
**36 C.F.R. § 219 Objection to the
Flathead Forest Plan,
the
NCDE Grizzly Bear Forest Plan Amendments,
and the
Species of Conservation Concern List**

February 8, 2018

Objection Reviewing Officer

USDA Forest Service

Northern Region

26 Fort Missoula Road

Missoula, MT 59804

Submitted electronically via: appeals-northern-regional-office@fs.fed.us

Dear Objection Reviewing Officer,

WildEarth Guardians, Western Watersheds Project, and the Sierra Club hereby object to the:

- Draft Record of Decision for the Final Environmental Impact Statement and Forest Plan, Flathead National Forest (hereinafter referred to as the Flathead Draft ROD),
- Draft Record of Decision for the Final Environmental Impact Statement and Forest Plan Amendments to Incorporate Habitat Management Direction for the Northern Continental Divide Ecosystem Grizzly Bear Population, Helena-Lewis and Clark National Forest, Kootenai National Forest, Lolo National Forest (hereinafter referred to as the NCDE Draft ROD), and
- Regional Forester's Species of Conservation Concern List for the Flathead National Forest's Final Revised Forest Plan, dated November 28, 2017.

We have previously submitted detailed comments on these plans, including scoping comments in May 2015 and comments on the Draft EIS in October 2016.

Lead Objector:



Greg Dyson

WildEarth Guardians

Wild Places Program Director

516 Alto St., Santa Fe, NM 87501

gdyson@wildearthguardians.org

Other Objectors:

Marla Fox
Rewilding Attorney
WildEarth Guardians
80 SE Madison St., Suite 210
Portland, OR 97214
mfox@wildearthguardians.org

Bonnie Rice
Greater Yellowstone/Northern Rockies
Senior Campaign Representative
Sierra Club
P.O. Box 1290, Bozeman, MT 59771
bonnie.rice@sierraclub.org

Josh Osher
Montana Director
Western Watersheds Project
P.O. Box 1135, Hamilton, MT 59840
josh@westernwatersheds.org

Statement of Issues and Proposed Solutions

I. FAILURE TO ADEQUATELY ADDRESS OR RESPOND TO COMMENTS IN A MEANINGFUL WAY

The following concerns were not raised in earlier comments because they relate to the Forest Service's response (or failure to respond) to comments in a meaningful way, which occurred after the close of the official comment period. The Forest Service failed to respond to many of our comments in a meaningful way in violation of NEPA's implementing regulations. 40 C.F.R. § 1503.4 (requiring an agency to "assess and consider comments" and "respond by one or more of the means listed below" including (1) modifying alternatives, (2) developing and articulating new alternatives, (3) supplementing, improving, or modifying its analysis, (4) making factual corrections, or (5) explaining why the comments do not warrant further agency response). Many examples are listed throughout this objection. Several specific examples include:

- (1) WildEarth Guardians commented that the revised plan is less protective of bull trout and its critical habitat than INFISH, and improperly eliminates INFISH standards and guidelines contrary to best available scientific information. *See, e.g.*, DEIS Comments at 25. In its response to comments, the Forest Service fails to respond to the substance of this comment. FEIS, App. 8 at 8-77 – 8-80.
- (2) Our comments urged the Forest Service to consider its duties under subpart A as part of its analysis of infrastructure plan components, and to include plan components that work towards establishing an economically and environmentally sustainable minimum road system. DEIS Comments at 80-81, 87-99. The Forest Service's response to comments regarding its outstanding duty to identify the minimum road system are misleading and fail to respond or address its duty to identify the minimum road system on the Flathead. FEIS, App. 8 at 8-191 – 8-192.
- (3) Our comments urged the Forest Service to consider cumulative impacts of the road system when combined with effects from climate change. DEIS Comments at 86-87. The Forest Service fails to respond to the substance of this comment.

Proposed Solution: Revise the analysis in Appendix 8 of the FEIS, and the FEIS itself to meaningfully respond to and address public comment.

II. GRIZZLY BEAR (URSUS ARCTOS)/NCDE AMENDMENTS

Grizzly bears are an iconic species in the Crown of the Continent landscape, with the majority of the remaining population in the contiguous U.S. calling the Flathead National Forest home. Grizzly bears in the Northern Continental Divide Ecosystem (“NCDE”) are currently listed as “Threatened” under the Endangered Species Act (“ESA”). Accordingly, the Forest Service is required to provide necessary habitat protections to aid the species’ recovery. The following section outlines our objections to the Flathead and NCDE Draft RODs as they pertain directly to grizzly bears.

A. **Improper Reliance on the Draft NCDE Conservation Strategy**

We understand that a key purpose of both the Flathead Forest Plan Revision and Grizzly Bear Amendments on the Kootenai, Lolo, Helena, and Lewis & Clark National Forests is to incorporate elements of the NCDE Grizzly Bear Conservation Strategy into individual Forest Plans, thereby demonstrating the presence of “adequate regulatory mechanisms” to protect grizzlies and allowing for the eventual, potential delisting of the NCDE population to proceed. However, the forest documents released for public comment, including the FEIS are based upon the *Draft* Conservation Strategy, while the NCDE forests are supposed to be guided by the provisions of a *Final* Conservation Strategy, a document that has yet to be written, approved, and issued in final form. Thus, at the outset, the agency’s failure to base the Forest Plan revision and amendment documents on a *Final* Conservation Strategy deprives the public of the opportunity to comment on the actual decision documents. Indeed, the *Draft* Conservation Strategy is nearly five years old and significant changes in the ecosystem and the status of grizzly bears have occurred in the interim, and it is our understanding, based on statements made at the December 2016 meeting of the Executive Committee of the Inter-governmental Grizzly Bear Committee (IGBC) and the December 2016 meeting of the NCDE IGBC subcommittee that the U.S. Fish and Wildlife Service does not intend to release the much delayed and apparently much changed Conservation Strategy for public comment. We note additional concerns with the Forest Service’s use of the *Draft* Conservation Strategy, rather than a *Final* Conservation Strategy, below.

Proposed Solution: The Forest Service should not issue a truly final EIS until the Conservation Strategy is final, has undergone all requisite public notice and comment processes and is incorporated into the Forest Plan. The Forest Service should then issue the revised and/or supplemental EIS for proper notice and comment and only then issue a final document. The Forest Service cannot properly rely on a five-year-old draft document as the basis for its Forest Plan amendment.

1. **Improper Reliance on Flawed Population Estimates**

The U.S. Fish and Wildlife Service (“FWS”) bases its claim of a “recovered” population on the NCDE’s estimated 1,000 grizzlies and 3% annual growth rate on a flawed interpretation of the science. USFWS 2013 at 7. First, population numbers and growth rate are not one of the ESA’s Section 4 delisting criteria. USFWS 1988; 16 U.S.C. §1533(a)(1). Second, Federal Judge Friedman has already ruled that habitat quantity, quality, and sufficiency are the determining factors of recovery, not minimum population and distribution numbers. *Fund for Animals v. Babbitt*, 903 F

Supp. 96, 113, 118 (D.D.C. 1995). Third, most independent grizzly researchers estimate that true recovery will require a lower-48 grizzly bear population of 2,500-3,000 grizzlies in a linked meta-population, with some estimates as high as 5,000. *See e.g.* Allendorf and Ryman 2002 at 51, Bader 2000, Reed et al. 2003 at 23, Shaffer 1992 at 10, Traill et al. 2010 at 32. Yet, the current population in the lower-48 is only approximately 1,800, with many ecosystems largely isolated. USFWS 2013. Additionally, Dr. Richard Harris, a contributor to the Draft Conservation Strategy, stated that the 3% growth rate the FWS relies on does not meet a “conventional level of statistical certainty.” *Id.* Finally, as the Service itself notes, the latest science concludes the actual growth rate is 2% not 3%. FEIS at 496 (citing Costello et. al. 2016).

Proposed Solution: The Forest Service should revise the FEIS to ensure compliance with the ESA, which necessitates recovery across the species’ range. If it insists on using a growth rate, the Forest Service must use the 2% growth rate in the latest peer reviewed science, not the criticized 3% assumption. The Forest Service must revise the FEIS to base its decisions on habitat quantity, quality and sufficiency, not purely on population numbers and an assumed growth rate.

2. Improper Reliance on Flawed Habitat Based Recovery Criteria

The ESA’s first listing/delisting criteria is, “the present or threatened destruction, modification, or curtailment of its habitat or range.” 16 U.S.C. § 1533(a)(1)(A). Yet, long-term, ecosystem-wide grizzly bear habitat studies have never been conducted in the NCDE. Thus, the agencies have no habitat baseline against which to measure these criteria. Further, the draft Habitat Based Recovery Criteria (“HBRC”) for grizzlies recently released for public comment is riddled with flaws. *See Fund for Animals v. Babbitt*, Civil Act. No. 94-1021 (PLF) (documenting settlement agreement requiring FWS to develop HBRC before delisting may occur); *National Audubon Society v. Babbitt*, Civil Act. No. 94-1106 (PLF) (Consolidated) (1997) (same). We incorporate (and attach as Attachment 1) our comments on the flawed HBRC here. Moreover, as with the draft Conservation Strategy, the HBRC are also only in draft form at this time.

Proposed Solution: The Forest Service must base its Forest Plan amendments on final and valid habitat based recovery criteria. The Forest Service must await publication of the final HBRC, ensure they are legally valid and scientifically sound and ensure that decisions are based on enforceable, measureable habitat based recovery criteria. The Forest should undertake long-term study of habitat conditions in the NCDE relevant to bears at least as robust as those long-underway in the Greater Yellowstone Ecosystem.

3. Failure to Adequately Measure Motorized Route Density and Failure to Account for Impacts

The only best available science on grizzly bear habitat security and motorized access route density is Amendment 19 to the Flathead Forest Plan (USDA 1995), which was adopted by the Flathead and the other NCDE Forests in 2007. USFWS 2007. However, the Draft Conservation Strategy, based on estimated population of 1,000 bears and a 3% growth rate, throws this science out the door, and instead replaces it with whatever road densities were present in a 2011 baseline year. USFWS 2013 at 49. This is unacceptable, as the FWS and the Forest Service are required to employ the best available science in their respective decision-making processes.

Proposed Solution: Revise the EIS to remove any and all assumptions based on the flawed and outdated 3% growth rate assumption, and ensure to compliance with Amendment 19. Assess all motorized routes (the Forest admits it has inadequate knowledge of actual routes and route density

in the FEIS – see page 494) and incorporate the best available science on motorized recreation’s impacts on grizzly bears.

4. Population Objectives

The Draft Conservation Strategy states its objective is to maintain “habitat conditions that are compatible with a stable to increasing grizzly bear population.” USFWS 2013 at 36–39. However, this objective is questionable. First, given a complete lack of long-term, ecosystem-wide habitat research, management agencies do not have a firm grasp on what current habitat conditions are. Second, the population objectives, survival rates of independent females, and mortality rates of independent males as outlined in the Draft Conservation Strategy all tend toward managing the population downward from current levels, not towards a “stable to increasing” population as demanded.

