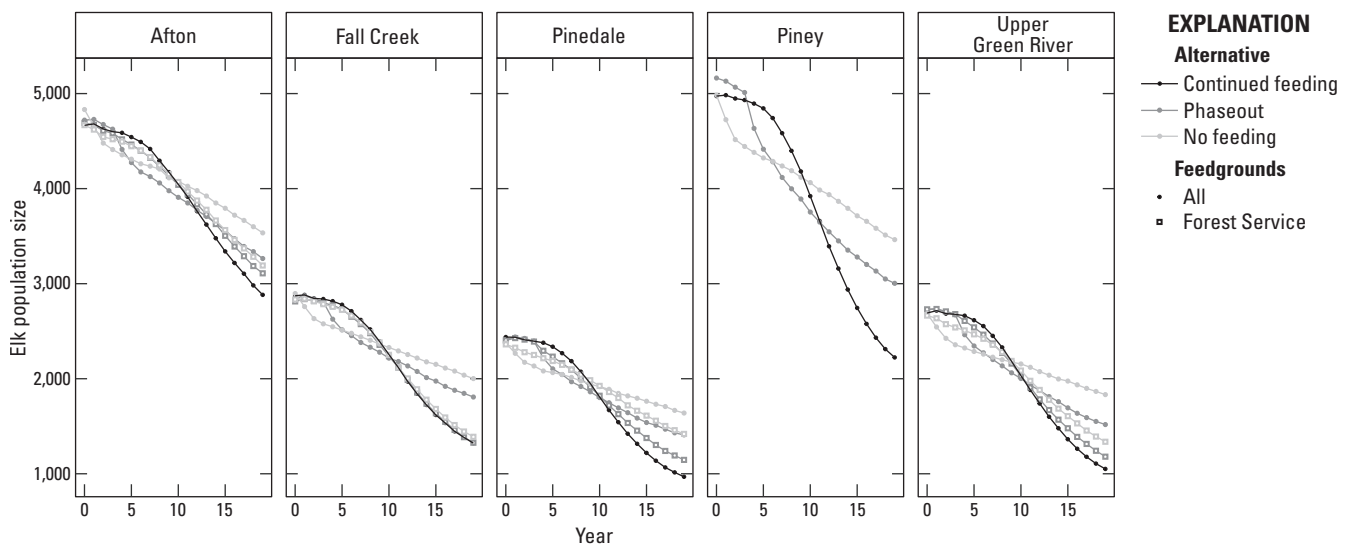


Figure 16. Predicted elk population sizes for different herd units for three management alternatives that are implemented on all feedgrounds or only on Bridger-Teton National Forest.

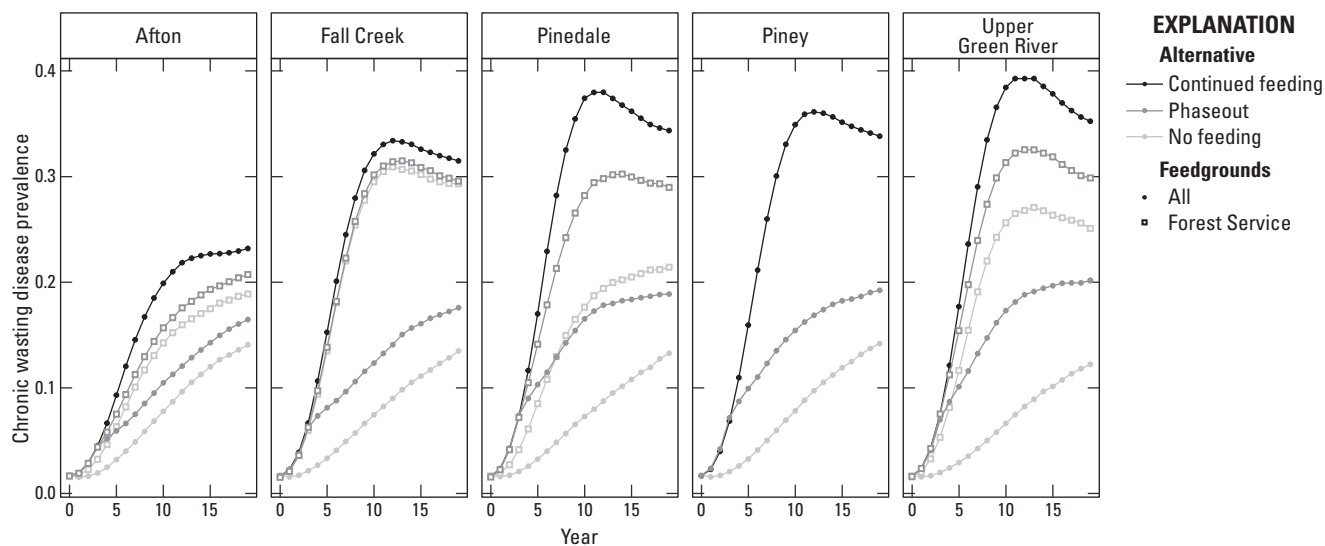


Figure 17. Chronic wasting disease prevalence for different herd units assuming all feedgrounds are fed, none of the feedgrounds are operational, or all feedgrounds are phased out. Circles represent all feedgrounds and squares indicate the management action occurs only on U.S. Department of Agriculture Forest Service feedgrounds.

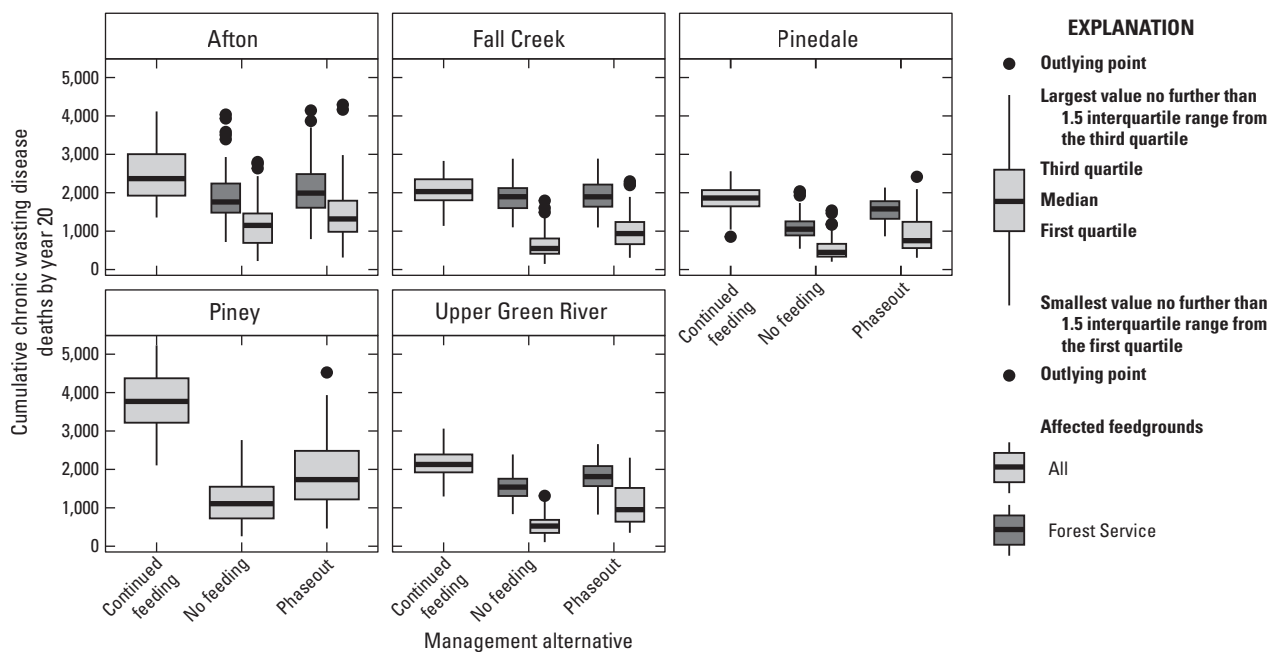


Figure 18. Boxplots of chronic wasting disease mortalities by year 20 for the no feeding, continued feeding, and phaseout alternative across five Wyoming herd units. For the no feeding or phaseout alternatives all feedgrounds in that herd unit or only those on U.S. Department of Agriculture Forest Service property. The Piney herd unit does not have any feedgrounds on U.S. Department of Agriculture Forest Service property.

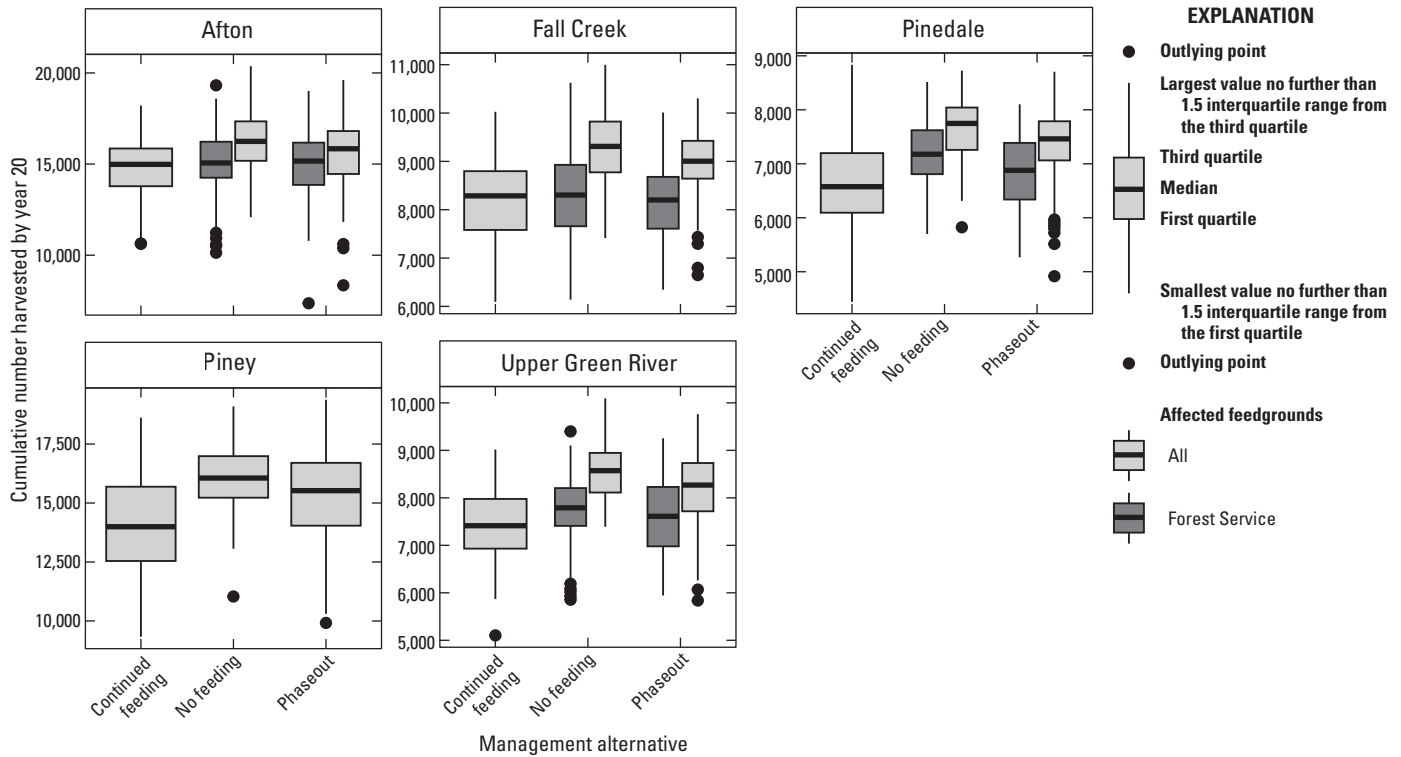


Figure 19. Boxplots of the simulated cumulative number of harvested elk by year 20 for the no feeding, continued feeding, and phaseout alternatives across five Wyoming herd units. For the no feeding or phaseout alternatives, all feedgrounds in that herd unit or only those on U.S. Department of Agriculture Forest Service property are closed. The Piney herd unit does not have any feedgrounds on U.S. Department of Agriculture Forest Service property.

5. Spatio-Temporal Analysis of Elk Distributions

5.1. Overview

Bridger-Teton National Forest managers identified two fundamental objectives related to the spatial distribution of elk. First, the Forest Plan requires Bridger-Teton National Forest to support other ungulate populations in addition to elk. Thus, it is important to understand how the selected alternatives affect competition between elk and other big game species, specifically mule deer (PM4a) and moose (PM4b), on winter ranges. In addition, managers want to minimize elk and private property overlap because of the potential for brucellosis transmission between elk and cattle (PM5b) and increased costs associated with elk depredation of haystacks and other agricultural resources (PM6a, described in Fundamental Objective 6 of Section 3). In this section, we estimated the consequences of the alternatives on these metrics (PM4a, PM4b, PM5b) by combining the temporal simulation results from Section 4 into a spatial analysis of elk distribution.