For example, although the current population estimate is roughly 960 grizzlies in the NCDE (Costello et al. 2016), the Draft Conservation Strategy goal is for 800: a 17% decline in the population. USFWS 2013 at 37–39. Additionally, the current survival rate of independent females is 95.2%, while the goal of the Draft Conservation Strategy is for only >90% survival. *Id.* And, the current mean annual mortality rate of independent males is 13.8% – 15.6%, but the Draft Conservation Strategy allows for 20%, importantly, with no scientific reference for this dramatic increase in allowable mortality. *Id.* While the Draft Conservation Strategy, and Forest Plan amendments based upon it, make the mistake of assuming that the 3% growth rate made possible by the protections afforded NCDE grizzly bears by the ESA and Amendment 19 will be possible after habitat standards are weakened and hunting potentially allowed, nothing could be further from the truth. Indeed, the FEIS admits the current best available science indicates a 2% growth rate and admits mortality on private lands (essential to establishing connectivity amongst populations) is increasing.

The Forest Service notes: “[t]he trend in grizzly bear mortalities on NFS lands is downward, but the trend on private lands is upward.” FEIS at 496. Because the Forest only controls the mortality on National Forest Lands, the Forest must ensure that the private land mortality trend does not undermine a positive trend on the Forest. In accordance with this knowledge and the Precautionary Principle, as well as with the acknowledged 2% (not the DEIS’ 3%) growth rate, the Forest must be conservative in its estimates. Indeed, if trophy hunting of grizzlies is allowed in Montana (the state is quite far along in developing its framework for trophy hunting seasons and is clear it intends to allow for trophy hunting) mortality on private and Forest lands are both likely to rise considerably. Additionally, the Forest should include bears translocated to other recovery areas in its assessment of “mortality” since those bears, like dead bears, are permanently absent from the NCDE.

Proposed Solution: Engage in long-term ecosystem wide habitat research and establish a viable baseline. Check assumptions against current population estimates and account for the future proposed lack of ESA protections and failure to comply with Amendment 19. Revise the EIS to comply with Amendment 19 and the ESA listing and delisting criteria. Ensure the EIS contemplates the impacts of removal of ESA protections and lack of adherence to Amendment 19 in all assumptions.

5. Management Zone 1

The Draft Conservation Strategy designates a Management Zone 1 around the perimeter of the Primary Conservation Area (“PCA”) with the following claimed characteristics: (1) “The objective in

Zone 1 is continual occupancy by grizzly bears but at expected lower densities than inside the PCA”; (2) “In these areas, habitat protections on Federal and Tribal lands will focus on limiting miles of open roads and managing current roadless areas as stepping stones to other ecosystems”; and (3) “Attractant storage rules would be implemented on Federal, Tribal, and most State Lands” within Zone 1. USFWS 2013 at 4–5; DEIS at 15.

These objectives are concerning, however, because they do not readily demonstrate how grizzlies will be ensured “continual occupancy” within the management area. First, open road limitations that are based on the new 2011 baseline standard have no basis in science. How can the agency know that “continual occupancy” based on this standard will indeed be achieved without the underlying scientific bases to support its assertion? Second, under the new Kootenai Forest Plan, Inventoried Roadless Areas (“IRAs”) are systematically denied Recommended Wilderness status, with most designated as Motorized Backcountry instead. USDA 2015a. This designation clearly allows for increased levels of motorized use than if the more protective Recommended Wilderness designation were adopted. Third, management control of food-conditioned grizzlies (attractants) is among the leading causes of NCDE mortality. Costello et al. 2016. Accordingly, this source of mortality must be duly considered as applied against the “continual occupancy” objective. And further, the State of Montana manages over 500,000 acres in the NCDE, yet it has thus far refused to control attractants on its lands. Again, this renders the “continual occupancy” objective of Zone 1 questionable at best.

Proposed Solution: Revise the Forest Plan to take into account impacts of the portion of the NCDE managed by other agencies who do not require food storage and other attractant controls, take into account the mortality cause attribution of Costello et al. 2016, reject the flawed 2011 baseline and revise using the best available science. Protect key linkages and corridors with Wilderness designations. Comply with Amendment 19.

6. Management Zone 2

The purpose of Management Zone 2, as described in the Draft Conservation Strategy, is “to provide the opportunity for grizzly bears, particularly males . . . to move between the NCDE and adjacent ecosystems.” USFWS 2013 at 4–5. However, the Draft Conservation Strategy also states: “there are no habitat standards specifically related to grizzly bears” in Zone 2 “because the objectives in these zones do not require them.” *Id.* The Draft Conservation Strategy further notes that Zone 2’s objective “is to maintain existing resource management and recreational opportunities and allow agencies to respond to demonstrated conflicts.” *Id.* In fact, these are some of the very activities that imperiled NCDE grizzly bears and placed them under ESA protection to begin with.

Thus, it is clear that the Draft Conservation Strategy, and any Forest Plan amendments based upon it, intend to manage Zone 2 as a *mortality sink*, not a *population link*, as claimed. While the movement of males provides for genetic connectivity amongst other ecosystems, only female movement actually results in the demographic connectivity that the Draft Conservation Strategy claims, but fails to provide. The solution to this problem is clear though: the agency should base the management of Zone 2 on the known security requirements of grizzlies – and particularly female grizzlies – instead of basing habitat objectives on land manager preferences.

Proposed Solution: Revise the Forest Plan to manage zone to ensure female as well as male grizzly bear dispersal and reproduction. Ensure that Zone 2 is managed to protect grizzlies, not recreational or political interests.

7. Independent Female Mortality

Although the Draft Conservation Strategy's Standard No. 3 states that independent female mortality will not exceed 10% (USFWS 2013 at 38–39), it contains absolutely no timely consequences for doing so. In fact, despite the fact that grizzlies are one of the slowest reproducing mammals in North America, rendering female mortalities as especially serious, the Draft Conservation Strategy throws the Precautionary Principle completely out the window. For example, the Draft Conservation Strategy's standard might allow mortality thresholds to be exceeded (or on the cusp of exceeding) for over a decade before even looking into the problem: "As an example of the application of the management review triggers, if independent female survival was between .89 and .90 for 12 consecutive 6-year intervals, such as 2014–2025, a management review would be triggered." USFWS 2013. That does not mean that it will be twelve years before corrective action is taken, it means twelve years would lapse before any investigation of the mortality causes is even launched. This is plainly unacceptable.

Proposed Solution: Revise the Forest Plan to include clear, enforceable triggers and consequences for female mortality levels based on the best available science. Institute management review if mortality thresholds are exceeded in two consecutive years.

8. Temporary Increases in Motorized Use and Reductions in Security Core

The Draft Conservation Strategy allows NCDE forests to "temporarily" increase Open Motorized Route Density ("OMRD") by 5%, increase Total Motorized Route Density ("TMRD") by 3%, and reduce Security Core by 2%. USFWS 2013. These figures are derived from an analysis of the impacts of six national forest projects between 2003 and 2010 (five on the Flathead and one on the Lolo). USFWS 2013 at 51–52. Since these projects occurred at a time when FWS stated that the NCDE grizzly population "is known to have been increasing," the Forest Service concludes that these figures must be adequate as applied across the entire ecosystem. There are a number of concerns with this approach.

First, according to Dr. Richard Harris, neither population nor trend was known at the time the Draft CS was developed. USFWS 2013, Appendix 2 at 9. Thus, how could the Draft Conservation Strategy accurately state that these figures increasing temporary motorized use and decreasing security core are indicative of assurances that allow for an increasing population to be maintained? Second, it is worth noting that none of the national forest projects upon which these figures are based were identified so that the data might be verified and the impacts truly revealed. Third, five of the six projects considered occurred on just one forest, which is hardly representative of the entire ecosystem. Fourth, such "temporary" increases in motorized density and "temporary" decreases in security core for "temporary" projects can span a fully five-year period, with yet another year for restoration (with limited exceptions). USFWS 2013 at 52. Displacing grizzlies, particularly females with cubs, from important habitat for over five years can hardly be considered "temporary," and would necessarily have serious consequences for both survival and reproduction.

Proposed Solution: Revise the Forest Plan to eliminate all "temporary" increases in motorized activity. Identify all projects on which assumptions are based. Comply with Amendment 19. Recognize and incorporate the impacts of climate change on motorized recreational use, particularly in the denning and rearing seasons.

9. Reliance on the Draft CS is in Error

We are disappointed that the public has still only been provided with a *Draft* Conservation Strategy, while actual recovery criteria and habitat standards for NCDE grizzly bears will eventually be based upon the best available science included in a yet-to-be-published *Final* Conservation Strategy. It is wholly inappropriate for the Forest Service to base these significant Forest Plan revision provisions and amendments pertaining directly to the recovery and future management of grizzly bears without the final facts properly vetted and adopted based upon consideration of the best available science. The Forest Service should consider that it cannot finalize the revision and amendments process in a manner that will ensure “adequate regulatory mechanisms” exist such that a potential delisting process for NCDE grizzly bears can proceed absent publication of a Final Conservation Strategy upon which to base its revisions and amendments on. The proper public process would be to first have the Final NCDE Conservation Strategy affirmatively in place, and then to revise the NCDE national Forest Plans accordingly.

Proposed Solution: Revise the Forest Plan once adequate regulatory mechanisms are in place, including a final Conservation Strategy and final HBRC. Comply with public notice and comment requirements for those revisions.

B. Comments on the Draft Revised Flathead Forest Plan as it Pertains to Grizzlies

In our DEIS comments recommended that the Flathead National Forest adopt proposed Alternative C – with modifications as outlined below – to ensure proper habitat conditions are maintained, and increased, to adequately protect the forest’s imperiled grizzly bears. We continue to maintain it is the only viable option for this decision. While Amendment 19 to the current Flathead Forest Plan still represents the best available science on grizzlies and motorized access impacts – and therefore should have appeared in all of the proposed alternatives – the remainder of the alternatives contains significantly outdated science, false interpretations of the law, and land management actions that render it an inappropriate choice. The Forest Service’s abandonment of Amendment 19 is wholly unacceptable.

Alternative B’s minimal recommended wilderness, nearly 160,000 acres of motorized “fake backcountry” summer and winter use, its 693,262 acres of General Forest Management Areas (“MAs”), and 465,200 acres suitable for timber harvest will fracture necessary connectivity opportunities for grizzly bears across geographic areas, making it a significantly poor choice. Flathead ROD at 12, 14.

We again recommend adoption of Alternative C, with modifications, because it most closely abides by the conservation mandates of the Forest Service’s mission. For example, Alternative C designates 506,919 acres as Recommended Wilderness. DEIS Vol. 1 at 36–37. Notably, the alternative includes 98% of inventoried Wilderness within Recommended Wilderness designation as well. *Id.* Additionally, at 73,426 acres, Alternative C’s proposal will designate the least amount of backcountry acreage for motorized over-snow (i.e., snowmobile) use, providing a huge benefit to imperiled species like *Candana lynx*, wolverine, and grizzly bears, as well as the large number of forest users seeking quiet landscapes. *Id.* Alternative C further provides for 79% of General Forest MA to be in the low and moderate categories, enhancing vital habitat protections. *Id.* Importantly, this alternative also generally provides a higher amount of habitat connectivity than any other action alternative. However, with 317,300 acres proposed as suitable for timber production, and another 392,000 acres proposed as suitable for timber harvest, there remains substantial reason for concern. DEIS Vol. 2 at 108–09.

Aside from our general concurrence with the Forest Plan provisions as proposed under Alternative C, we suggest the forest would benefit from additional modifications to increase the vitality of the Flathead's outstanding wildlife, vegetation, habitat and water resources. We suggest the Forest Service consider implementing the following improvements to its alternatives analysis to create a Forest Plan that is not only biologically and economically sound, but also is appropriately scientifically and legally defensible.

Proposed Solution: Adopt the revised Forest Plan as outlined in Alternative C with the below additional considerations fully incorporated. Alternative C, in combination with the aforementioned suggested modifications, provides an opportunity for the Forest Service to prove its good intentions underlying grizzly bear recovery in the NCDE.

1. Retain Amendment 19 Road Density Standards

We suggested in our DEIS Comments that the Forest Service retain Amendment 19 road density standards as reflected in the current Flathead Forest Plan. Amendment 19 is based upon the best available science from Mace and Waller (1997) and cannot be cursorily dismissed. We further recommended the agency include the following Amendment 19 provisions in a revised Alternative C:

- Open Motorized Route Density (“OMRD”): 19% *or less* of each Bear Management Unit (“BMU”) Subunit contains one-mile per square-mile or less of open motorized routes.
- Total Motorized Route Density (“TMRD”): 19% *or less* of each BMU Subunit contains less than or equal to two-miles per square-mile of total motorized routes.
- Security Core: 68% *or more* of each BMU Subunit is defined as security core, meaning an area at least 2,500 acres in size that is at least 500 meters away from any open/gated route, motorized route, or high-use trail.

We noted that implementation of these standards would not mean that a BMU subunit with OMRD or TMRD of 16% would exceed Amendment 19 standards, thus leaving another 3% available for road development. Rather, it would mean that 16% *meets* Amendment 19 and therefore must be maintained at that level, or better. Likewise, the security core standard suggested above does not mean that a BMU subunit with 75% core would exceed Amendment 19, thereby allowing the forest to develop via logging or roads an additional 7% of the subunit's footprint. Rather, it means that 75% core *meets* Amendment 19 and therefore must be maintained at that level, or better.

Proposed Solution: Retain Amendment 19 standards, and move promptly to close and fully decommission 518 miles of national forest system roads and 57 miles of trails within the next 10 years. DEIS Vol. 2 at 38. The Flathead can use the \$2.2 million in annual savings, as identified by the DEIS under Alternative C (*Id.* at 115), to fund this necessary program of decommissioning.

2. Decommission Roads

Decommissioning requires all bridges and culverts to be removed, as required by Amendment 19. Only fully decommissioned routes can be removed from the TMRD mileage list. Intermittent stored-service routes should never be substituted for decommissioned routes, and cannot be removed from TMRD miles. USDA 1995. Wildlife dependent on large unroaded landscapes – like grizzly bears, Canada lynx, and wolverine – need these routes to be truly decommissioned, not just figuratively so.

We remain concerned with the forest's reference to Ruby (2014) to justify abandonment of Amendment 19. DEIS Vol. 1 at 417. This research is being falsely interpreted by the forest to suggest that grizzly bears are doing fine with high open-road densities in the Swan Valley and that they are not being *completely* displaced by these roads, but rather are merely shifting their use to night-time periods. The forest fails to reveal the most important of Ruby's conclusions until the last sentence of this section: "While human activity associated with human site development in the rural landscape of the Swan Valley did not affect habitat selection, Ruby noted that it can result in human encounters resulting in grizzly bear mortality or management related removals from the population." *Id.* We remind the forest that former Montana Fish, Wildlife and Parks ("FWP") grizzly bear biologist, Rick Mace, expressed this same point to the NCDE Grizzly Bear Subcommittee on several occasions while reporting that female mortalities in the Swan Valley were excessive. Mace, pers. comm.

Proposed Solution: Revise the Forest Plan to accurately interpret Ruby 2014 and follow the recommendations of Mace. Revise the Forest Plan to adhere to Amendment 19.

3. Remove Recovery References

Proposed Solution: As noted previously, there is no scientifically or legally sound evidence that the NCDE grizzly population has achieved biological "recovery." The Flathead FEIS and associated Forest Planning documents should, accordingly be revised to remove all claims to the contrary absent proper scientific support. Additionally, all Standards, Objectives, Guidelines, and Desired Conditions which rely on this false claim of "recovery" to decrease protections for grizzlies or their habitat should be stricken from all planning documents.

4. Remove Temporary Increases in Motorized Use and Temporary Decreases in Security Core

FW-STD-IFS-03 allows for "temporary" changes to OMRD, TMRD, and security core in every BMU subunit within the PCA, as follows: "The ten-year running average for OMRD, TMRD, and secure core numeric parameters shall not exceed the following limits per bear management subunit: 5% temporary increase in OMRD; 3% temporary increase in TMRD; 2% temporary decrease in secure core." This is in error.

First, these changes have no justifiable scientific basis. Instead, they are based on the Draft NCDE Conservation Strategy that has similar flaws (as noted previously), and are entirely illegal under the current state of the law (requiring implementation of Amendment 19 standards).

Second, we are concerned that use of the "ten-year running average" artificially manipulates the true impact of a particular project. For example, grizzlies do not need to survive the ten-year "average" impacts of a project, but rather, need to survive the actual changes occurring to their habitat as a result of a particular project in any given week, month or year. The actual changes to security core during the four- to five-year projects are shown in Table C-5. DEIS Vol. 2, Appendix C at 39. Upon calculation, we see that the *true* damage to habitat is as follows: OMRD increases by +12%; TMRD increases by +3%; and Security Core decreases by -5%. This is a significant flaw the forest must address.

Third, a project of four years (as described) cannot defensively be considered "temporary." Grizzlies – particularly females with cubs – displaced by such lengthy habitat intrusions are likely to suffer severe consequences to their feeding, breeding and denning habits, as well as increased

mortality. USFWS 2014a at 68, 86, 93–94, 112–13. In addition, since the actual percentages for disruption as noted above far exceed known grizzly tolerance levels as reported by Mace and Waller (1997), some displaced bears may actually lose their “institutional memory” for key portions of their home ranges, or may fail to pass it on to their cubs entirely. This unjustified weakening of habitat protections across the entire PCA – which appears to be based upon little more than manager preferences – will not maintain the “stable to slightly increasing” population claimed to be managed for in the Draft CS. The forest should revise its Forest Plan accordingly.

Proposed Solution: Revise the Forest Plan to abandon the false “temporary” label and the flawed 10-year running average assessment. Ensure compliance with scientifically defensible short-term grizzly tolerance levels.

5. Additional Provisions Requiring Modification

In our DEIS Comments we suggested the forest remove similarly destructive habitat provisions from all action alternatives, including Alternative C. The FEIS and plan amendments fail to adequately consider these comments, so reiterate them here.

First, the provision allowing temporary public access for activities like firewood gathering should be removed. FW-STD-IFS-04. In all likelihood, opening a restricted area or road for thirty consecutive days – or anything close to it – will effectively displace grizzlies and other wildlife from important portions of their home ranges with subsequent consequences to feeding, breeding and denning habits, as well as survival. USFWS 2014a at 68, 86, 93–94, 112–13. Further, given that science-based access management standards – like Amendment 19 standards – have played a major role in the successful rebound of the NCDE grizzly population from its near brush with extinction only forty years ago, we question the wisdom of recklessly turning back the clock to times when access decisions routinely ignored the habitat requirements of grizzlies and other wildlife. Why risk a potential grizzly bear recovery success story so that someone can get a cord of wood in an area deemed restricted for duly proper reasons?

Second, we are concerned that the forest may allow projects in important grizzly bear habitat for overly extensive time periods that could be potentially detrimental to the bears. FW-GDL-IFS-01. This “5 years” language has no foundation in grizzly bear science, research or ecology. Instead, it is an arbitrary provision written for the primary purpose of manager preference and convenience. In reality, no grizzly population will remain secure and thrive if its home range is disrupted for five years. Further, these extensive disruptions could readily occur repeatedly, since there are few limitations on projects or extensions in the Guideline.

Third, we disagree with the provision proposing to negatively impact grizzly bear values for Security Core, OMRD, and TMRD with five-year projects (plus unspecified extensions) followed by one-year restoration periods (with its own unspecified extension opportunities). *Id.*, FW-GDL-IFS-02. It is not difficult to see the damage that could result from a five-year project that extends its impacts out to six, eight, or even 10 years (with no guidance on how and when the extensions can be approved). While the Forest Service claims that such retreats are harmless because six such projects have occurred under ESA Section 7 consultation while the population was recovering (USFWS 2013, Application Rules at 51; DEIS Vol. 3 at 92), we note this analysis is flawed. First, as noted prior, the population is not justifiably and biologically “recovered” yet. Second, the public has not been given information as to the specifics of these projects to verify their impacts. And finally, the Forest Service cannot cite to any evidence documenting that grizzlies in those areas were not actually displaced or harmed. Such disregard for undue impacts on essential wildlife habitat is how the

grizzly bear became a threatened species to begin with. The Forest Service should be implementing provisions to affirmatively protect grizzly bear habitat, not allow for its continued destruction.

Proposed Solution: Revise the Forest Plan to comply with the ESA and the bears' current listed status. Remove all references to a "recovered" population. Years into this process the USFWS has yet to propose removing ESA protections. Even were it to do so tomorrow, the process will take significant time. The Forest Plan must comply with the current ESA status of grizzly bears. Revise the Forest Plan to ensure the "recovery" of grizzlies (not just survival or persistence).

6. Eliminate Administrative Use Loophole

Throughout the Flathead FEIS and Grizzly Amendments we see language similar to NCDE-STD-AR-01: "Within the NCDE primary conservation area, motorized use of roads with public restrictions shall be permitted for administrative use (see glossary) as long as it does not exceed either 6 trips (3 round trips) per week OR one 30-day unlimited use period during the non-denning season . . . Administrative use is not included in baseline calculations and is not included in calculations of net increases or decreases." This is an entirely unnecessary loophole. It clearly detracts from the agency's implementation of real habitat protections and erroneously makes the assumption that bears will somehow know the difference between public and agency vehicles – and will not be displaced by the latter – with no scientific justification whatsoever. In fact, Mace and Waller (1997) reported that while motorized use on their study area's restricted routes was essentially zero, even low levels of motorized use displaced grizzly bears. Mace and Waller 1997 at 64, 70. Additionally, the FWS (2014a) reported that increasing use of restricted routes can have consequences for breeding, feeding, denning, and survival. USFWS 2014a at 68, 86, 93–94, 112–13. This administrative free-pass that fails to abide by scientifically justified requirements regarding motorized use levels is inappropriate and should be removed from the proposed plan revision alternatives.

Proposed Solution: Revise the Forest Plan to remove all "administrative use" loopholes. Restrictions should be blanket.

7. Reconsider High-Intensity, Non-Motorized Trails

The Draft Conservation Strategy, DEIS and FEIS impermissibly drop high-intensity, non-motorized trails (defined as trails with more than 20 parties per week for at least one month during the non-denning season) from the 500 meter buffer requirements applicable to roads. FEIS volume 3 at 15; FEIS Volume 1 at 516. The Forest Service also adjusts the designation of Security Core to allow for inclusion of these high-use trails in secure core habitat. FEIS volume 3 at 72, 84. We disagree with the agency's conclusion regarding the impacts of these high-intensity, non-motorized trails on grizzly bear habitat. ("This change was made due to the lack of demonstrable effects of nonmotorized trails on grizzly bears.") FEIS volume 2 at 67. We are concerned with the potential for increased grizzly bear mortality (primarily due to conflict and/or management removals) as a result of this shared use of important grizzly bear habitat (as determined by its Security Core designation). And the science backs up our concern.