5.2. Methods

5.2.1. Habitat Selection and Use

There have been several analyses of elk selection and distribution on and around the supplemental feedgrounds of western Wyoming (Jones and others, 2014; Merkle and others, 2018; Maloney and others, 2020). We developed our analyses primarily based on Maloney and others (2020), from which we made several modifications. Maloney and others (2020) pooled data on 255 radio-collared elk that visited 20 of the WGFD-operated feedgrounds and 168 radio-collared elk from neighboring winter ranges (Banulis $n = 36$, Buffalo Valley $n = 15$, Hunt Area 99 $n = 22$, Riley Ridge $n = 77$, Spring Creek $n = 9$, Upper Green River $n = 9$). They then estimated resource selection function (RSF) coefficients, ϕ_{jk} for each month, j , in fed ($k = 1$) and native winter range elk ($k = 2$) populations on a third-order scale where availability was calculated from polygons representing each animal's area of use. We used the same coefficients and habitat covariates to capture seasonal changes in selection by elk as they moved up and downslope during spring and fall. We also accounted for the potential

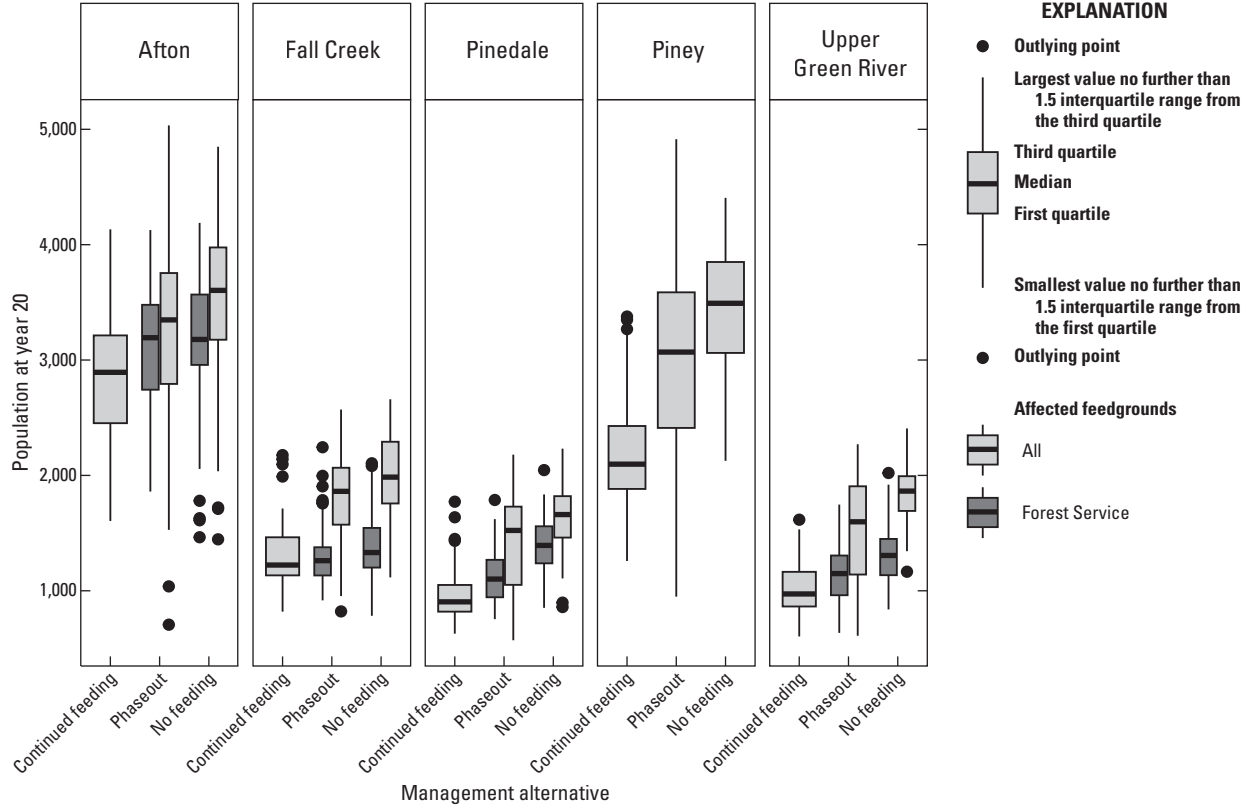


Figure 20. Boxplots of the simulated population size in year 20 for the no feeding, continued feeding, and phaseout alternatives across five Wyoming herd units. For the no feeding or phaseout alternatives, all feedgrounds in that herd unit or only those on U.S. Department of Agriculture Forest Service property are closed. The Piney herd unit does not have any feedgrounds on U.S. Department of Agriculture Forest Service property.

closure of feedgrounds by recalculating the distance to feedground covariate in the absence of those feedgrounds and applied that to the updated RSF.

We first calculated elk selection for a given 1-km² cell, s , as $w_{sjk} = \exp(\phi_{0jk} + x_{1sjk}\phi_{1sjk} + x_{2sjk}\phi_{2sjk} + \dots + x_{7sjk}\phi_{7sjk})$, where x is a vector of mean values of each environmental variable within a 1-km² cell. The habitat covariates used were the annual integrated Normalized Difference Vegetation Index (250 m resolution); distance to feedground; elevation (30 m resolution); road density within 2.5 km; maximum snow water equivalent (1 km resolution); and percent forest and percent native herbaceous cover within 2.5 km (30 m resolution). To account for the availability of a resource (Boyce and McDonald, 1999), we converted the Maloney and others (2020) RSFs from a selection function to a probability of use function. We followed the approach of Schoenecker and others (2015) because we have continuous habitat covariates, binned our RSF values, w_{sjk} into 20 percentiles within each HU, l , and then used [equation 5](#) to calculate the probability of use, $U(x_{ljk})$ as:

$$U(x_{ljk}) = w(x_{ljk})A(x_{ljk}) / \sum_l w(x_{ljk})A(x_{ljk}), \quad (5)$$

and estimated the number of elk in each bin is as:

$$n_{ljk} = N_{jkt} U(x_{ljk}), \quad (6)$$

where N_{jkt} is the predicted number of fed or unfed elk in month j and year t from the CWD simulation model. We did this for each HU to elucidate the differences of the alternatives on the metrics for each individual herd.

To relate elk spatial distribution to performance metrics, we derived the number of elk days per HU by multiplying the number of elk estimated in each cell by the number of days in each month of the year. We then summed the total number of elk days that occur on mule deer (PM4a) and moose winter ranges (PM4b), and the number of elk days on private lands. We initially calculated elk days on big-horn sheep winter ranges but removed this from the metrics as big horn sheep winter range only occurred minimally within our study area, and not at all in the Afton and Piney

HUs. We used these overlaps as indexes of forage competition with other big game species on winter ranges and as an index of elk damage to private property. The WGFD defined winter ranges using data from their winter observation survey data and Global Positioning System collar data (<https://wgfd.wyo.gov/Wildlife-in-Wyoming/Geospatial-Data/Big-Game-GIS-Data>) and derived private property from tax records from Wyoming GIS Parcel Data up to January 1, 2022 (Wyoming Statewide Parcel Viewer, 2022).

For brucellosis risk to cattle, we calculated the predicted number of elk abortions that occur on private property. Cross and others (2015) estimated the probability that an adult, seropositive female elk would have an abortion, ρ , per day, which we summed to a monthly basis. We assumed no abortions occurred from August to the end of January. The CWD model in Section 4 provided the number of fed or unfed female elk over age 2, F_{jkt} , monthly for 20 years. For each HU, we calculated the average brucellosis seroprevalence in adult females from 2010 to 2020 using data provided by WGFD. The total predicted number of fed or unfed elk abortions in a HU is then given as

$$a_{jkt} = F_{jkt} \rho_j \eta, \quad (7)$$

where

F_{jkt}	is the number of adult females in an HU;
η	is the average brucellosis seroprevalence for the HU;
j	is an indicator variable for month;
k	indicator for fed or unfed elk; and
t	is an indicator variable for year.

We then allocated the abortions predicted from [equation 7](#) in space similar to [equation 6](#). We assumed all private properties are areas of potential cattle exposure over the next 20 years. Ideally, we would use the actual cattle distribution rather than all private properties; however, cattle distribution is private information. In addition, cattle distribution changes during the year and is expected to change over the next 20 years.

5.2.2. Implementation of Management Alternatives

We adapted this spatial model to evaluate and predict effects of the four alternatives on performance metrics 4a, 4b, and 5. For the CF alternative, no changes were required to the methods described in Section 5.2.1 other than to extract the number of elk days on different winter ranges or abortions on private land and sum over the 20-year timeframe. For the NF alternative on Dell Creek or Forest Park, we took the average population size on Dell Creek and Forest Park feedgrounds from 2016 to 2020 and assumed they are distributed to the native winter range as part of the unfed population of their respective HUs. We assumed when a feedground is closed there is no lag time in fed elk being distributed to native winter range within the same HU. In discussion with WGFD experts,

there was uncertainty about whether feedground elk may move to another feedground rather than native winter range after a feedground closure. The existing GPS data indicate limited movement between Dell Creek, Forest Park, and other neighboring feedgrounds, while they are continuing to be fed. It is unclear whether that would be the case given a feedground closure. For the NF alternative, we recalculated the distance to feedground covariate assuming the feedground (Dell Creek or Forest Park) is closed and previously fed elk are no longer attracted to that area. For the PO alternative, we assumed elk on the target feedground selected the same landscapes as fed elk for the first 3 years and selected the same landscapes as native winter range elk for the next 17 years.

For the EF alternative, we assumed emergency feeding is triggered every year on the Dell Creek feedground and in 70 percent of years at Forest Park (based on Singer and others, 1997). The distribution of elk during intermittent closures is uncertain; however, *Cervus elaphus* (red deer) continued to revisit feeding locations even after feeding activities stopped (Putman and Staines, 2004). We assumed Forest Park and Dell Creek elk continued to select habitats as fed elk and are attracted to feedgrounds every year even though feeding is intermittent or slightly delayed.

5.2.3. Cumulative Effects

For the cumulative effects analyses, we only modeled the CF, PO, and NF alternatives because emergency feeding may be implemented differently at feedgrounds depending on whether the trigger is related to livestock disease risk or elk calf survival. We modeled scenarios where all feedgrounds were managed the same way—either open, closed, or phased out at the same time. We also modeled scenarios where management actions were implemented only on feedgrounds located on FS property, whereas other feedgrounds remained operational.

5.3. Results

5.3.1. Dell Creek and Forest Park

Supplemental feedgrounds concentrate elk during winter at a small number of locations compared to more widely distributed native winter ranges that tend to be at lower elevations ([figs. 21, 22](#)). In [figure 23](#), we showed the predicted, unfed elk use relative to the WGFD winter observation data of elk off feedgrounds. The agreement between predictions and observed data appeared to be better for the Jackson, Fall Creek, and Afton HUs. The Piney HU had more winter elk observations across a broader landscape, which is reflected in the predictions. The Upper Green River and Pinedale HUs showed some discrepancies between predicted areas of winter use and observations ([fig. 23](#)). The Upper Green River HU had a strong elevational gradient and limited area of low elevation because we assumed elk are contained within HU for this modeling analysis. In contrast, the Pinedale HU had a

broad area of lower elevation over which the model predicts unfed elk are likely to spend the winter. In these two HUs, existing private lands may limit the migratory movements of elk from going farther downslope in the fall migration. In addition, winter observations of elk off feedgrounds may still be affected by the existence of feedgrounds. For this reason, we did not do a formal comparison of winter unfed elk observations and predicted use.

Whether fed or native winter range elk are predicted to spend more or less time on private property depends on the extent and location of private property relative to feedground locations (figs. 22, 24). In figure 24, we summed the predicted monthly use, U , on different land types and divided by 12 to estimate the proportion of time a fed or unfed elk would likely spend on those land types over a year. Approximately 19 percent of the Afton and Upper Green River HUs are private property. In the Afton HU and considering the CF, fed elk are predicted to spend a little over 20 percent of their time on private property, whereas unfed elk are predicted to spend over 35 percent of their time on private property

(fig. 24). We predicted native winter range elk have more overlap with private property across all alternatives in the Afton HU (fig. 24). In the Upper Green River HU, however, if Dell Creek is not feeding, then fed elk are predicted to spend slightly more time on private property than unfed elk (fig. 24). Model results indicated fed elk have more overlap with moose critical winter ranges than unfed elk in both the Afton and Upper Green River HUs.

We estimated the predicted number of elk abortions on private land was lower for the continued feeding and emergency feeding alternatives in the Afton and Upper Green River HUs compared to the phaseout or no feeding alternatives (fig. 25). This is likely because of the increased spatial overlap between unfed elk and private property during March–May (fig. 26) as well as the higher elk population sizes associated with the no feeding alternative (fig. 13). The spatial overlap between elk and private property and moose or mule deer critical winter ranges differed among alternatives in the Afton HU compared to the Upper Green River HU (fig. 27).

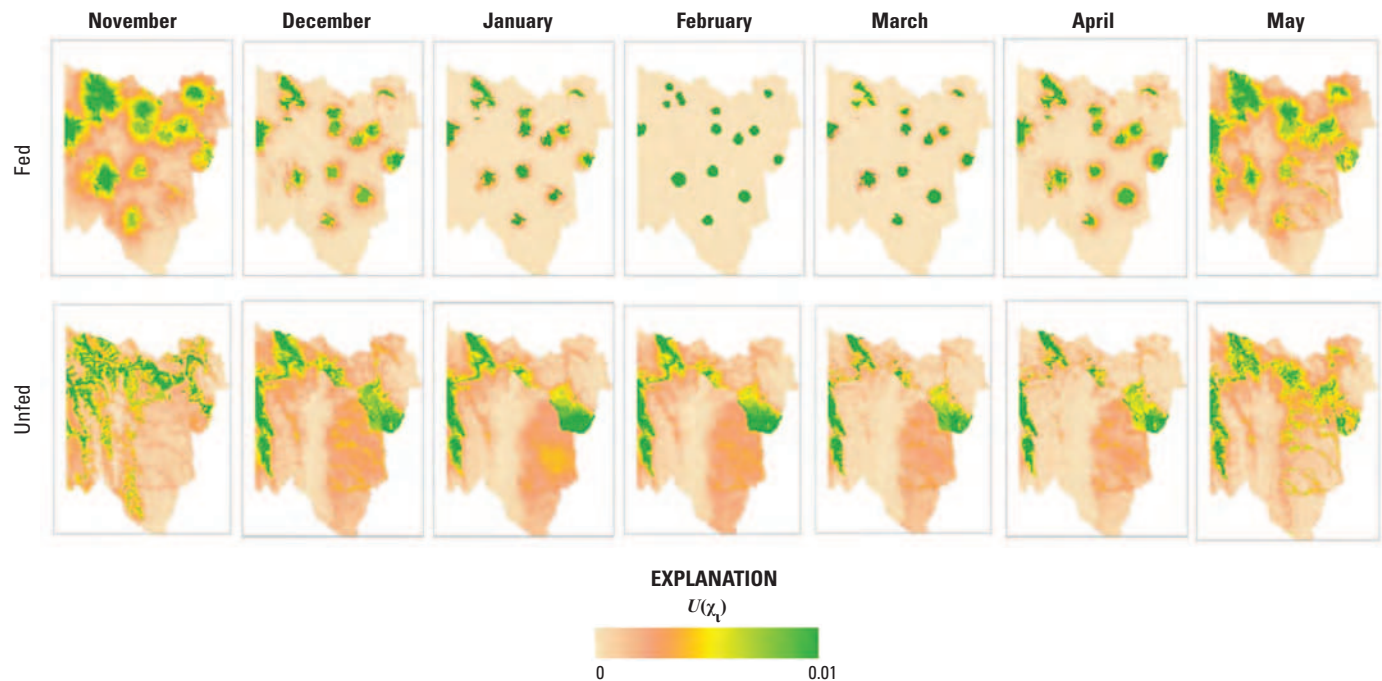


Figure 21. Predicted monthly per capita elk use $U(x_{jk})$ for elk that use native winter ranges (unfed elk) and elk that use feedgrounds (feedground elk) for the Afton, Upper Green River, Fall Creek, and Piney herd units in western Wyoming. Maps are based on the parameters estimated by Maloney and others (2020).

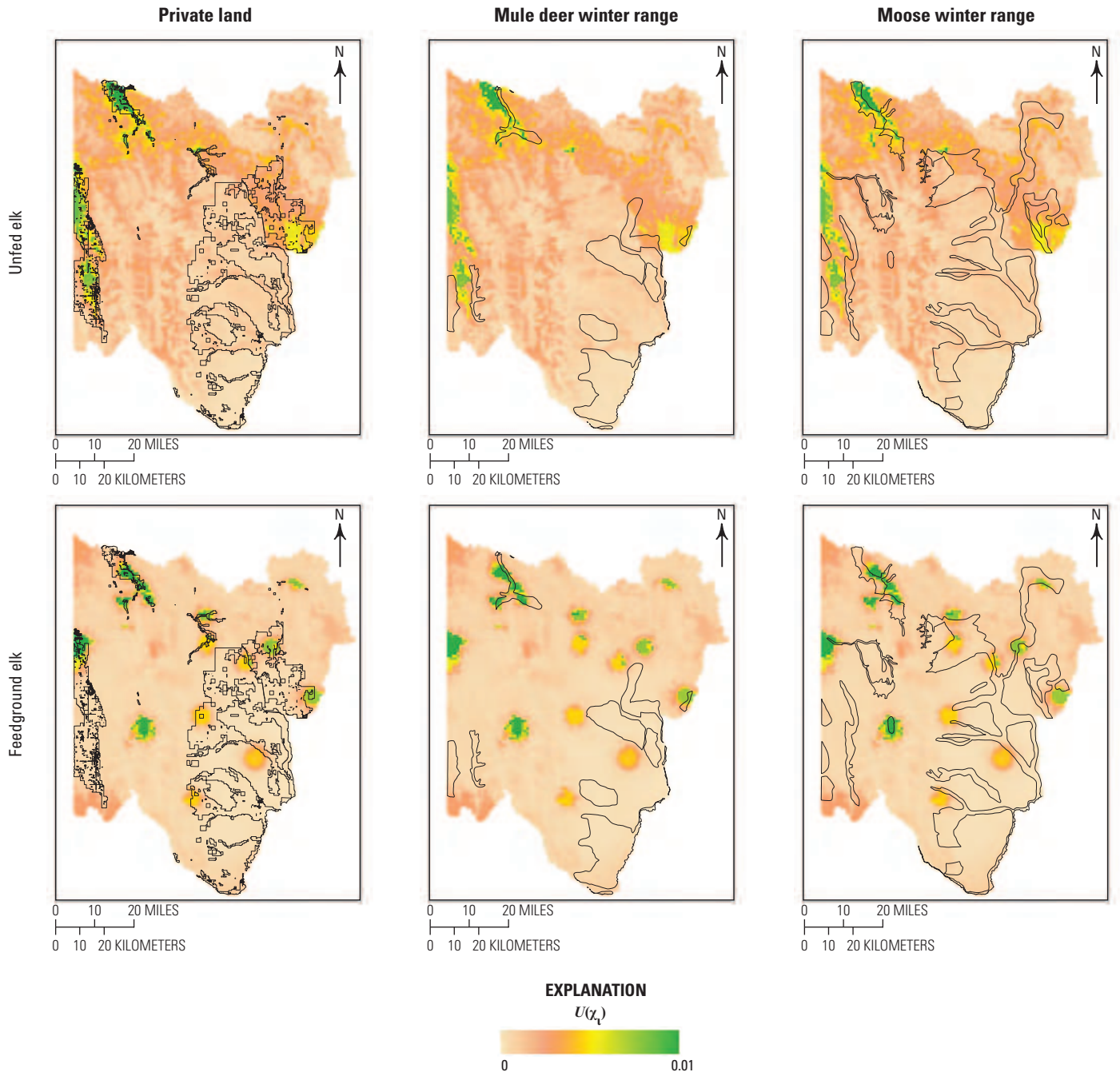


Figure 22. Land ownership, mule deer critical winter ranges, and moose critical winter ranges overlaid with average per capita elk use $\sum_j U(x_{ijk})/12$ for elk that use native winter ranges (unfed elk) and elk that use feedgrounds (feedground elk) in the Afton, Upper Green River, Fall Creek, and Piney herd units in western Wyoming. Map is based on the parameters estimated by Maloney and others (2020).

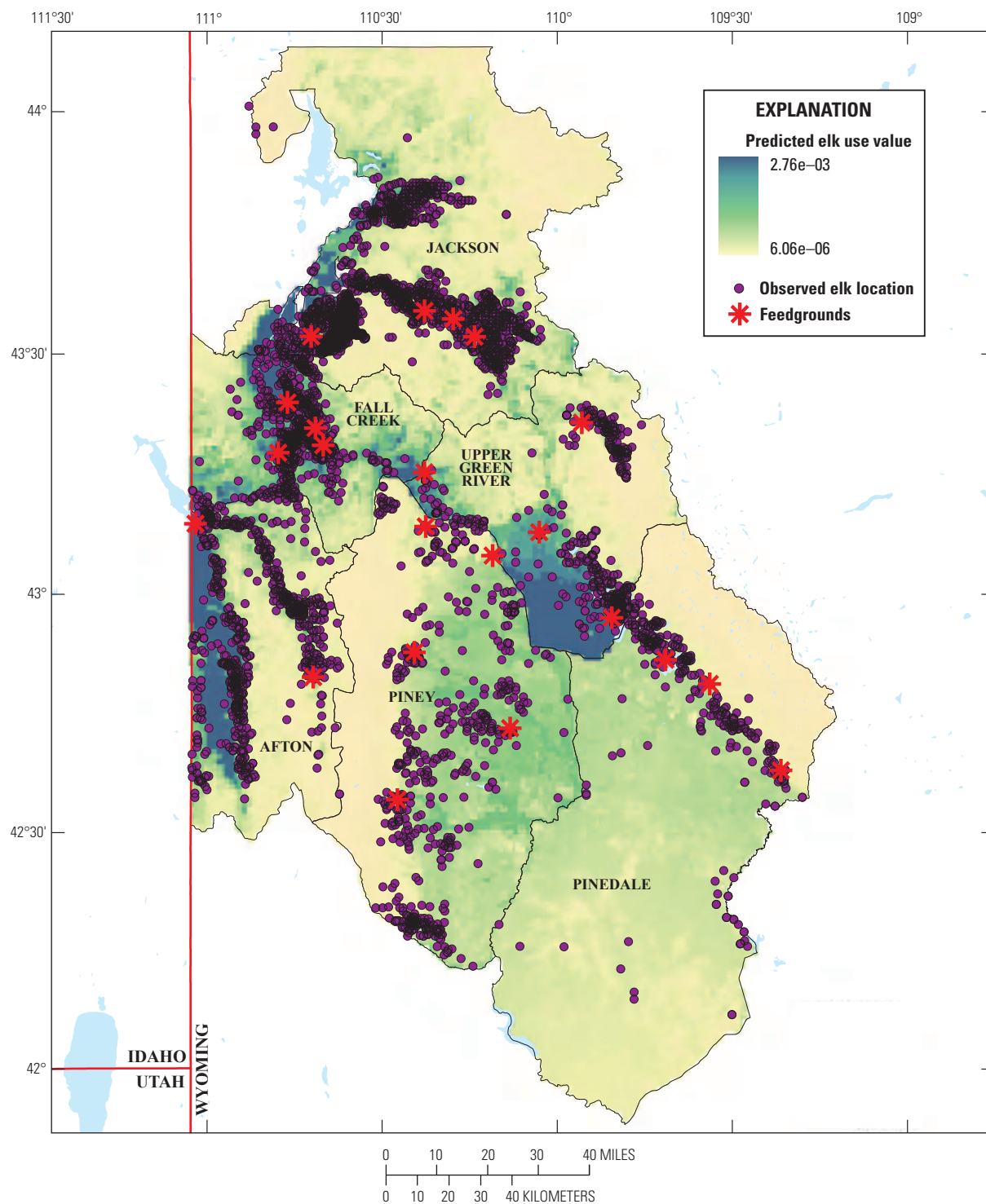


Figure 23. Winter elk locations from Wyoming Game and Fish Department surveys (1980–2021; Wyoming Game and Fish Department, 2020a, and references therein) with the predicted per capita elk use $U(x_{ijk})$ raster for unfed elk during the month of February. Darker blue represents higher probability of use and light yellow a lower probability of use. Probability of use was calculated independently for each herd unit.