For example, the Draft Conservation Strategy admits: "multiple studies document displacement of individual grizzly bears from non-motorized trails to varying degrees (Schallenberger and Jonkel 1980; Jope 1985; McLellan and Shackleton 1989; Kasworm and Manley 1990; Mace and Waller 1996; and White et al. 1999)." DEIS Vol. 3 at 51. The FWS (2014a) has also found that such displacement has potential consequences for grizzly breeding, feeding, denning, and survival.

USFWS 2014a at 68, 86, 93–94, 112–13. Indeed, the FEIS admits “There may be a higher frequency of grizzly bear-human encounters along these trails than on trails receiving less use.” FEIS Volume 3 at 80. The Forest Service also notes that use in secure core increases in many BMUs given its change in definition. *See eg.* FEIS Volume 3 at 84, 94. While the Forest Service is correct that it may be impossible to completely eliminate the risk of hiking or mountain biking in grizzly habitat, the Forest Service can reduce the risk to *grizzlies* by providing adequate buffers in secure core areas. Thus, we recommend that the Flathead designate high-intensity, non-motorized trails as areas requiring a buffer of 500 meters from grizzly bear Security Core habitat.

Proposed Solution: Revise the Forest Plan to account for the impacts of displacement, and designate high-intensity, non-motorized trails as areas requiring a buffer of at least 500 meters from grizzly bear Security Core habitat.

8. Increase Non-motorized Use Protections in Zone 1 and the Salish Connectivity Area

Under Alternative B Modified, management of Zone 1 and the Salish Demographic Connectivity Area (“DCA”) motorized route densities require dramatic improvement. Additionally, these motorized route densities should be based on the demonstrated habitat needs of grizzly bears, as justified by the best available science. Accordingly, Amendment 19 standards and methodologies should be implemented in Zone 1 and the Salish DCA, as well as in other areas within Forest Service jurisdiction. We recommend the following changes to ensure this occurs.

First, the Forest Service must deploy the “Moving Windows” analysis for calculating adequate road densities in these areas. USDA 1995 (defining the *Moving Windows* analysis as “[a] GIS procedure that quantifies the density of roads and trails by incrementally moving a template across a digital map.”). While it uses the moving windows analysis for the PCA, the FIES inexplicably switches to a different, less robust analysis of linear road density for both the Salish DCA and Zone 1. FEIS Volume 3 at 47. However, it is well known that employing the “baseline linear road density” analysis is an outdated technique that was abandoned nearly 20 years ago. The archaic linear analysis allows for overly excessive route density calculations to result. *See* USDA 1995. As the Forest Service must ensure it is using the best available science, the agency must replace the dated linear analysis with the modern moving windows analysis instead.

Proposed Solution: Revise the EIS to replace the linear analysis conducted for Zone 1 and the demographic connectivity areas with the moving windows analysis. Ensure consistency across the landscape by applying the moving windows analysis throughout.

Second, in addition to revising its analytical method, the Forest Service must ensure road density calculations properly account for the long-term survival needs of grizzly bears, and particularly females. For example, Table 65 shows a linear route density of 1.6 miles per square-mile in the Salish DCA, and .9 to 1.9 per square-mile in various areas of Zone 1. FEIS Volume 1 at 511-12. These standards are not adequate to ensure the long-term survival of grizzly bears; especially considering that the DCA is intended to serve as an important habitat linkage zone meant to connect the NCDE population to grizzly bears in the Cabinet-Yaak ecosystem. Amendment 19’s standards of 19% OMRD, 19% TMRD, and 68% Security Core should instead be substituted on all national forest system lands.

Third, we are concerned that the Forest Service is not properly fostering *demographic* connectivity via the Salish DCA. “The Salish Demographic Connectivity Area has an objective to provide genetic

connectivity between the NCDE and the Cabinet-Yaak Grizzly Bear Ecosystem (CYE) to the west, through occupancy by female bears, but at a lower density than in the primary conservation area.” FEIS, Volume 1 at 498. However, if that statement were true, the area would more appropriately be called the Salish *Genetic* Connectivity Area and would only require one male transferring through per generation. Instead, as implied by the term *Demographic* Connectivity Area, the purpose of the DCA is to functionally link the two ecosystems to provide a demographic rescue effect to the struggling CYE population. State and federal agencies have acknowledged this reality for more than 20 years, and it is for that reason that FWP has had an augmentation program underway since 1990. Kasworm et al. 2015 at 23–24. *Demographic* connectivity requires female grizzly bears to effectively live in between the two ecosystems on a regular basis; something the excessive road densities of the Salish DCA as currently proposed are unlikely to allow.

Proposed Solution: Revise the Forest Plan to ensure female dispersal into and occupancy of the CYE from the NCDE, including by reducing road densities and securing connectivity corridors and linkages. Adhere to Amendment 19 and employ the moving windows analysis across all habitat types.

Fourth, as noted in our DEIS comments, we are concerned with the Forest Service’s reliance on Boulanger and Stenhouse (2014) to justify the excessive route densities called for in Zone 1, Zone 2, and the DCAs: “Road densities less than or equal to 2.4 linear mi./sq.mi. appeared to be a threshold for grizzly bear occupancy in Alberta. Bear mortality was reduced when road density was reduced below 1.6 mi./sq.mi., and areas with less than 1.2 mi./sq.mi. were described as being capable of serving as core conservation areas.” FEIS Vol. 3 at 47-48. There are several reasons why using these weaker numbers is problematic. To start, linear road densities have been considered outdated and do not meet the best available science mandates of the ESA. USDA 1995 (adopting Amendment 19 standards and methodologies). Alberta has no such law. In addition, research in the United States is more appropriately based upon the critical female segment of the population, while the Alberta study used data from both male and female bears with different road tolerances. Finally, the Flathead has neglected to report two other findings from this same study: (1) “If lower survival rates of females with dependent offspring is considered, then the threshold of road density that bears can tolerate is reduced further (Fig. 4)”;

(2) “Currently the Alberta government is attempting to manage identified core and secondary conservation zones within each [Bear Management Area (“BMA”)] at road densities of 0.6 km/sq.km. and 1.2 km/sq.km,” (which translates to .96 miles per square-mile and 1.92 miles per square-mile). Boulanger and Stenhouse 2014 at 15. Both of these densities are significantly lower than Amendment 19’s OMRD and TMRD standards respectively. Thus, rather than going research shopping in another country to justify higher route densities, we suggest that the forests of the NCDE implement the highly respected research of Mace and Waller (1997) conducted right in their own back yard.

Proposed Solution: Revise the Forest Plan to adopt Amendment 19’s OMRD and TMRD standards. Implement Mace and Waller (1997).

9. Increase Denning Habitat Protections from Snowmobiles

As noted in our DEIS comments, we have significant concerns that the forest is not properly considering the negative impacts of over-snow vehicle use (i.e., snowmobiles, snowmachines, snowbikes, etc.) on grizzly bears and their denning habitat. For example, during the grizzly bear denning season (December 1 to March 31) the Flathead National Forest offers over 788 miles – 513,654 acres – of forest service lands that are open to over-snow vehicle use. FEIS Vol. 1 at 513. This is nearly 3.6 times the miles available in Yellowstone National Park, one of the premier

snowmobiling areas in the Rockies. And, during the non-denning period (April 1 to November 30) late-season snowmobiling is offered on 666 miles of routes (*Id.*); again three times that available in Yellowstone.

The agency's claim that it "have not detected any conflicts due to over-snow use on the Flathead National Forest," (DEIS, Volume 1 at 413) is plainly false. In fact, an FWP official at the April 2015 NCDE Grizzly Bear Subcommittee Meeting in Choteau, Montana displayed photos of snowmobile tracks passing fewer than 100 yards of a den site. FWP, pers. comm. The snowmobiles pictured had illegally entered the area from the late-season Skyland-Challenge play-area, and had gone undetected by rarely-present forest law enforcement officers. This is but one example of the detriment high levels of allowable snowmobile use is likely to cause forest-wide if the forest's proposals are adopted as written.

Indeed, there are likely a number of such instances each winter and the Flathead is simply not doing a good enough job of finding illegal trail users and prosecuting them for violating the law. With the forest already providing a four-month season on more than one-half million acres, there is simply no justification for risking increased peril to imperiled grizzly bears, lynx and wolverine for motorized over-snow recreation in high-elevation play areas beyond March 31st.

Proposed Solution: Revise the Forest Plan to eliminate late-season snowmobile access in all occupied and/or modeled grizzly bear denning habitat. Account for climate change induced changes to motorized recreation use and timing. Include clear mitigation requirements for any and all over-snow recreation.

10. Enhance Connectivity Opportunities

The revised Forest Plan must include enhanced opportunities to allow for effective connectivity amongst wildlife populations across the Crown of the Continent region. In his pivotal report, *Conservation Legacy on a Flagship Forest: Wildlife and Wildlands on the Flathead National Forest, Montana* (2014), Dr. John Weaver found that: "The community of carnivores (17 species) on the Flathead National Forest appears unmatched in North America for its variety, intactness, and density of species that are rare elsewhere." Weaver 2014 at 114. And, "[c]onsequently, many scientists advocate the need for conservation corridors or linkages between habitats (existing and future) to support necessary movements and greater viability." *Id.* at 5. These findings echo the earlier conclusions of Weaver (2001): "Due to these unique characteristics and its strategic position as a linkage between National Parks in both countries, the transboundary Flathead may be the single most important basin for carnivores in the Rocky Mountains." Weaver 2001 at 5. The significance of these findings cannot be overstated. The challenge for the Forest Service is to develop and implement a transboundary (United States/Canada) conservation plan that honors these outstanding values.

Proposed Solution: Revise the Forest Plan to incorporate necessary carnivore conservation provisions into its revised Forest Plan include: (1) ensure maintainance of food resources with proper management of habitat and prey populations; (2) provide security from excessive mortality with networks of core reserves and other precautionary measures; and (3) maintain regional connectivity with landscape linkages. *Id.* Adopt Alternative C's 506,919 acres of Recommended Wilderness (including 98% of all inventoried Wilderness areas) and lower acreage of General Forest MAs modified accordingly.

First, the DEIS states: “Alternatives B, C, and D do not specifically address connectivity with respect to grizzly bear habitat, but all alternatives would support connectivity for grizzly bears because they include the following plan components” DEIS Vol. 1 at 435. The FEIS, while acknowledging the many public comments calling for better work to support connectivity and enforceable standards, falls short of meeting these key outcomes. FEIS Volume 3 at 11.

Second, following the lead of the flawed NCDE Draft CS, the Flathead and other NCDE forests are trying to entirely abandon the science-based Amendment 19 motorized access standards, erroneously replacing them with an arbitrary 2011 baseline standard apparently based on little more than agency management preferences. USFWS 2013 at 49. A key purpose of Amendment 19 was to reweave the forest’s ecological web by lowering excessive motorized route densities and restoring habitat security core based on known grizzly bear needs. By abruptly dumping Amendment 19 – notably, with numerous BMU subunits still failing to meet their bear-based standards today – the Flathead’s proposal is leaving gaping holes in the security network and connectivity of grizzly bear habitat ecosystem-wide, with impacts for other wide-ranging carnivores as well. The Forest Service’s rejection of comments recommending compliance with Amendment 19 is hollow and unacceptable. FEIS at Vol. 3 at 21. The purported fact that implementing the longstanding Amendment 19 would be hard is not enough to reject doing so.