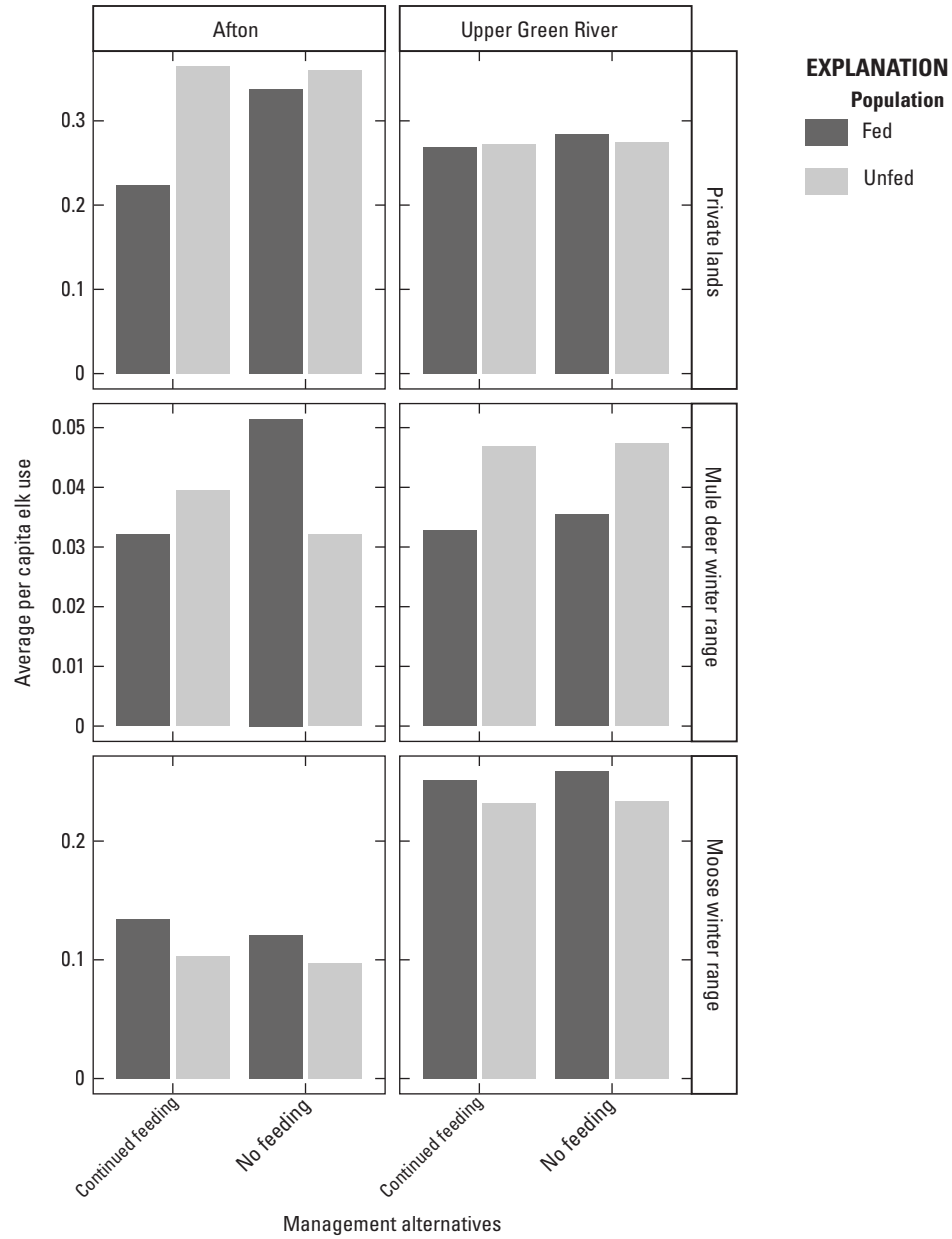


Figure 24. Average per capita elk use, $\sum_j U(x_{ijk}) \div 12$, on different land types (private property, mule deer critical range, and moose critical range) for the continued feeding and no feeding alternatives applied to Dell Creek (Afton herd unit) and Forest Park (Upper Green River herd unit).

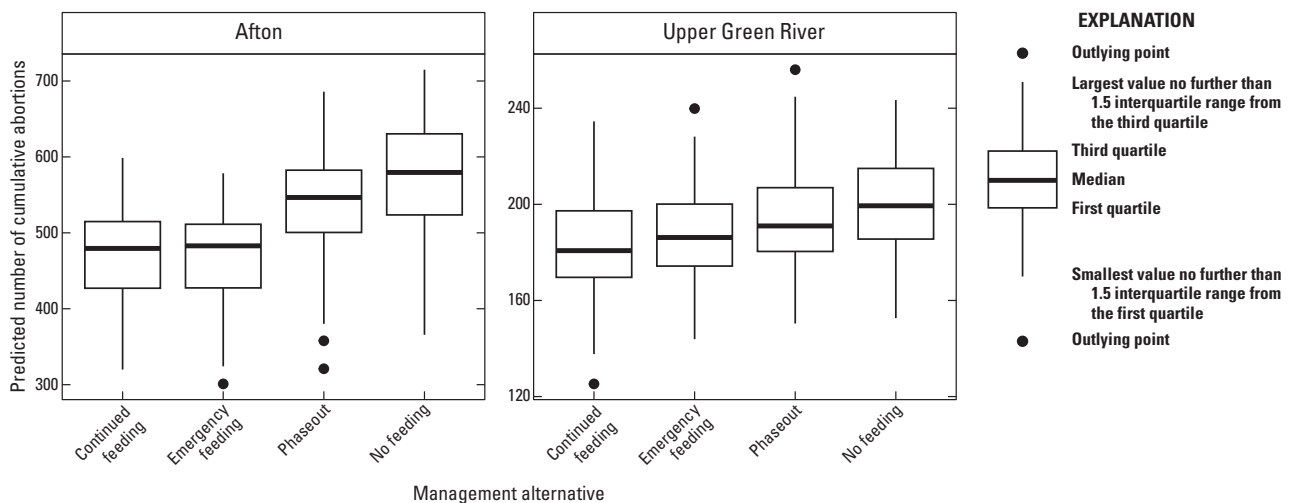


Figure 25. The predicted number of cumulative elk abortions on private property over 20 years for the Afton and Upper Green River herd units.

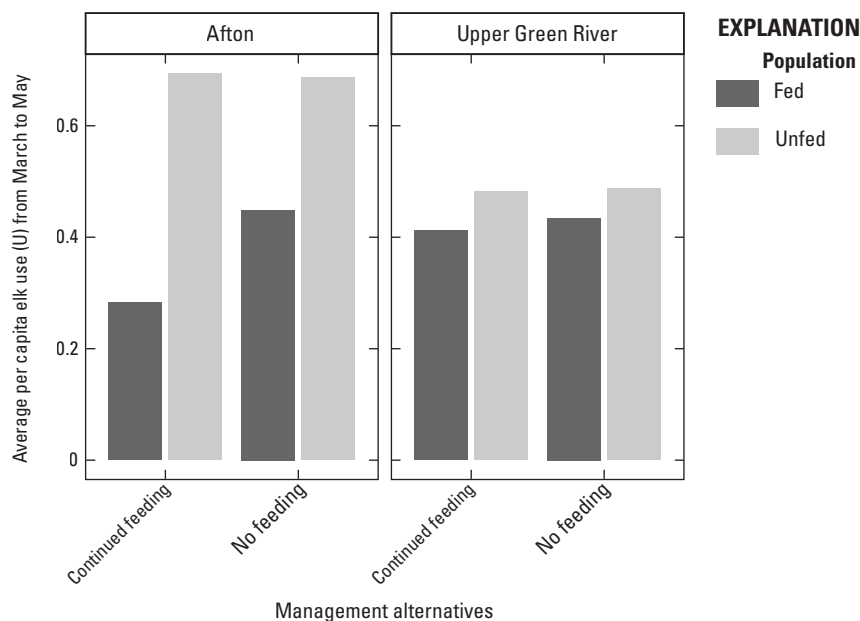


Figure 26. The average per capita elk use, (U) from March to May on private property for the continued feeding and no feeding alternatives applied to Dell Creek or Forest Park feedgrounds. March–May is the riskiest time of year for brucellosis transmission from elk to cattle.

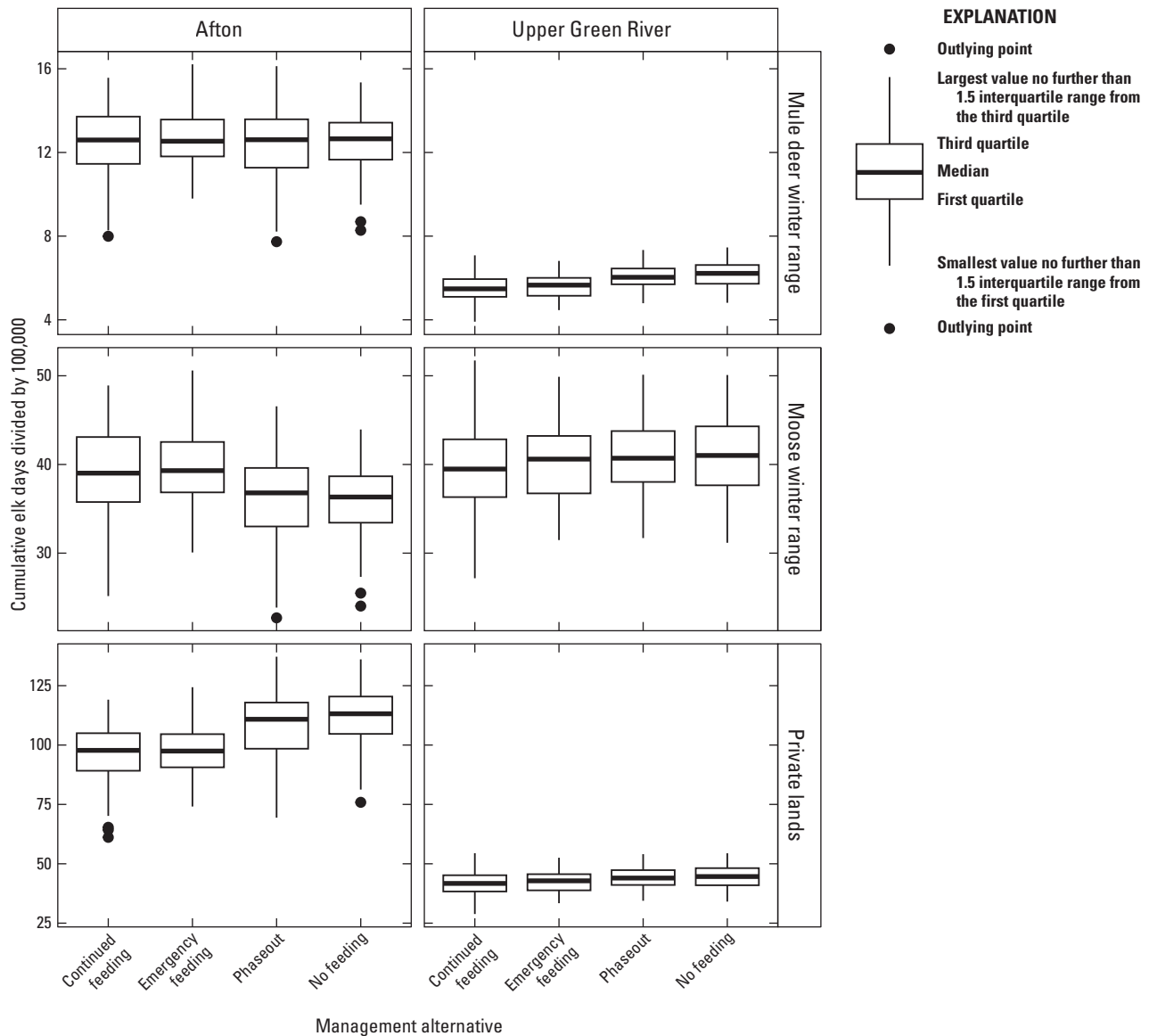


Figure 27. The cumulative number of elk days divided by 100,000 on different land use types (private property, moose critical winter range, and mule deer critical winter ranges) in the Afton and Upper Green River herd units for the four alternatives.

5.3.2. Cumulative Effects

Similar to the Dell Creek and Forest Park analyses, we found that whether fed or native winter range elk had more spatial overlap with private property or moose and mule deer winter ranges varied by HU (fig. 28). For example, per capita, fed elk in the Fall Creek HU are predicted to spend more time on mule deer winter ranges than unfed elk, but the reverse occurs in the Piney HU (fig. 28). The potential closure of feedgrounds on FS property did not change whether fed or unfed elk had more spatial overlap with private property and moose and mule deer critical winter ranges except for private property in the Upper Green River HU (fig. 28).

We predicted the no feeding and phaseout alternatives would result in more elk on private land during periods of brucellosis transmission risk, with the exception of the Pinedale HU (fig. 29). We predicted the no feeding and phaseout alternatives would result in more elk on private land during periods of brucellosis transmission risk, with the exception of the Pinedale HU (fig. 29). In year 1, we predicted the no feeding alternative would result in about 102 (SD = 9) abortions on private land across all five HUs relative to 88 (SD = 7) for continued feeding. By year 20, the no feeding alternative is predicted to have 69 (SD = 7) elk abortions on private land compared to 40 (SD = 5) for the continued feeding alternative. These standard deviations only included variation in female elk population size; thus, are underestimates of the total uncertainty.

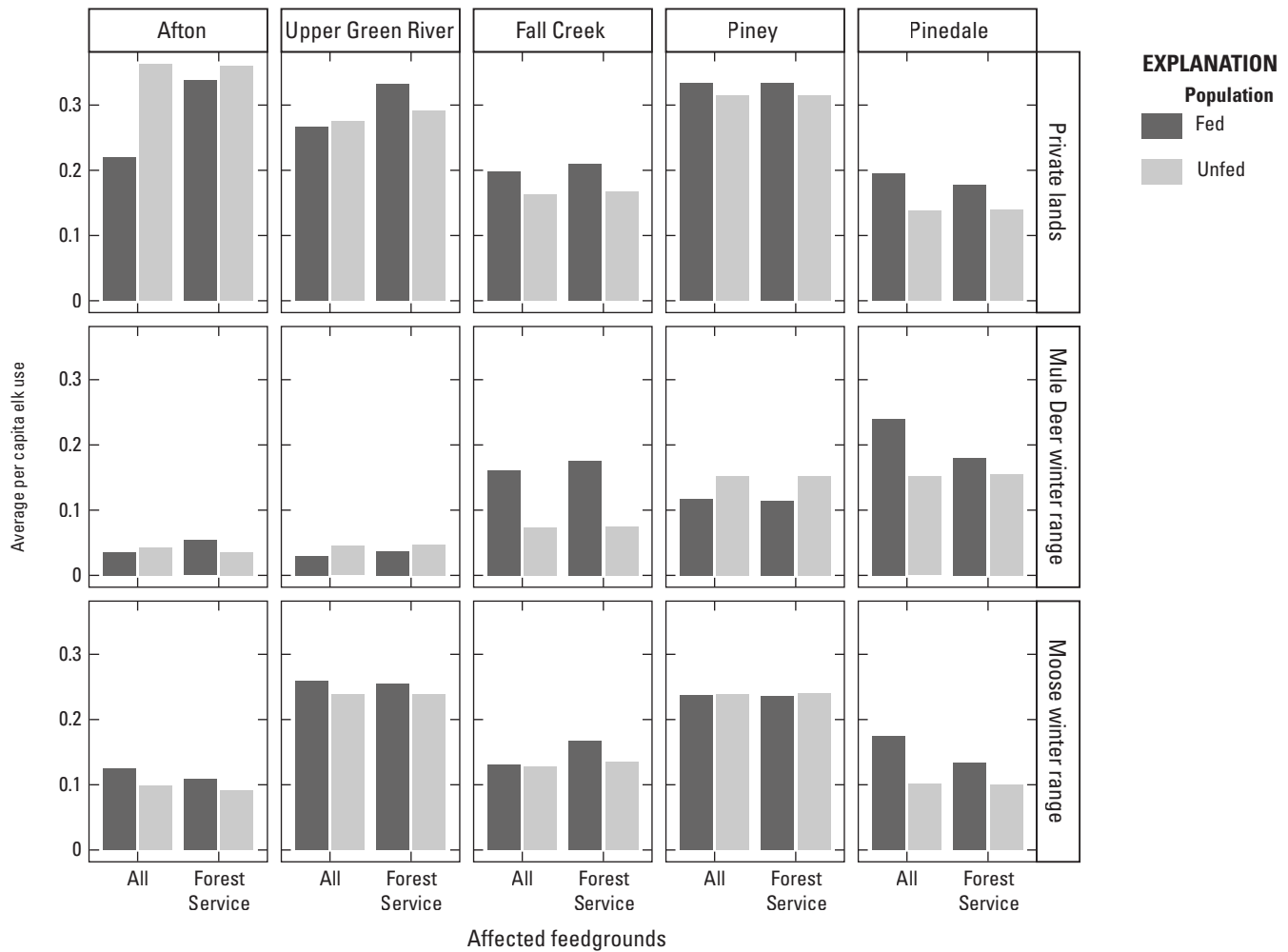


Figure 28. Graphs showing the average per capita elk use on different land types assuming all feedgrounds are operational compared to feedgrounds on U.S. Department of Agriculture Forest Service properties are closed.

Predicted per capita elk use of private lands varied by herd unit and depended on which feedgrounds were operational (fig. 28). Incorporating the temporal changes in elk population size, no feeding was associated with an increase in the use of private property over 20 year in Afton and Upper Green River HUs relative to continued feeding. However, the Pinedale HU was predicted to have less use of private land in the no feeding alternative (fig. 30). Summing across all HUs, we predicted that the cumulative number of elk days on private property will be higher, on average, for the no feeding (31.5 million elk days, SD = 1.8 million) compared to continued feeding alternatives (29.6 million elk days, SD = 1.9 million). If the management alternatives are only applied to feedgrounds on FS property, then the results depended on the fraction of elk on those FS feedgrounds and where those feedgrounds are located. For example, in the Fall Creek unit only the Dog Creek feedground is on FS property and it is smaller than the other feedground in that unit. The closure of Dog Creek feedground is predicted to have little

effect on elk overlap with mule deer critical winter range and private property, in contrast to the closure of all feedgrounds in the Fall Creek HU (figs. 30, 31). The no feeding alternative is also generally associated with a reduction in use of moose critical winter ranges in the Pinedale HU but increasing use of moose winter range in the Fall Creek HU (fig. 32). Summing across all HUs, we predicted that the cumulative number of elk days on moose winter range would be similar between the no feeding (19.8 million elk days, SD = 1.0 million) and continued feeding alternatives (19.7 million elk days, SD = 1.3 million).

5.4. Discussion

One objective of supplemental feeding in Wyoming is to minimize elk and cattle contact during spring to reduce the potential for brucellosis transmission (McWhirter and others, 2021). With the exception of the Pinedale HU, our spatial analyses supported the assertion unfed elk would have more

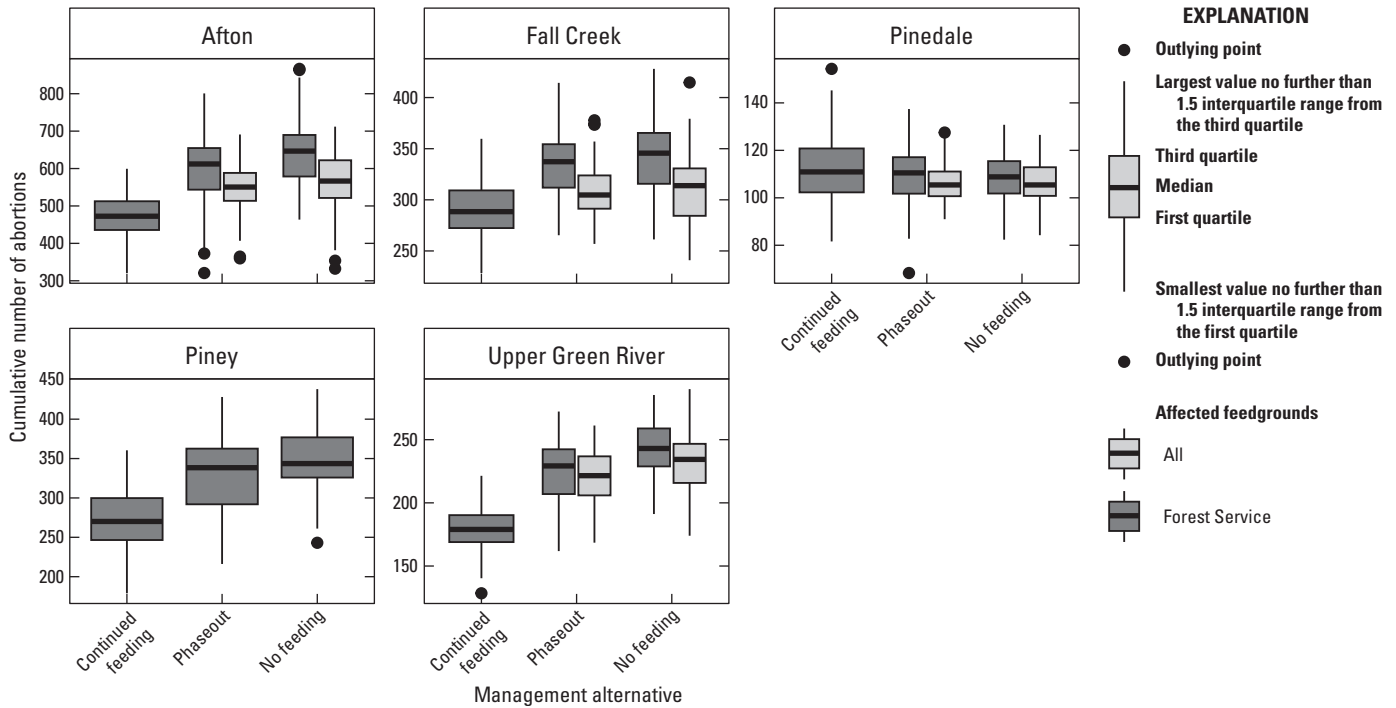


Figure 29. Boxplots of the cumulative number of elk abortions on private property over 20 years as an index of brucellosis risk to cattle. The three management alternatives were continued feeding, phaseout, and no feeding. Dark boxes assume that management alternatives are implemented on all feedgrounds as opposed to just feedgrounds on U.S. Department of Agriculture Forest Service property.

overlap with private properties during the time of potential brucellosis transmission (figs. 25, 26, 29). We predicted the closure of the Forest Park feedground would result in 23 percent (SD = 20 percent) more elk abortions on private property in the Afton HU, whereas the closure of Dell Creek feedground would result in 10 percent (SD = 15 percent) more abortions on private property. This difference would increase to 34 percent (SD = 25 percent) in the Afton HU if all feedgrounds were closed. The locations of feedgrounds relative to private properties, moose and mule deer winter ranges created the possibility where the best management alternatives may differ among HUs. For example, the habitat model predicts that feedground closures could result in similar brucellosis risk on private property in the Pinedale HU across all alternatives compared to all other HUs where the no feeding alternative increases brucellosis risk (fig. 29). We developed consequences further in Section 6.

Our results are based on a few key assumptions related to elk behavior. First, we assumed elk remained within their existing HU regardless of the management alternative. We also assumed all fed elk relocated to native winter ranges in the same HU when feeding stops or starts without a time lag and select habitats similar to unfed elk. These assumptions could be modified but would require expert judgment or additional experiments in monitoring fed elk responses when feedgrounds are closed. Further, we assumed elk redistributed equally to preferred native winter ranges when feedgrounds are closed or opened despite their proximity

to feedgrounds (for example, Star Valley in the Afton HU, fig. 22). This is unlikely, at least initially, because of the learned behavior of elk, which leads them to return to specific feedgrounds or find new ones during winter. From a modeling perspective, incorporating alternative behaviors (for example, memory) into the analyses would require complicated and computationally demanding techniques (Merkle and others, 2018). More complex modeling might be appropriate for the first few years of projections but would lose value (in other words, be less reliable) over longer time horizons because of uncertain changes to future conditions. An additional assumption that may have affected the results was elk were unaffected by localized barriers, such as elk-proof fencing. The RSF assumed all pixels are equally accessible to elk because we lacked data to inform the presence of barriers to elk movement. Future work could exclude some regions from the analyses based on expert opinion and fencing data.

Our assessment of brucellosis risk assumed all private properties have cattle and brucellosis seroprevalence in elk will be unaffected by feedground closures. In addition, we did not include livestock grazing allotments as likely locations of risk. Although many elk abortions do occur on FS properties (Merkle and others, 2018), most of the grazing allotments only allow livestock later in the season after most brucellosis risk as passed (Cross and others, 2019). Previous work found the end date of the elk feeding season correlated with winter snowpack and feeding season length correlated with elk brucellosis