Although Alternative C has the lowest number of acres in General Forest MA (598,605 acres), and the lowest acres in 6c General Forest High MA (DEIS at 36–37), the manner in which these are laid out on the landscape presents significant problems for connectivity; particularly in the North Fork, Swan Valley, Hungry Horse, and Salish Geographic Areas. We recommend the Forest Service modify and adopt Alternative C to increase the potential for carnivore populations across the Crown of the Continent region to connect.

In his pivotal research on connectivity and fragmentation in the transboundary region of SE British Columbia and the northern NCDE, Michael Proctor recommended the following:

“We recommend that the entire regional metapopulation be considered, that multiple jurisdictions work together on a larger strategy to manage the system for inter-area connectivity, particularly of females, and that larger core subpopulations be managed as potential sources of bears for adjacent smaller threatened subpopulations.” Proctor et al. (2012) at 39.

This failure to ensure connectivity becomes even more serious given research just published in the Journal of Animal Ecology and reported in The Chronicle Journal of Edmonton, Alberta (9/28/16). Researchers Garth Mowat and Clayton Lamb (2016 at 2) and Lamb et al. (2016 at 4-5) found that, “In the last eight years we’ve lost 40 percent of our grizzlies in that area (Elk Valley) – that’s not normal.” This represents a decline from a population of 271 down to 163 – a loss of 108 grizzlies from the South Rockies research region, and not the healthy, connected population to our north claimed by the Flathead Forest.

The Forest Service states at FEIS p. 624: “Information on connectivity is abundant, but more information is needed to determine the most appropriate use of each publication, model, or data set (T. Graves, Chandler, Royle, Beier, & Kendall, 2014; McClure et al., 2016).”

Proposed Solution: Identify and implement the “information...needed” to use the admittedly abundant information on the importance of connectivity for wildlife in terms of corridors, linkage area or zones or permeability.

As the Forest Service notes, “wildlife and natural ecosystem processes occur irrespective of political boundaries.” *Id.* The Forest needs to look at solutions beyond the Forest itself to ensure necessary connectivity. As the Forest notes: “[w]ell-connected populations improve the probability of persistence for small populations (M. F. Proctor et al., 2015) and also help to mitigate the potential impacts on the grizzly bear from a changing climate, increasing resiliency to demographic and environmental variation (USFWS, 2011c)” yet the Forest fails to ensure connectivity with the other recovery zones. The Forest seems to ignore that the goal of the ESA is to ensure recovery of the species *across its range* not just in isolated pockets. While the NCDE bears may not suffer in the immediate future from a lack of genetic exchange, due in large part with connectivity with Canadian bears, the failure of the Forest and cooperating agencies to ensure connectivity between and amongst the grizzly recovery zones, including the as-yet unoccupied Bitterroot ecosystem does not comport with the ESA. While mentioning the four occupied grizzly recovery zones, the Forest Service fails to acknowledge that a fifth recovery zone exists that is yet to be repopulated. FEIS at 492. The future success of the Bitterroot recovery zone is likely dependent on connectivity with and dispersal from the NCDE.

Proposed Solution: Revise the Forest Plan to ensure connectivity with all *four* other recovery zones and in support of recovery of grizzly bears across their range. Comply with the mandates of the ESA. Work cooperatively with the Highway Administration to identify crossings, find and prioritize funding to build those crossings in the short term. *See* FEIS at 629.

11. Modifications by Geographic Area (“GA”)

North Fork GA

Although the North Fork’s significant designations of Recommended Wilderness and Backcountry Non-Motorized under Alternative B Modified are major improvements toward restoring connectivity in this vital drainage, this progress is threatened by extensive stringers of MA 6b General Forest Moderate extending three-quarters of the way to the Whitefish Divide up every major creek and riparian area. These MAs would separate grizzly core areas, and fragment lynx critical habitat and the movement corridor identified by Squires et al. (2013).

Proposed Solution: Revise the MA 6b boundaries be pulled back significantly toward the North Fork Road, and in other areas, changed to MA 6a Low. MA 6a and 6b General Forest, coupled with the Coal Creek State Forest present a nearly solid wall of logging from Trail Creek south to nearly Blankenship Bridge, making connectivity between the Whitefish Range and Glacier National Park difficult. The Forest should reduce the amount of logging and roading at the mouth of Trail and Logging Creeks to allow necessary linkage between these two important areas.

Hungry Horse GA

The combination of Hungry Horse Reservoir, which is bracketed by two high use roads, MA 7 focused recreation areas, and MA 6b Moderate logging, creates a significant fracture zone preventing essential east/west connectivity for wildlife.

Proposed Solution: Revise the Forest Plan to adopt Alternative C amended to include creation of several wide, functional linkage zones through this wall of roads and logging. Abandon touting of a Coram Connectivity Area where none exists due to the MA 6a General Forest designation, private land development and Highway 2. Designate this area as a vital north/south wildlife linkage.

Swan Valley GA

The Grizzly Bear Recovery Plan (USFWS 1993) specifically addresses the importance of keeping the Mission Mountains grizzly bear population viable and adequately linked to neighboring populations in the Swan Mountains. One of the goals of the Swan Valley Grizzly Bear Conservation Agreement (“SVGBA”) (USFWS 1995) was, ostensibly, to do just that. Unfortunately, that goal has yet to be achieved.

Proposed Solution: Bring lands acquired from Plum Creek via the Montana Legacy Project up to Amendment 19 road density standards. The forest should also abide by the SVGBA and create vital wildlife linkage zones, including by providing four wide and functional connectivity corridors across the Swan Valley. The addition of these new connectivity corridors will create necessary breaks in the nearly solid wall of logging and roading under the MA 6b General Forest designation as proposed.

Salish Mountains GA

If the Salish GA is to have any hope of truly functioning as a DCA, the forest will need fundamentally alter past practices managing this area largely as a sacrifice zone dominated by industrial logging and high-use motorized recreation. While we are glad that several grizzlies have successfully occupied portions of the Salish GA in recent years, we are concerned that the prospects for their long-term survival are low.

Proposed Solution: The forest must protect significant and essential habitat pathways through the MA 6b and MA 6c logging minefields of this area in order to comply with the agency’s conservation mandates. In both the Salish GA and all other GAs, the forest should collaborate closely with FWP’s current and former grizzly bear biologists to identify grizzly bear population centers, movement areas and the best ways to link these landscapes. Implement Amendment 19 road density standards on all lands within its jurisdiction.

C. FEIS Volume 3 Grizzly Amendments

The primary purpose in amending the plans of all NCDE forests is to incorporate provisions of the NCDE Conservation Strategy and demonstrate that adequate regulatory mechanisms are in place to guide the management of grizzly bears in a potential post-delisting world. Fundamentally, the Amendments – and the Conservation Strategy upon which they are based – must employ the best available science to fully comport with the mandates of federal law. However, we have significant concerns that indicate the Forest Service is failing to following this basic premise.

1. Lack of a Final Conservation Strategy

In order for an eventual removal of ESA protections from NCDE grizzly bears to proceed, all national forests in the ecosystem need to adopt and incorporate into their respective Forest Plans the conservation commitments as outlined in a Final Conservation Strategy. However, that document has yet to exist. It is inappropriate for the Forest Service to be proceeding with an amendment process based on a Conservation Strategy in mere draft form. Additionally, while the Forest Service claims the draft Conservation Strategy is the best available science, that document is now nearly five years old, comments on the draft have yet to be incorporated, and significant changes in the science and on the ground have occurred since its release. For example, the GYE population of grizzly bears lost ESA protections and the growth rate in the NCDE was revised down from 3% to 2%.

Proposed Solution: Revise these amendments and reopen to public comment upon publication of a Final Conservation Strategy and HBRC.

2. Recovery Status of NCDE Grizzly Bears

In the Draft Conservation Strategy, the FWS decided that the NCDE grizzly bear population had achieved “recovery” based upon population numbers, trends, distribution and achievement of the 1993 Recovery Plan criteria. USFWS 2013 at 7. However, as noted prior, federal courts have held that the FWS cannot claim recovery based upon population numbers and distribution alone, but instead, the agency must also consider the adequacy and availability of the quantity and quality of habitat necessary to support a recovering population. *See Fund for Animals v. Babbitt*, Civil Act. No. 94-1021 (PLF) (documenting settlement agreement requiring FWS to develop HBRC before delisting may occur); *National Audubon Society v. Babbitt*, Civil Act. No. 94-1106 (PLF) (Consolidated) (1997) (same). Most independent scientists have determined that true grizzly recovery will require a linked “metapopulation” of at least 2,500-3,000 grizzly bears in the lower-48 states. *See e.g.* Allendorf and Ryman 2002 at 51; Bader 2000; Reed et al. 2003 at 23; Shaffer 1992 at 10; Traill et al. 2010 at 32. Thus, the FWS’s claim that NCDE grizzly bears are “recovered” appears to be nothing more than an agency opinion based on politics, rather than science.

Proposed Solution: Remove all false claims that the NCDE population is “recovered” from the Grizzly Amendments absent scientific support. Revise all management documents to provide proper scientific support for assertions that similar management practices were in place while the population was recovering or increasing in size and distribution.

3. Lack of Final Habitat-Based Recovery Criteria

As noted, the FWS is required to develop HBRC for each grizzly bear recovery zone, including the NCDE. However, FWS has not yet complied with this legally required mandate in final form. It is irresponsible for the Forest Service to proceed with the Grizzly Amendments as proposed without this vital habitat-based criteria established to incorporate within. The Forest Service should not be adopting FWS documents that are legally indefensible. This is especially true considering that much of the habitat upon which these HBRC will apply is on national forest system lands. We respectfully remind the Forest Service, that the agency has duty under the ESA to conserve listed species and their habitat and to avoid jeopardizing the species or cause harm to their habitat. The Forest Service cannot simply wash its hands of any responsibility for aiding the FWS in developing appropriate HBRC for the NCDE grizzly bears and still maintain compliance with federal law.

Proposed Solution: Work closely with the FWS to develop scientifically sound, legally adequate final HBRC for NCDE grizzly bears. Engage in long-term, ecosystem-wide grizzly habitat research to form the basis for proper HBRC. Conduct the necessary research on the habitat needs of the species, and specifically key food resources, and develop an effective baseline against which to measure grizzly bear recovery success.

4. Inadequate Baseline

We have significant concerns with the Grizzly Amendment’s use of a 2011 baseline standard. We disagree with the Forest Service’s claim that since the grizzly bear population was apparently doing well towards achieving recovery goals with the management framework in place in 2011, it is therefore appropriate to maintain the status quo as of that year. We request the agency provide scientific support for this standard. Notably, the 2011 baseline standard incorrectly assumes that the

future will look like the past, and that levels of protection that were in place in 2011 – arguably inadequate at the outset – will protect grizzly bears and their habitat in 2016 and beyond. This is in error. *See* WildEarth Guardians’ comments on the draft HRBC (attached as Attachment 1).

First, the agency must consider increasing mortality levels based on attractants. As reported in the Grizzly Amendments, while just 17% of the NCDE is on private lands, 67% of management removals were due to attractants (unsecured garbage, pet and livestock foods, carcasses, orchard fruits, garden vegetables, etc. which result in the food conditioning of bears and subsequent management removals). FEIS, Volume 3 at 103. The Grizzly Amendments note: “Private lands continue to account for a disproportionate number of conflicts and grizzly bear mortalities in the NCDE. These impacts are likely to intensify, although appropriate residential planning, outreach and information about how to avoid conflicts, tools such as bear resistant containers and electric fencing, and assistance in resolving conflicts can help mitigate these impacts.” *Id.* at 105. Unfortunately, private property rights generally trump responsible residential planning in the Flathead and Mission Valleys. And despite the fact that FWP fields excellent Grizzly Bear Conflict Resolution Specialists, the top causes of grizzly bear mortality in the NCDE continue to be poaching and management control. Costello 2016.