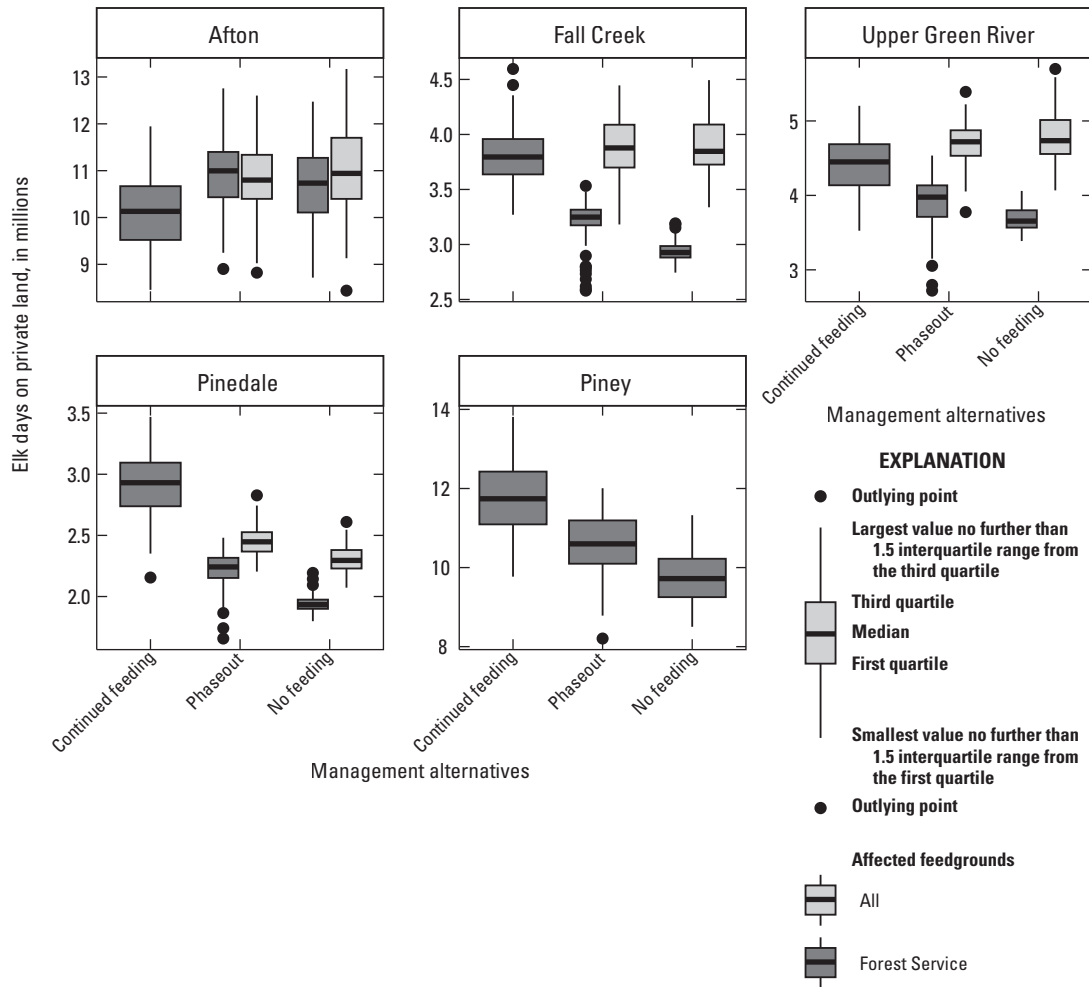


Figure 30. Boxplots of the cumulative elk days on private property over 20 years. The three management alternatives were continued feeding, phaseout, and no feeding. Dark boxes assume that management alternatives are implemented on all feedgrounds as opposed to just feedgrounds on U.S. Department of Agriculture Forest Service property.

seroprevalence (Cross and others, 2007). However, subsequent increases in brucellosis among unfed elk populations creates some uncertainty about the relative contributions of snowpack and feeding to brucellosis seroprevalence (Cross, Cole, and others, 2010; Cross, Heisey, and others, 2010; Proffitt and others, 2015; Brennan and others, 2017; Cotterill and others, 2020).

These analyses likely underrepresent uncertainty because we did not incorporate variation in RSF coefficient estimates. We did, however, include the variation in population counts estimated in Section 4. We conclude the variation in population projections represents the largest source of uncertainty in our spatial predictions. Future work could draw the ϕ_{jk} coefficients from multivariate normal distributions and then recalculate the predicted w and U values for each timestep of the simulations.

6. Consequences

6.1. Overview

This report developed a set of linked analyses in support of a FS decision on whether to permit elk feeding on Dell Creek and Forest Park sites for the next 20 years. The analyses were designed through a series of meetings with the FS and cooperating agencies and built on a long history of empirical study, model development, and scientific inference on elk and other big game species in and around Greater Yellowstone Ecosystem. We also drew on the expertise of a scientific panel composed of WGFD, Federal agency, and academic researchers to estimate important, but unknown, CWD transmission parameters in fed and unfed elk population segments. The results (in other words, consequences) of the four alternatives are presented as 11 performance metrics that

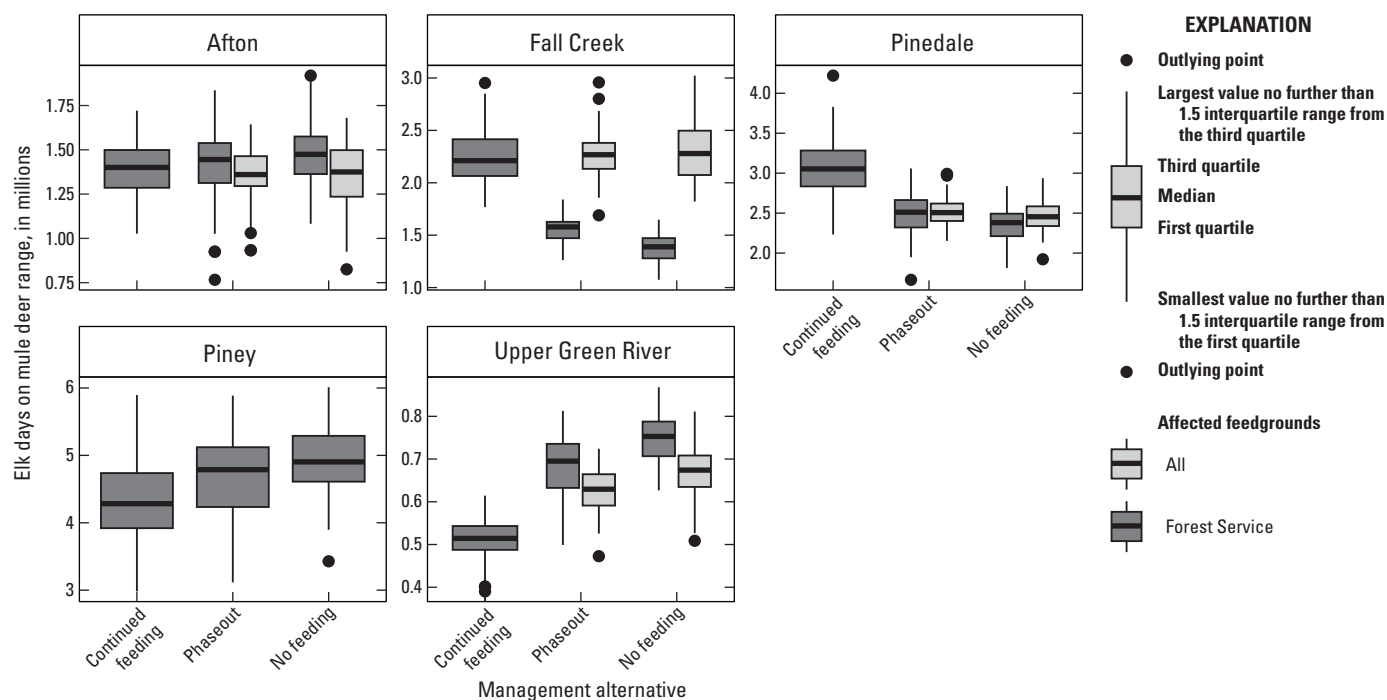


Figure 31. Boxplots of the cumulative number of elk days on mule deer critical winter range over 20 years for three management alternatives: continued feeding, phaseout, and no feeding. Dark boxes assume that management alternatives are implemented on all feedgrounds as opposed to just feedgrounds on U.S. Department of Agriculture Forest Service property.

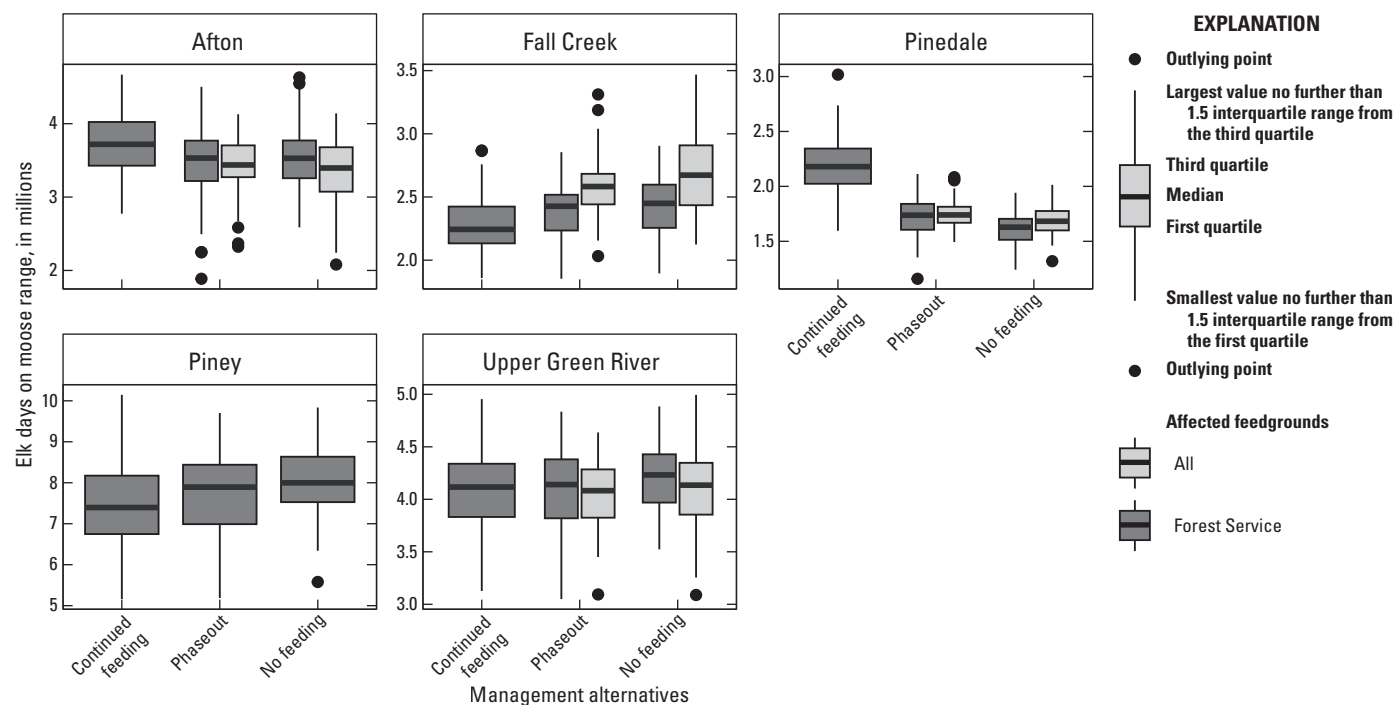


Figure 32. Boxplots of the elk days on moose critical winter range over 20 years as an index of competition between elk and moose. Three management alternatives were continued feeding, phaseout, and no feeding. Dark boxes assume that management alternatives are implemented on all feedgrounds as opposed to just feedgrounds on U.S. Department of Agriculture Forest Service property.

measure the fundamental objectives of the FS as they consider whether to continue to permit supplemental feeding of elk on Forest Park and Dell Creek sites.

Sections 4 and 5 developed the methods and presented the results of performance metrics designed to measure the consequences of decision alternatives on Fundamental Objectives 1–4. Therefore, these findings will not be revisited in detail in this section; however, many of the socioeconomic metrics designed to evaluate the performance of alternatives on Fundamental Objectives 5 and 6 were developed separately for the draft EIS (U.S. Department of Agriculture Forest Service, in press). These economic indicators used information from Sections 4 and 5 on elk population size, number of elk available for harvest, CWD prevalence, and elk days on private lands to assess the proportional increase or decrease of these metrics relative to current conditions. The economic indicators are then adjusted for the net present value using a discounting rate of 3 percent per year (Maloney and others, 2020).

6.2. Results

Fundamental Objective 5, minimize conflict with agricultural and public stakeholders, was measured using two performance metrics (PM5a and PM5b). The first performance metric associated with Fundamental Objective 5 was a measurement of elk depredation of privately owned haystacks across the four alternatives. We based this estimate on average annual damages for the Afton and Upper Green River HUs of \$418 and \$2,571 per year (McWhirter and others, 2021), which were then adjusted for the proportional changes in elk days on private property (Section 5) and net present value (U.S. Department of Agriculture Forest Service, in press). These costs were small relative to the other economic metrics, and the differences among alternatives were less than \$2,000 over 20 years (tables 7, 8). The second performance metric for Fundamental Objective 5 measured the predicted costs associated with brucellosis spillover from elk to cattle. This metric was based on the estimated number of cattle outbreaks per year in the region (Brennan and others, 2017), our predicted number of elk abortions on private land, and the average cost of an outbreak to a producer (Boroff and others, 2016; U.S. Department of Agriculture Forest Service, in press). Brucellosis costs to producers were highest for the NF alternative and lowest for the CF and EF alternatives in the Afton and Upper Green River HUs.

Fundamental Objective 6, maximize the prosperity of resource-supported economies, was measured using four performance metrics (PM6a, b, c, and d). The first performance metric quantified the consequences of alternatives on hay sales associated with elk feeding programs based on McWhirter and others (2021). This metric varied as expected across the different alternatives with the CF alternative having the highest revenue associated with hay sales and the NF alternative having the lowest for the Afton and Upper Green River HUs.