Second, the agency must consider the impact an increasing human population in the NCDE will have on grizzly bear habitat and recovery prospects in the future. As noted in the Grizzly Amendments: “Proctor and others (2012) used data from 3,134 grizzly bears along with radiotelemetry location data from 792 grizzly bears across the distribution in western Canada and the northern United States to assess large scale movement patterns and genetic connectivity among grizzly populations . . . in the southeastern part of their distribution, rates of movement and genetic interchange were impaired due to anthropogenic influences. Population fragmentation in these areas . . . correspond to human settlement, highways, and human-caused mortalities.” FEIS, Volume 3 at 41. Additionally, in a report to the NCDE Grizzly Bear Subcommittee, researcher Kate Kendall expressed concern that ongoing development along Highway 2 in the western half of the Middle Fork Flathead corridor could open up a linear fracture zone between grizzly bears in Glacier National Park and those in the Bob Marshall Wilderness Complex. Kendall 2014, pers. comm.

The DEIS acknowledges the increasing human population in the NCDE, noting that reporting from the four-county area west of the Flathead and Mission Valleys found that “[f]rom 1990–2011, the four-county area saw a 90 percent increase in population – from 79,485 to 151,254 people.” DEIS, Volume 2 at 180–81. The Forest Service 2010 Renewable Resources Planning Act also acknowledges the increase: “The average population of the four-county area is projected to increase 39 percent from 2010–2035 and 37 percent from 2035-2060.” *Id.* This information is conspicuously absent from the FEIS. The impacts of an increasing human population in the NCDE in the coming years cannot be ignored.

Proposed Solution: Revise the Forest Plan to abandon the flawed 2011 baseline. Consider research, such as that by Mattson and Merrill (2001), finding that human-caused grizzly bear mortality was primarily driven by the frequency of human contact (number of people) and the lethality of that contact (presence of firearms). More people hostile to sharing the landscape with grizzly bears will necessarily equate to more dead bears. Mortality assumptions and thresholds must take this into account.

5. Incorporate Amendment 19 Standards

As noted previously, the gold standard for motorized route density and security core in the NCDE is Amendment 19, which is based on the research of Mace and Waller (1997).

Proposed Solution: Maintain Amendment 19's scientifically-based road density standards and incorporate OMRD, TMRD, and Security Core standards accordingly into the Grizzly Amendments.

6. Management Zones & DCAs

The management zones and DCAs as outlined in the Grizzly Amendments are flawed. First, Costello (2016) has documented full occupancy in Zone 1, and since grizzly bears in Zone 1 count toward recovery, these bears and their habitat should receive the same protections as those in the PCA.

Proposed Solution: Revise the Forest Plan to afford bears in Zone 1 all protections at the same level as in the PCA.

Second, Zones 1 and 2, and both proposed DCAs, are vital to achieving demographic and genetic connectivity to the Cabinet-Yaak, Greater Yellowstone, and Selway-Bitterroot Ecosystem populations of grizzly bears. The habitat requirements of grizzlies do not change to meet manager preferences, particularly in terms of motorized route density.

Proposed Solution: Revise the Forest Plan to afford Zones 1, 2, and the DCAs the same protections as afforded in the PCA, including adherence to Amendment 19 road density standards.

Third, the Forest Service should not weaken provisions allowing for essential connectivity opportunities. As noted in the Grizzly Amendments: "Dispersal between disjunct populations can play an important role in the persistence of a species. Inter-population movements can reduce competition for resources and mates in the source population, increase genetic diversity in the receiving population, facilitate colonization and recolonization of unoccupied habitats, and augment the numbers of small populations (Dobson and Jones 1985, Hanski and Gilpin 1997, Mattson and Merrill 2002)." FEIS Vol. 3 at 41. Attempts by the NCDE forests to increase motorized route densities in these areas using Boulanger and Stenhouse (2014) are transparent efforts to weaken standards to politically-correct levels rather than maintain ecologically sound ones. As we noted previously, reliance on the Boulanger and Stenhouse (2014) study is in error.

Proposed Solution: Revise the Forest Plan to abandon flawed reliance on Boulanger and Stenhouse (2014). Protect dispersal corridors between disjunct populations. Adhere to Amendment 19.

7. Levels of Protection

"The NCDE recovery zone includes about 5.7 million acres of land, of which about 60 percent is NFS lands. Using verified grizzly bear locations from 2000–2014 to create a current distribution map for the NCDE, Mace and Roberts (2014) estimated that bears are currently occupying an area of about 13.2 million acres, more than double the size of the recovery zone." FEIS, Volume 3 at 44. Yet, under the Draft CS and Grizzly Amendments, the 7.5 million acres outside the PCA – and the grizzlies occupying these acres – will see significantly less protection than they do today, and in some

areas (e.g., Zone 3) virtually no protection at all. That is a reduction in the number of acres with grizzly bear protections of nearly 57%. This is plainly unacceptable.

If the agencies are going to count all grizzly bears occupying the PCA and Zone 1 toward a claimed “recovery,” then full protection of these bears and their habitats must be maintained. Similarly, if the two DCAs and Zone 2 are to be functioning linkages to the Cabinet-Yaak, Selway-Bitterroot, and Greater Yellowstone Ecosystems, then the dramatically weaker habitat protections in those areas as outlined in the proposed Grizzly Amendments are inappropriate.

Further, the Forest Service must question what will become of grizzly bears in Zone 3, who have been recolonizing this former habitat east of Highway 89 for more than 20 years now. Zone 3: “primarily consists of areas where grizzly bears do not have enough suitable habitat to support long-term survival and occupancy. The management emphasis would be on conflict response. No additional habitat protection measures are proposed for zone 3.” FEIS Vol. 3 at 14. This is in error and these bears deserve protection. The fact that grizzly bears of all ages and sexes have been pushing east from the forests of the Rocky Mountain Front for 30 years, and increasingly east of Highway 89 for more than 20 years, indicates ample suitable habitat for the bears exists. Although this inspiring recolonization of habitat not occupied for nearly a century indicates a potentially great wildlife success story is in the making, it is clear that the agencies consider Zone 3 to be *politically* unsuitable habitat and are willing to manage it as a grizzly sacrifice area. We respectfully remind the Forest Service that habitat protections must be based on science, not politics.

Proposed Solution: Revise the PCA and Recovery Zone boundaries to account for current and anticipated future dispersal of grizzlies. Include habitat protections for grizzlies in all occupied habitat and project future occupied habitat. Designate all currently occupied habitat as “suitable” and include it in Zone 1 or 2.

8. High-Intensity, Non-Motorized Use Trails

As noted above, the Forest Service should reconsider the impacts to grizzly bears and their habitat resulting from high-intensity, non-motorized trails in the Grizzly Amendments as well. FEIS, Volume 3 at 48 (“Several studies have documented displacement of individual grizzly bears from non-motorized trails to varying degrees (Jope 1985, McLellan and Shackleton 1988, Kasworm and Manley 1990, Mace and Waller 1996, White et al. 1999). However, none of these studies documents increased mortality risk from foot or horse trails or population level impacts due to displacement . . . Furthermore, there are no clear methods or criteria to accurately measure and identify “high intensity use” trails, which resulted in data inconsistencies.”). As noted previously, the agency’s justification for altering the designation of high-intensity, non-motorized use trails is flawed.

First, researchers have clearly demonstrated hikers displacing grizzly bears from preferred habitat. *See e.g.* Jope 1985, McLellan and Shackleton 1988, Kasworm and Manley 1990, Mace and Waller 1996, White et al. 1999. It is for this reason that Glacier National Park routinely closes trails during berry season to allow bears to feed. Second, FWS (2014) has stated that such displacement can cause negative impacts to feeding, breeding, denning, and survival, and particularly to females with cubs displaced into strange habitat, or habitat occupied by adult males. USFWS 2014a at 68, 86, 93–94, 112–13. Third, based on the agency’s flawed justification, the impacts of high-intensity use trails will only be proven by dead bears in the middle of trails, or by instances of grizzlies and hikers routinely coming to blows in trailside berry patches. For more than two decades there has been little difficulty in defining and identifying such trails. The long established standard (accepted by federal and state agencies, the Interagency Grizzly Bear Committee (“IGBC”), and IGBC Subcommittees

alike) defines these trails as hosting 20 parties or more per week. Until additional research establishes a new level, that standard should remain in place.

It seems the real reason that the Forest Service want to get rid of this standard is that it requires such trails, plus 500 meter buffers on either side, to be subtracted from their Security Core numbers. By eliminating this standard, the forest manipulatively increase the amount of Security Core without actually protecting one additional square foot. This is simply inappropriate.

Proposed Solution: Adopt the IGBC definition of “high-intensity use trails” (20 parties or more per week). Revise the Forest Plan to adopt the best available science on non-motorized trail disturbance.

9. Motorized Route Density and Secure Core Retreats

We remain concerned that the Grizzly Amendments decrease protections regarding motorized route density and secure core. The Forest Service notes “Both alternative 1 and alternative 2 modified would require no net increase in motorized route densities and no net decrease in secure core in the primary conservation area on all amendment forests. For all amendment forests, there would be no substantive difference in motorized access between alternatives 1 and 2 within the primary conservation area.” FEIS Vol. 3 at 202. We appreciate that in response to public comments “[u]nder alternative 2 modified, standards would be added within the primary conservation areas to establish consistent definitions and procedures for managing road access for administrative use (NCDE-STD-AR-01) and temporary changes during project activities (NCDE-STD-AR-03 and NCDE-GDL-AR-02).” FEIS Vol. 3 at 188, 218.

However, these standards are not enough. As the Forest Service noted in the FEIS, “[t]here is some flexibility in accessing core through NCDE-STD-AR-03, which would allow for some timber harvest within these areas and access to stands for stand-tending needs.” FEIS Vol. 3 at 188. The FEIS also admits: “The allowance for temporary increases in open and total motorized route densities and temporary decreases in secure core under standard NCDE-STD-AR-03 could result in a higher potential for disturbance of grizzly bears.” FEIS Vol. 3 at 94. For 20 years, the prime directive for core areas under the IGBC Access Task Force standards (1998), and under Amendment 19, has been that core areas contain no open roads during the non-denning period, are to receive the highest levels of protection, and are to remain in place for at least ten years. USFWS 2014 at 4–6. The intent of the Amendment’s language appears to undermine the very concept of secure core and the best available science it is based upon.

The Amendments also state re: NCDE-STD-AR-01, “administrative use” is defined as: “A generic term for authorized agency activity. Specifically, in the portion of the Northern Continental Divide Ecosystem for grizzly bears mapped as the primary conservation area, motorized use of roads closed to the public is permitted for Federal agency personnel or other personnel authorized to perform duties by appropriate agency officials, as long as doing so does not exceed either six trips (three round trips) per week or one 30-day unlimited use period during the non-denning season.” FEIS Vol. 4 at 1 (glossary). The FEIS attempts to sweep concerns over the administrative use loophole under the rug. FEIS Vol. 3 at 22-3. However, once again we note that grizzly bears are not likely to be impacted differently by agency vehicles as compared to public vehicles. Grizzly bears are not likely to tolerate administrative use any better than they tolerate public use. This distinction is based on an erroneous assumption with no grounding in science or law and should be removed from the Amendments’ text. Indeed, the forest admits: “Administrative use might have some impact by disturbing bears in the affected area.” FEIS Vol. 3 at 62, 84-85

Likewise, we express concern with the agency's justification for allowing temporary motorized uses. *Id.* at 22-23. It is important to realize the massive intrusions this standard authorizes in all BMU Subunits, ecosystem-wide. It has the potential to dramatically increase motorized use and decrease secure core, plain and simple. We disagree that allowing four to five years of disruption to occur may appropriately be deemed "temporary."