The second performance metric for this objective measured WGFD revenues associated with resident and nonresident harvest tag sales. The calculation of this metric was based on the average number of resident and nonresident hunters from 2016 to 2020 in each HU, which was then adjusted for net present value and declines in the elk population assuming hunting licenses are proportional to the elk population (U.S. Department of Agriculture Forest Service, in press). For this metric, we assumed nonresident and resident hunters were less likely to buy licenses as CWD prevalence increases based on Needham and others (2006). Resident and nonresident license sales were assumed to decline by 20–25 percent when CWD prevalence was 40 percent (Needham and others, 2006; U.S. Department of Agriculture Forest Service, in press). Projected harvest tag revenues under these assumptions are closely matched among alternatives, although on average no feeding had the highest tag revenues, in the Afton and Upper Green River HUs given the projected variation (tables 7, 8). The third performance metric used to evaluate Fundamental Objective 6 was a measurement of hunting related inputs to the regional economy, which mirrored the hunter tag revenue results. This metric was the largest across the 20-year permit period (\$26–47 million dollars), but the differences among alternatives were small (for example, \$2.4 million between the NF and CF alternative in the Afton HU) relative to the standard deviations of \$3 to \$6 million (tables 7, 8). The last metric measured the effect of alternatives on outfitter revenues, which was based on the predicted number of nonresident hunters (U.S. Department of Agriculture Forest Service, in press). The standard deviation in outfitter revenues for an alternative was approximately 2 times larger than the average difference among alternatives (tables 7, 8). In table 9, we summarized some of the performance metrics across all five of the analyzed HUs.

6.3. Discussion

There are several important tradeoffs across the four alternatives and two HUs. Generally, we found no single alternative performed best on all fundamental objectives and performance metrics (tables 7, 8, and 9). Similarly, no single alternative performed the worst across all performance metrics. For the Afton and Upper Green River HUs, the management alternatives that minimized feeding (NF and PO) also minimized CWD and maximized elk population size at year 20 relative to the continued feeding and emergency feeding alternatives (tables 7, 8). However, NF and PO alternatives underperformed relative to EF and CF alternatives on brucellosis related costs and private hay sale revenues. These tradeoffs are consistent with the uses and effects of elk feedgrounds and expectations if they were to be closed (McWhirter and others, 2021).

Table 7. Consequence table showing the 11 performance metrics and 4 alternatives for the Afton herd unit (includes Forest Park feedground).

[Color gradient indicates desirability of outcomes ranging from dark blue for more desirable outcomes to light blue for less desirable outcomes. Values in parentheses indicate CWD prevalence. CWD, chronic wasting disease; SD, standard deviation; min., minimum; max., maximum; —, no data]

Performance metric	Units	Direction	Continued feeding		Emergency feeding		Phaseout		No feeding	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
CWD mortalities ¹	Cumulative elk	Min.	2,598 (0.20)	702	2,490 (0.20)	607	2,251 (0.19)	820	1,930 (0.17)	687
Elk population size	Elk at year 20	Max.	3,091	659	3,221	568	3,251	749	3,551	668
Number of harvested elk	Cumulative elk	Max.	14,959	1,826	14,938	1,637	14,923	1,824	15,249	1,665
Elk use of mule deer range	Elk days (millions) ²	Min.	1.25	0.16	1.27	0.14	1.24	0.16	1.27	0.15
Elk use of moose range	Elk days (millions) ²	Min.	3.91	0.51	3.96	0.42	3.63	0.47	3.64	0.41
Elk depredation costs	Dollars (thousands) ²	Min.	5.49	0.70	5.54	0.59	6.13	0.77	6.42	0.71
Cost of brucellosis	Dollars (thousands) ²	Min.	68.91	9.02	68.34	8.98	77.65	9.81	83.00	11.06
Hay sales revenue	Dollars (thousands) ²	Max.	559.05	85.85	378.85	54.99	133.56	20.91	0.00	0.00
Harvest tag sales ³	Dollars (millions) ²	Max.	8.43	1.14	8.73	1.13	8.68	1.22	8.95	1.20
Regional economic inputs ³	Dollars (millions) ²	Max.	44.73	5.95	46.27	5.92	45.87	6.27	47.17	6.23
Revenue of outfitters ³	Dollars (millions) ²	Max.	10.96	1.50	11.36	1.48	11.30	1.60	11.67	1.57

¹Chronic wasting disease prevalence at year 20 is noted in parentheses.

²Cumulative across the 20-year simulation.

³Assumes a decline in hunter participation at high levels of chronic wasting disease (Needham and others, 2006; U.S. Department of Agriculture Forest Service, in press).

Table 8. Consequence table showing the 11 performance metrics and 4 alternatives for the Upper Green River herd unit (includes Dell Creek feedground).

[Color gradient indicates desirability of outcomes ranging from dark blue for more desirable outcomes to light blue for less desirable outcomes. Values in parentheses indicate CWD prevalence. CWD, chronic wasting disease; SD, standard deviation; min., minimum; max., maximum; —, no data]

Performance metric	Units	Direction	Continued feeding		Emergency feeding		Phaseout		No feeding	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD
CWD mortalities ¹	Cumulative elk	Min.	2,106 (0.30)	407	2,100 (0.30)	336	1,942 (0.27)	391	1,910 (0.27)	367
Elk population size	Elk at year 20	Max.	1,158	288	1,241	289	1,234	316	1,267	337
Number of harvested elk	Cumulative elk	Max.	7,562	970	7,765	845	7,598	835	7,679	1,005
Elk use of mule deer range	Elk days (millions) ²	Min.	0.55	0.06	0.56	0.06	0.61	0.06	0.62	0.06
Elk use of moose range	Elk days (millions) ²	Min.	3.95	0.47	4.02	0.43	4.10	0.42	4.12	0.45
Elk depredation costs	Dollars (thousands) ²	Min.	28.91	3.16	29.33	2.86	30.55	2.84	30.88	3.11
Cost of brucellosis	Dollars (thousands) ²	Min.	27.36	3.01	27.93	2.72	28.75	2.82	29.44	3.06
Hay sales revenue	Dollars (thousands) ²	Max.	531.44	63.46	431.40	44.65	133.75	11.24	0.00	0.00
Harvest tag sales ³	Dollars (millions) ²	Max.	3.75	0.49	3.87	0.46	3.91	0.48	3.94	0.55
Regional economic inputs ³	Dollars (millions) ²	Max.	26.34	3.25	27.12	3.07	27.32	3.16	27.54	3.66
Revenue of outfitters ³	Dollars (millions) ²	Max.	5.40	0.72	5.57	0.67	5.63	0.71	5.68	0.81

¹Chronic wasting disease prevalence at year 20 is noted in parentheses.

²Cumulative across the 20-year simulation.

³Assumes a decline in hunter participation at high levels of chronic wasting disease (Needham and others, 2006; U.S. Department of Agriculture Forest Service, in press).

Table 9. Cumulative effects table showing seven performance metrics and chronic wasting disease prevalence for three alternatives on all feedgrounds and those on U.S. Department of Agriculture Forest Service lands. Data are summarized for the Afton, Fall Creek, Upper Green River, Piney, and Pinedale herd units.

[Color gradient indicates desirability of outcomes ranging from dark blue for more desirable outcomes to light blue for less desirable outcomes. FS, U.S. Department of Agriculture Forest Service; CWD, chronic wasting disease; SD, standard deviation; min., minimum; max., maximum; —, no data]

Performance metric	Units	Direction	Proposed action		Phaseout all		Phaseout FS		No feeding all		No feeding FS	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
CWD mortalities	Cumulative elk (thousands)	Min.	12.34	1.60	6.38	1.90	9.31	1.28	4.06	0.96	7.61	1.13
CWD prevalence	Prevalence	Min.	0.29	0.04	0.16	0.05	0.22	0.04	0.13	0.03	0.19	0.04
Elk population size	Elk at year 20 (thousands)	Max.	8.29	0.74	11.00	1.63	9.65	1.09	12.46	0.98	10.70	0.89
Number of harvested elk	Cumulative elk (thousands)	Max.	51.12	3.82	55.30	3.20	52.92	3.05	57.72	2.60	54.24	2.92
Harvest tag sales ²	Dollars (millions) ¹	Max.	25.81	1.64	27.54	2.02	27.05	2.15	28.74	1.70	28.13	1.88
Regional economic inputs ²	Dollars (millions) ¹	Max.	173.46	10.46	182.31	12.95	180.28	13.31	190.10	10.69	187.53	11.84
Revenue of outfitters ²	Dollars (millions) ¹	Max.	31.30	2.04	33.66	2.53	32.95	2.71	35.17	2.15	34.30	2.36
Cost of brucellosis	Dollars (thousands) ¹	Min.	194.62	11.54	230.42	15.35	220.81	11.73	242.97	15.05	227.32	13.73

¹Cumulative for the 20-year simulation.

²Assumes a decline in hunter participation at high levels of chronic wasting disease (Needham and others, 2006; U.S. Department of Agriculture Forest Service, in press).

7. Conclusions and Future Directions

Our work suggested the removal of feedgrounds or a high chronic wasting disease (CWD) prevalence is likely to cause large reductions in the western Wyoming elk populations. We predict, however, population declines associated with feedground closures will be more than offset by the benefits of reducing the negative consequences of CWD such that the no feeding alternative tends to result in higher elk populations by year 20. The high concentrations of elk on feedgrounds led our expert panel to estimate high levels of environmental contamination of prions that result in persistent hotspots of disease with the potential to infect elk and mule deer for many years to come. The differences among alternatives in some performance metrics are small relative to our prediction uncertainties when we consider just the Dell Creek and Forest Park decisions because of the small percentage of elk on Dell Creek and Forest Park feedgrounds relative to the entire herd unit (HU).

To assess the cumulative effects across many feedgrounds, we analyzed the continued feeding, phaseout, and no feeding decision alternatives across all feedgrounds on five HUs and found the overall magnitude of effect depended on the percentage of fed elk relative to the total HU population. In some cases, the differences between the continued feeding (CF) and no feeding (NF) alternatives were large. We found CWD prevalence on the Piney HU could be limited to 14 percent ([5th and 95th percentiles = [3 percent, 28 percent]]) if all feedgrounds were closed relative to 33 percent ([5th and 95th percentiles = [23 percent, 44 percent]]) prevalence under the continued feeding alternative. The same alternatives on the Afton HU reduced CWD prevalence from 23 percent to 14 percent in year 20 (fig. 17). The no feeding alternative led to rapid reductions of elk after feedground closures; however, elk population sizes under the CF alternative also declined because of high CWD-associated mortality, and in most cases, fell below the NF alternative after 10 years.

The cumulative effects analysis highlighted a cost associated with CWD when management actions are delayed under the phaseout alternative. Our results indicate the phaseout alternative allowed CWD to grow rapidly within the fed population and elevate CWD prevalence across HUs. For example, the CWD prevalence in the Upper Green River HU was predicted to be 20 percent in year 20 if all feedgrounds were phased out after 3 years compared to 12 percent if feeding is stopped immediately. When feedgrounds were then closed after the 3-year delay, we predicted larger population declines when compared against the NF alternative because of a lack of winter range and higher CWD prevalence. Thus, early action is often more effective, but it coincides with a high degree of uncertainty in outcomes and waiting for more information may have consequences.

Our predictions do not include all potential uncertainties. To inform our assumptions and modeling techniques, we relied on published literature, empirical estimates, and expert

judgement; however, there remain sources of uncertainty that will affect our projections. We conclude the key uncertainties are: (1) the magnitude of elk population declines in the absence of feeding, (2) the magnitude of CWD transmission rates in fed and unfed elk, and (3) the behavior and movement of elk in response to closures. Our estimate of elk population declines due to feedground closures depended on current estimates of elk winter range. In the absence of feedgrounds, elk may utilize areas that are not currently considered elk winter range. If so, we may be overestimating the population declines that would be associated with feedground closures. However, if feedground closures result in more use of private land, then this may affect hunting regulations and elk population size in ways that are hard to predict. In addition, we did not include variation in brucellosis transmission rates or elk brucellosis seroprevalence over time or across regions.

Future analysis could evaluate this system as a series of linked decisions at both the individual feedground scale and at the scale of the feedground program in western Wyoming. If feedground closures result in elk relocating to another feedground, then the ordering of feedground closures could be important so elk are not further concentrated on feedgrounds with the greatest potential for conflict. Future analysis could also consider the effects changes in climate and snowpack have on space use and feeding patterns. The Greater Yellowstone Ecosystem climate assessment predicts a 30–40 percent reduction in April snowpacks for the upper Green and Snake River watersheds by mid-century, which will likely translate into shorter feeding seasons (Hostetler and others, 2021).

If feeding is not permitted on Dell Creek or Forest Park feedgrounds, there is an opportunity to study those impacts, which would be informative for future feeding decisions. Both feedgrounds are in areas with high winter snowpacks; thus, they have prolonged feeding seasons relative to other feedgrounds. We expect winter-associated declines in elk populations would be most severe on these two feedgrounds under a no feeding alternative; however, these would be the first tests of our assumed 23-percent declines without feeding. There is also an opportunity to learn more about long-term CWD dynamics in fed and unfed elk population segments, but it will be important to design CWD surveillance programs with sufficient statistical power.

The consequences of the different management alternatives for Forest Park and Dell Creek feedgrounds show there are tradeoffs across objectives in the choice of a preferred alternative. That is, to identify a preferred alternative, the FS, in consultation with its stakeholders and cooperating agencies, will have to balance the relative importance of the different objectives when selecting the alternative that has the highest performance. The field of decision analysis offers a set of tools to help decision makers and stakeholders through deliberations and associated tradeoffs, thus, providing a transparent way to communicate how tradeoffs were navigated to identify a

preferred alternative. We developed the analyses in this report so tools like multicriteria decision analysis can be used to evaluate and understand complex tradeoffs.

The U.S. Department of Agriculture Forest Service and Wyoming Game and Fish Department could work collaboratively to develop future management alternatives beyond those we considered here. There may be alternatives that help reduce CWD and brucellosis effects and also address the potential loss of population productivity and changing space use patterns that could occur without feeding. Potential mitigation measures include habitat enhancements and restoration, increased harvest during feedground closures, and working with local landowners to minimize brucellosis transmission risk and lessen private property damage. The continued use of decision analysis to frame and evaluate future decisions allows for the development of research that is specific to the needs of the decision maker, improved communication with stakeholders, and a better understanding of the role that scientific uncertainty plays in a decision-making context. Understanding the importance of scientific uncertainty for future elk management decisions can direct research to the appropriate places to reduce uncertainty and improve our understanding of future outcomes under a diversity of management alternatives in this interconnected and dynamic system.

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Appendix 1. Additional Chronic Wasting Disease Analysis Details

Table 1.1. Names and affiliations (at the time of the elicitation) of expert panelists who provided judgment on estimates of chronic wasting disease transmission parameters.

Expert	Affiliation
Emily Almberg	Montana Department of Fish, Wildlife, and Parks
Justin Binfet	Wyoming Game and Fish Department
Hank Edwards	Wyoming Game and Fish Department
Nathan Galloway	National Park Service
Glen Sargeant	U.S. Geological Survey
Brant Schumaker	University of Wyoming
Daniel Walsh	U.S. Geological Survey
Benjamin Wise	Wyoming Game and Fish Department

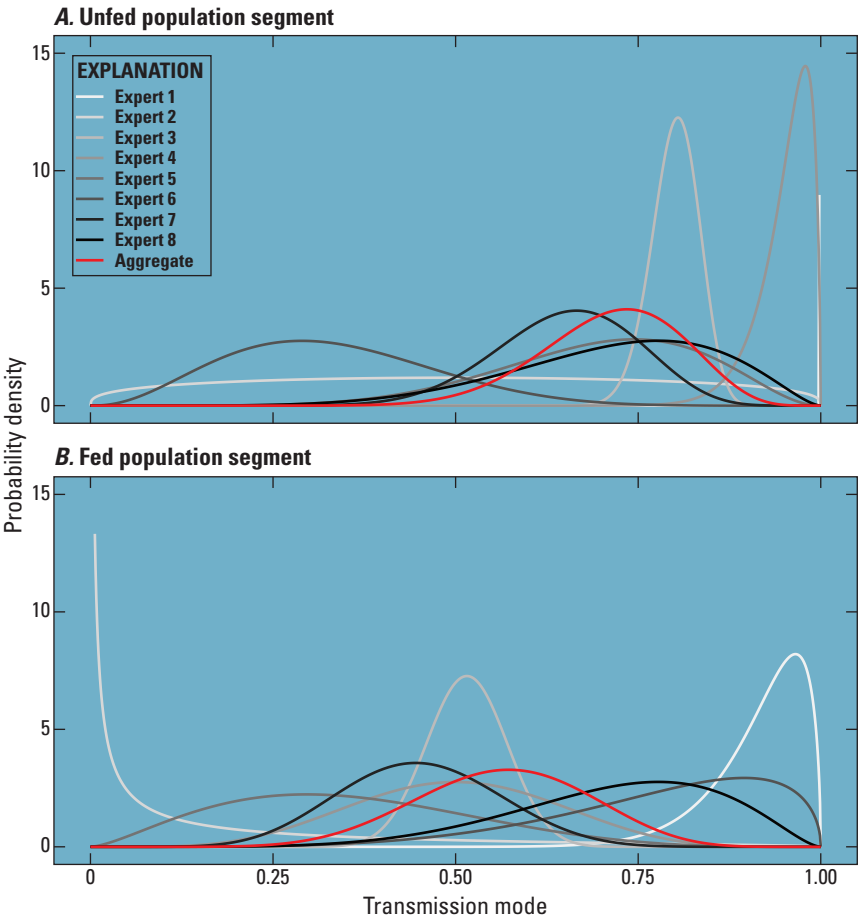


Figure 1.1. Individual and aggregate distributions for chronic wasting disease transmission modes in *A*, unfed (native winter range) and *B*, fed elk population segments. A value of zero on the x-axis represents density-dependent disease transmission whereas a value of one represents frequency-dependent transmission.

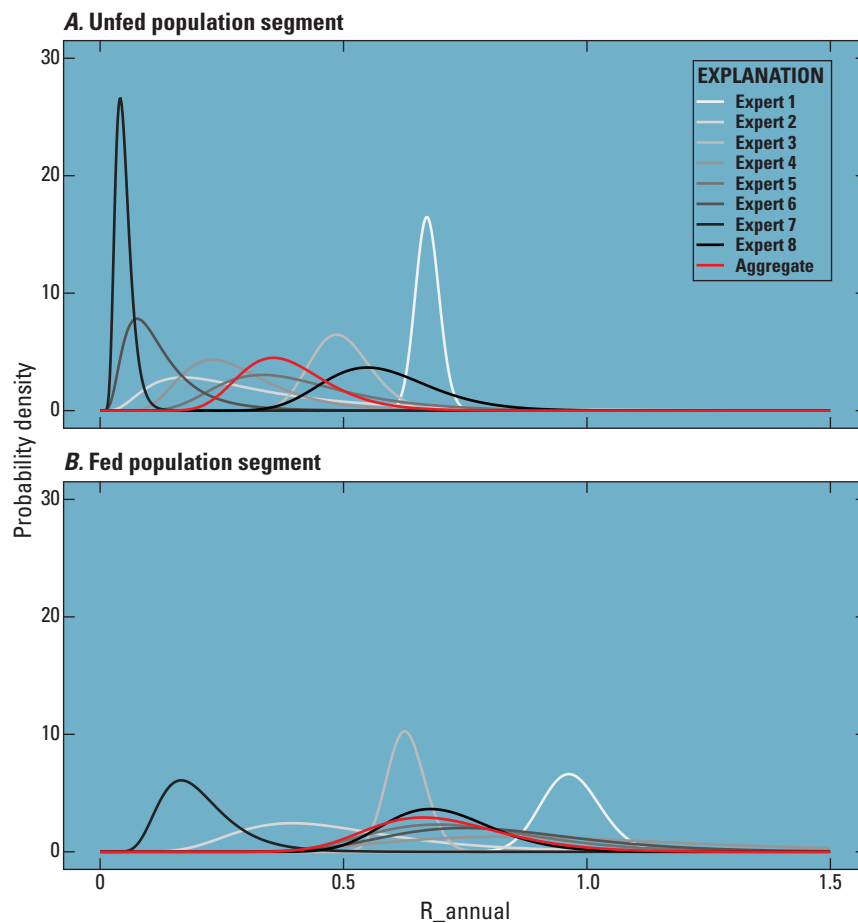


Figure 1.2. Individual and aggregate distributions for direct chronic wasting disease transmission rates in *A*, unfed (native winter range) and *B*, fed elk population segments.

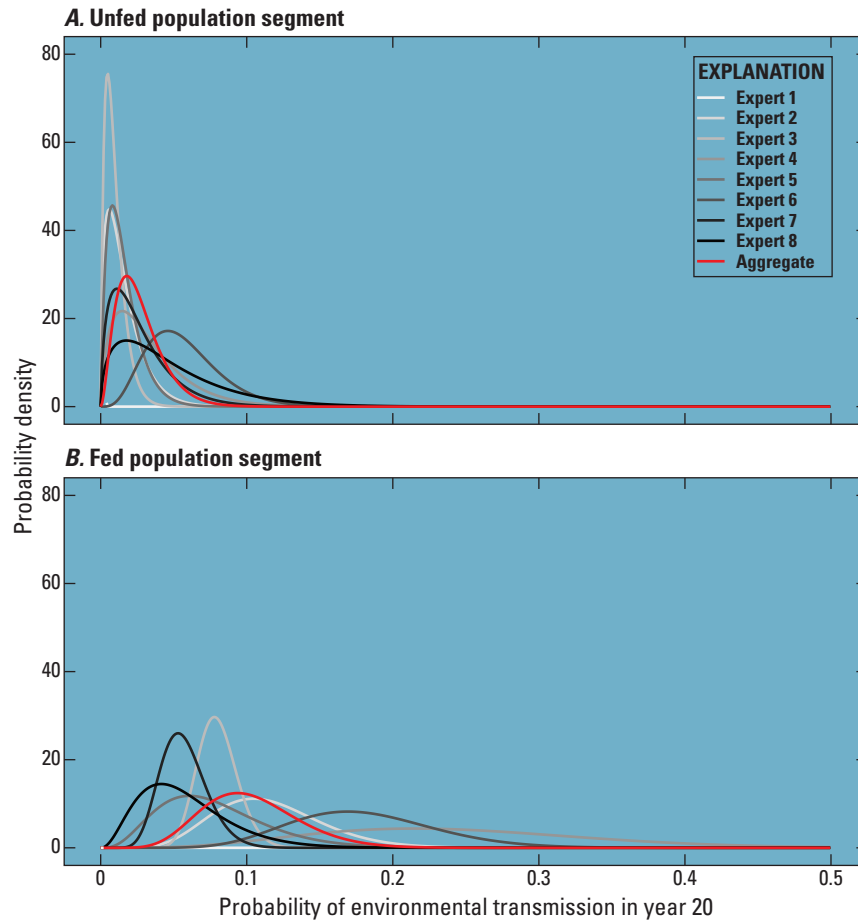


Figure 1.3. Individual and aggregate distributions for indirect chronic wasting disease transmission rates in *A*, unfed (native winter range) and *B*, fed elk population segments.

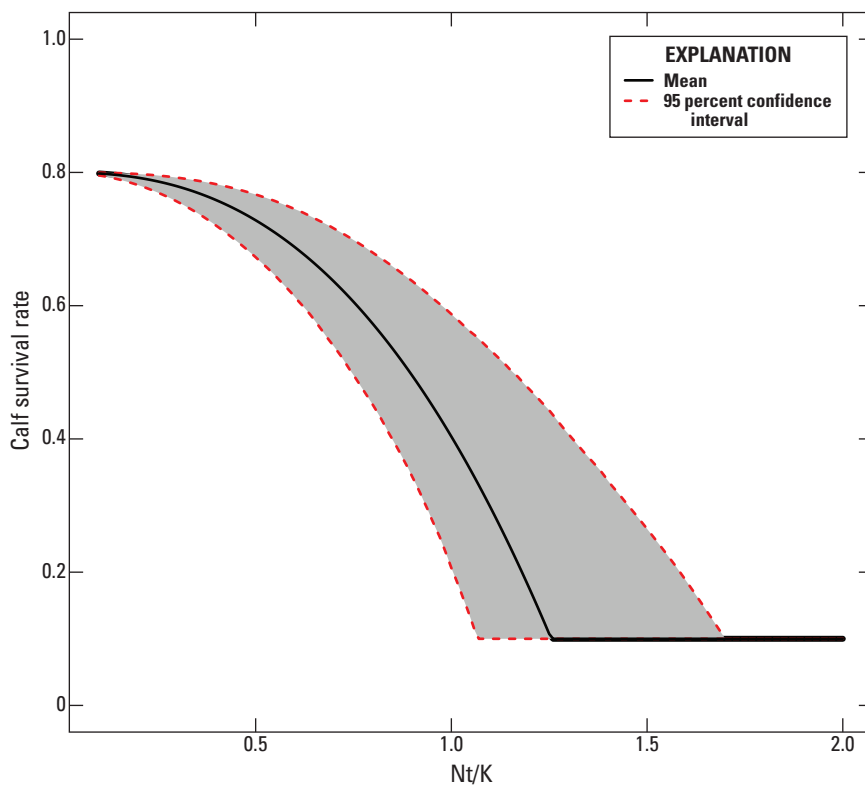


Figure 1.4. Annual calf survival probability as a function of elk population size (N_t) divided by carrying capacity (K), N_t/k . The maximum and minimum annual calf survival rates were 0.8 and 0.1, respectively.