Proposed Solution: Revise the Forest Plan to eliminate the loop holes for administrative use and "temporary" motorized use.

10. The Grizzly Amendments Require Further Revision

As outlined in the comments above the Grizzly Amendments require significant revision before they may appropriately be adopted by the five NCDE national forests.

Proposed Solution: Revise the Forest Plan based on a *Final* Conservation Strategy and HBRC, and not documents merely in draft form. We look forward to having additional opportunity to comment as the Amendments are updated to properly incorporate the best available science as provided by a Final Conservation Strategy and final HBRC.

III. CANADA LYNX

This objection incorporates and relates to all of the comments provided on pages 41-50 of our DEIS Comments.

A. Failure to Provide Ecological Conditions Necessary to "Contribute to the Recovery" of Lynx

The Forest Service's 2012 planning rule tasks the Flathead with the duty to determine whether or not the ecological components included in the revised plan – including whether the proposed standards, objectives, desired conditions, and guidelines – provide the ecological conditions necessary to "contribute to the recovery" of listed species like lynx. 36 C.F.R. § 219.9(b). Recovery means providing the ecological components necessary to improve the status of a listed species to the point at which listing under the ESA is no longer appropriate. *Id.*

This duty to contribute to the recovery of lynx must be the focus of the Flathead's revised Forest Plan and must drive and inform all management decisions concerning lynx. Providing for the persistence and survival of lynx on the Flathead is insufficient; the Flathead must provide ecological conditions necessary to "contribute to the recovery" of lynx.

As written, however, the revised Forest Plan fails to comply with this recovery obligation. In terms of lynx management, for example, the Flathead relies solely on compliance with the Northern Rockies Lynx Management Direction ("lynx direction") which is outdated, fails to properly manage (and recruit) lynx winter habitat, and is no longer consistent with the best available science including, but not limited to Kosterman (2014), Squires (2010), the Lynx Conservation Assessment and Strategy ("LCAS"), and recommendations from the Species Status Assessment ("SSA") team.

Proposed Solution: Revise the Forest Plan to ensure the "recovery" of lynx (not just survival or persistence) and update the lynx direction to reflect the best available science on lynx conservation.

B. Failure to Properly Manage for Connectivity and Movement Between Subpopulations of Lynx Within the Flathead and Between Lynx in the United States and Canada

Lynx in the Northern Rockies, Montana and Flathead National Forest are connected to populations in Canada and are known to “disperse in both directions across the Canada-U.S. border.” 78 Fed. Reg. at 59434 (citations omitted). This “connectivity and interchange with lynx populations in Canada is thought to be essential to the maintenance and persistence of lynx populations in the contiguous United States.” 78 Fed. Reg. at 59434 (citations omitted). Squires (2013) notes that lynx conservation in the contiguous United States hinges in part on maintaining population connectivity between Canada and the United States.

Maintaining such connectivity, however, is becoming increasingly difficult due to climate and anthropogenic change, as evidenced by reduced connectivity of other boreal species. Squires 2013 at 187. Results from Squires (2013)’s population level model indicate that “changes to vegetation structure can increase landscape resistance to lynx movement, however, there is no evidence that this is currently causing genetic isolation.” *Id.* at 194. “Although lynx are capable of crossing hundreds of kilometers of unsuitable habitat, as evidenced by verified locations in prairie ecosystems, lynx in the Northern Rockies are sensitive to changes in forest structure and tend to avoid forest openings.” *Id.* Lynx are also vulnerable to highway-caused mortality. *Id.* In Colorado, for example, 20% of the lynx mortalities (13 out of 65) were due to vehicle collisions. *Id.* In New York, 19% of lynx mortalities in the Adirondack Mountains were attributed to vehicle collisions. *Id.*

In the Flathead, Squires (2013) identified an important north-south corridor that extends from the Canadian border, proceeds south from the Whitefish Range in the north along the western front of the Swan Range, and ends near Seeley Lake, Montana. *Id.* at 191; *see also id.* at 192 (map depicting location of corridor). “The majority of least cost paths crossed US Highway 2 transportation corridor to the north of the Hungry Horse reservoir near the town of Hungry Horse, MT. In both summer and winter, the 10km stretch of US Highway 2 near the town of Hungry Horse had the largest number of simulated lynx paths . . . connecting northern populations to destination points in the study area.” *Id.* at 191–92.

It is therefore critical that the last remaining areas that still provide good habitat and connectivity for lynx (and other boreal species) in the Flathead – including those identified by Squires (2013) - are sufficiently protected and preserved from development, logging (as well as thinning), and motorized use and increased human access. This is the *only* way to properly manage for recovery of lynx as required by the Forest Service’s planning regulations, 36 C.F.R. § 219.9 (b). As explained in Squires (2013), “[l]ong-term population recovery of these species requires maintenance of short and long distance connectivity.”

It is also extremely important for the Forest Service, in concert with other federal (BLM, National Park Service) and state land management agencies to take any and all available steps to maintain, protect and restore connectivity between subpopulations of lynx in the contiguous United States, Northern Rockies, Montana and within the Flathead National Forest. New and existing and potential corridors and/or “linkage zones” between subpopulations of lynx in the Flathead – many of which have already been identified in Squires (2013) and the lynx direction (see lynx direction map) - should be identified and protected in the revised Forest Plan. Focusing narrowly on individual lynx analysis units (“LAUs”) or adjoining LAUs is insufficient. A broader landscape scale approach that ignores administrative, political, and Forest Service boundaries is needed.

The revised Forest Plan, as written, fails to properly protect and manage important areas for connectivity for lynx. The Flathead's revised Forest Plan also fails to ensure information on lynx connectivity is updated to reflect changes in lynx habitat, movement, trend and status in the Flathead. And, the Flathead must (but has failed) to carefully review and analyze how the revised plan directly, indirectly, or cumulatively (and in addition to vegetation management, including treatments inside the WUI) impacts connectivity for lynx on the forest.

Proposed Solution: Review the best available science – including Squires (2013) – and identify and protect (via enforceable standards) corridors, habitat linkage zones, and “least cost paths” that help connect the lynx populations within the Flathead and northern Rockies and lynx populations in the Flathead with populations in Canada. Carefully analyze how the revised Forest Plan directly, indirectly, and cumulatively impacts connectivity for lynx.

C. Failure to Properly Identify, Manage, and Recruit for Winter Lynx Habitat

The Flathead needs to ensure that lynx *winter habitat* is adequately protected in the revised Forest Plan. Squires (2010) found that, in contrast to populations in Canada and lynx in other areas in the contiguous United States, lynx in the Northern Rockies selected mature, multistoried forests composed of large-diameter trees with high horizontal cover during winter, which is the most constraining season for lynx in terms of resource use. For this reason, Squires recommends that land management agencies like the Forest Service prioritize retention and recruitment of abundant and spatially well distributed patches of mature, multistoried forest stands.

As noted by Squires in his September 27, 2002 comments on the lynx direction (attached to our DEIS Comments), “the few areas that support lynx populations need to be identified and managed accordingly; these actions may be greater than those described in the [Lynx Conservation Assessment and Strategy (“LCAS”)]. This issue is especially important relative to forest thinning. Although the total percentage of thinned acres may be low at a regional scale, the critical issue relative to lynx conservation is the amount of thinned acres in areas that currently support lynx populations.”

The Forest Service should therefore prioritize retention (not management) of mature, multilayer spruce-fir forest stands that provide important habitat for lynx on the Flathead. As explained by Squires, this means avoiding management actions in these stands (including precommercial thinning) that reduce horizontal cover and degrade lynx habitat. Squires (2010) at 1657. “Recovery of high elevation, spruce-fir forests following harvesting or thinning tend to be slow due to short growing seasons, cold temperatures, high winds, and deep snow . . . Therefore, reducing horizontal cover within multistory spruce-fir forest through thinning or harvest may degrade lynx habitat for many decades.” *Id.*

In the revised Forest Plan, the Forest Service fails to properly identify, manage, and recruit these mature, multistory forest stands that are so important for lynx winter habitat and lynx conservation in the region. Nor does the Flathead manage forest stands in a manner that would allow younger stands to eventually become good lynx winter habitat, even in areas designated as critical habitat within the Flathead. Historically, old growth habitat on the Flathead ranged from 15% to 60%. Based on the Flathead's own monitoring reports, the current average across the forest is only 11.6% and ranges between 6.9% to 12.7%. The Flathead is thus failing to retain and recruit lynx winter habitat. Nor has the Forest Service properly analyzed the direct, indirect and cumulative impacts of the revised Forest Plan and its vegetative prescriptions on winter lynx habitat.

The Forest Service notes that it will use timber harvest methods (including regeneration, group selection, or intermediate harvest and pre-commercial thinning) to “create lynx habitat” in forest stands that currently do not have dense understory conditions (stem exclusion stage). The Flathead also notes that it will utilize salvage logging in areas that do not have live understory and use precommercial thinning to “promote development of future mature, multi-storied winter hare habitat” But no scientific literature supports these approaches as valid management for winter lynx habitat.

Timber harvest of stem exclusion stands simply resets the successional clock and acts as a roadblock to recruitment by keeping forest stands from moving towards a more mature, multistoried structure. In support of precommercial thinning, the Flathead relies on Bull (2005), but the Interagency Lynx Biology Team notes in the LCAS that the findings of Bull (2005) conflict with other, more recent studies and that the use of pre-commercial thinning as a management technique to “fill in” the understory is “unproven.” LCAS at 73. Homyack (2007) found that snowshoe hare densities were reduced following precommercial thinning for 1-11 years post thinning. *Id.* The study further suggests that “after precommercial thinning, the stands did not regain the structural complexity in the understory that would be needed to support snowshoe hare densities to the level that were present pre-treatment.” *Id.*

In sum, the best available science reveals timber harvest, salvage logging and precommercial thinning in lynx habitat will not benefit the species or hares, especially in the long-term. The Flathead thus fails to utilize and present the best available science on this topic and presents a misleading and biased approach (contrary to NEPA, NFMA, and the 2012 Planning Rule) that conflicts with the best available science on habitat management for lynx in northwest Montana.

As long as land management agencies like the Forest Service – which controls the vast majority of lynx habitat in the western United States – think they are properly managing winter lynx habitat by authorizing clearcuts, seedtree cuts, shelterwood cuts or even thinning that removes the important understory for lynx and hares because they are creating young regenerating stands (that may be good hare (not lynx) habitat in 20-30 years), then lynx will never recover in the contiguous United States.

Proposed Solution: Adopt standards – beyond the outdated lynx direction - to ensure lynx winter habitat on the Flathead is properly managed and conserved. The Forest Service should also adopt standards and prescriptions designed to ensure that coniferous forest stands in the Flathead are given a chance to become good lynx winter habitat in the coming years and decades. The Forest Service must also properly analyzed the direct, indirect and cumulative impacts of the revised Forest Plan and its vegetative prescriptions on winter lynx habitat

D. Failure to Maintain Dead/Beetle-Killed Forest Stands for Lynx

As documented in Squires (2006), one of the most important variables in describing lynx habitat is the amount of horizontal cover. Lynx tend to avoid sparse/open forest stands and stands dominated by small diameter trees, especially during the winter, and forage and den in areas with high horizontal cover. As such, dead and beetle-killed forest stands that retain a sufficient understory of horizontal cover may still function as suitable lynx habitat.

In the fall of 2014 Colorado Parks and Wildlife initiated a long-term lynx occupancy monitoring program in the San Juan Mountains and collaborated with the Rio Grande National Forest, including John Squires, on a lynx project designed to evaluate the impacts from spruce beetle kill on lynx and snowshoe hares. See <http://www.fs.fed.us/blogs/what-happens-lynx-when-beetles-eat>

forests; see also http://www.chieftain.com/looking-for-lynx-to-a-changing-habitat/article_859ccc65-dc2f-525a-842a-be1c0a20ed9c.html.

The final results from this effort are still forthcoming, but preliminary monitoring efforts indicate that lynx are still present in nearly all of the areas they inhabited prior to the spruce beetle outbreak on the Rio Grande National Forest (roughly 4-6 years ago). In fact, in 2015, two GPS-collared female lynx produced kittens within beetle-killed forest patches. To date, the researchers have found that after spruce trees die, young fir trees take advantage of the extra space and sunlight and densely populate in some parts of the beetle-kill area. Preliminary findings show that the lynx like and continue to use these areas. These results are so striking that Colorado Parks and Wildlife has commented to the Forest Service that it needs to review these findings before approving logging projects in beetle-kill forests in Colorado. In 2017, Dr. Squires and his colleagues released a progress report on their research titled “Response of Canada Lynx and Snowshoe Hares to Spruce-Beetle Tree Mortality and Wildfire in Spruce-fir Forests of Southern Colorado.” The preliminary findings (which are attached as Attachment 2) should be reviewed and incorporated into the final Forest Plan.

The revised Forest Plan fails to include sufficient standards that recognize the importance of and preserve dead forest stands (both fire and beetle kill) for native species, including lynx.

Proposed Solution: Adopt Forest Plan standards and guidance on protecting and preserving dead forest stands (both fire and beetle kill) for native species, including lynx.

E. Failure to Increase the Amount of Mature Forest and Decrease the Amount of Young Generating Forests Within Female Lynx Home Ranges

The best available science, including a new research paper – Kosterman (2014) (attached to our comments on the DEIS) – reveals the Flathead’s current approach in the revised Forest Plan for managing forest stands in occupied lynx habitat is insufficient to ensure lynx reproductive success.

Kosterman (2014) found that lynx reproductive success is related to forest structure abundance and spatial configuration at the female home range scale. A “habitat mosaic comprised of higher percentages and connectivity of mature forest interspersed with patches of young regenerating forest will likely support and enhance lynx reproductive success.” Specifically, Kosterman (2014) notes that female lynx home ranges consisting of >50% mature forest and approximately 10-15% young regenerating forest and greater connectivity of mature forests (with small young generating patches) appears to be the optimal composition of forest structure types. The authors suggest that greater than 15% young regenerating forests may negatively affect lynx reproductive output.

Kosterman (2014) is important and has significant implications for the Flathead because the recommended numbers differ from the current approach outlined in the lynx direction and utilized by the Flathead. Pursuant to the lynx direction (VEG S1), no greater than 30% young regenerating forest is allowed within an LAU (approximately the same size of a female lynx home range). This is too high – nearly twice the amount recommended by Kosterman (2014) – and needs to be updated. The Flathead must, therefore, work towards protecting and recruiting more mature forests, reducing the amount of young regenerating forests, and ensuring more connectivity between mature forest stands. This is the only way to recover the species.

Proposed Solution: Update the lynx direction and, in particular, VEG S1, to reflect the best available science, including Kosterman (2014)'s recommendations and adopt as a new Forest Plan standard in the revised Forest Plan.

F. Failure to Take Necessary Actions Within its Authority and Control to Conserve Lynx in the Flathead

The Forest Service should have (but failed) to use the revised Forest Planning effort as a springboard and take affirmative steps to ensure the long-term survival and recovery of lynx and increase the probability of the species' persistence in the Flathead and lower 48.

As recommended by the SSA team in the Expert Elicitation Workshop Report (attached to our DEIS Comments, see page 53), these actions (some of which are already discussed) include, but are not limited to, the following: (a) adjusting forest management on the Flathead to retain spruce and fir and reduce fire burn rates; (b) promoting and maintaining habitat connectivity with Canadian populations of lynx through coordinated cross-border land use planning; (c) restrict and properly manage salvage logging associated with fire and insect damage to minimize impacts and facilitate restoration of lynx and hare habitats; (d) configure and design lynx-friendly landscapes at appropriate scales and design, and maintain a mosaic of lynx and hare habitats; (e) support additional research to fill knowledge gaps, particularly related to the effectiveness of conservation efforts (it remains unclear exactly what is needed for lynx across the range to achieve and maintain viability); (f) take a hard look at the cumulative impacts to lynx from projects and activities occurring on the Flathead and on adjoining private, BLM, or state lands; (g) reduce fragmentation and promote the reforestation of heavily fragmented areas; (h) apply strategic habitat concepts and model and identify key areas and focus on those areas that are still in need of protection and management; (i) implement fire BMPs that allow and encourage burns to occur in a way that creates high and low intensity mosaic fire patterns; (j) evaluate whether there is a need for monitoring lynx (and hares) using consistent methods throughout the Flathead; and (k) devote increased funding to lynx conservation (lynx are in worse shape than other carnivore species but receive far less funding than those species that have more secure populations and appear less vulnerable to climate change).

Proposed Solution: Adopt the SSA teams' recommended actions in the revise Forest Plan to ensure the long-term survival and recovery of lynx and increase the probability of the species' persistence in the Flathead.

G. Failure to Analyze How Motorized Access Impacts Lynx

In the FEIS the Flathead fails to carefully analyze how allowing motorized access (both summer and winter) into areas occupied by lynx directly, indirectly and cumulatively impacts the species. The number of routes and areas authorized for motorized recreational use should be analyzed and examined within LAUs to determine the level of stress imposed on lynx in these areas and to compare and contrast lynx occupancy within LAUs vis-a-vis the amount of motorized use.

It is also important to consider that as snow levels diminish with climate change, dispersed use of over snow vehicles will become more concentrated in those snowy areas still remaining – exactly where lynx are trying to persist as well. Winter recreation will thus continually become a more serious threat to the persistence of the population over time. This must be analyzed.

In addition, human access via forest roads can increase the potential for mortality or injury of lynx captured incidentally in traps targeting other species or through illegal shooting. The LCAS agrees

that open roads can increase lynx vulnerability to hunting, trapping and/or poaching. The Flathead must therefore take a hard look at this indirect impact. We request that the number of miles of roads and trails open to motorized use within mapped lynx habitat be analyzed in the EIS. We also recommend that the Flathead's proposed "guidelines" for recreation in occupied lynx habitat and critical habitat become enforceable standards, including the recreational guidelines included in the lynx direction and FW-GDL-REC-05, which replaces lynx direction guideline HU GII.

Proposed Solution: Take a hard look at the direct, indirect, and cumulative impacts of motorized access on lynx and convert "guidelines" for managing lynx and lynx critical habitat into enforceable standards.

H. Failure to Develop and Implement an Effective Monitoring Program for Lynx

Pursuant to the Forest Service's 2012 planning rule, the Flathead is tasked with developing a monitoring program for the revised plan that, among other things, tracks the status of all focal species to assess various ecological conditions, including conditions necessary to "contribute to the recovery of federally listed threatened and endangered species" like lynx. 36 C.F.R. § 219.12(a)(5).

Lynx monitoring should address the key ecosystem characteristics and ecological conditions for lynx by exploring the following types of questions: (1) are plan components effectively providing for healthy lynx populations within and across the Forest? For healthy hare populations? (2) is there a need for a consistent lynx (and hare) monitoring strategy that can be applied across the Flathead and other forests? (3) what are the hare densities necessary to support resident lynx populations? (4) what is the influence of immigration from Canada on lynx populations in the Flathead? (5) are plan components contributing to the "recovery" of lynx as required by 36 C.F.R. § 219.12(a)(5)(iv)? How does the Flathead differentiate between monitoring for persistence and monitoring for recovery? (6) are plan components effectively providing for (and recruiting) winter lynx habitat as defined and identified by Squires (2010)? (7) are plan components effectively providing for lynx movement within and across the Forest and for lynx movement between Canada and the Flathead? (8) is there any indication that human disturbance or vegetative management (including precommercial thinning) is impacting the condition of lynx, lynx habitat conditions, or lynx critical habitat on the Forest? (9) are measurable changes in spring snow affecting lynx persistence in the plan area? (10) what is the relationship between decreases in snow, vegetative management, demand for winter motorized recreation, and lynx persistence and recovery? (11) are plan components designed to provide for "little human disturbance" effectively providing for conserving lynx?

In terms of lynx monitoring, it is important that the Flathead monitor how and to what extent forest management is contributing to the conservation of lynx, mapped lynx habitat, *and* designated lynx critical habitat. It is also imperative that the monitoring focus not only on persistence (survival) but also recovery, *see* 36 C.F.R. § 219.12(a)(5)(iv), and that monitoring for lynx and lynx critical habitat not be restricted to the lynx direction standards or desired conditions.

Also, while potential indicators for addressing various monitoring questions in the appendix to the revised Forest Plan are generally useful, they should also be analyzed per LAU as well, as that is within the context of lynx biology and conservation. An additional indicator should also be included regarding lynx vulnerability to mortality from increased human access. The Flathead should determine how many miles of roads and trails are open to motorized use within mapped lynx habitat and this should have been analyzed between various alternatives in the EIS.

Proposed Solution: Adopt and implement a new and effective monitoring program to conserve lynx on the Flathead.

IV. WOLVERINE

This objection incorporates and relates to all of the comments provided on pages 50-65 of our DEIS Comments.

A. Failure to Adopt Meaningful Standards to Conserve Wolverine

The Forest Service, more than any other land management agency, has the ability to protect wolverines by instituting protective management practices on National Forest lands, including the Flathead. Approximately 94% of the currently occupied wolverine habitat in the contiguous United States is in Federal ownership, with most managed by the Forest Service. Yet, existing Forest Plans – including the draft ROD for the Flathead – fail to include any meaningful standards to conserve the species.

The Forest Service’s 2012 planning rule implementing NFMA, tasks the Flathead with the obligation to determine whether or not the ecological components included in the revised plan – including whether the proposed standards, objectives, desired conditions and guidelines – “conserve” wolverine, a species currently proposed for listing under the ESA. 36 C.F.R. § 219.9 (b).

For the purposes of 36 C.F.R. § 219.9, “conserve” means to protect, preserve, manage, or restore natural environments and ecological communities to potentially avoid the federal listing of proposed and candidate species. 36 C.F.R. § 219.19. This means the Flathead must do more than merely maintain the status quo and existing population numbers of wolverine on the forest (which the best available science reveals are already dangerously low). The Flathead must take proactive steps to avoid federal listing of wolverine in order to “conserve” the species. This duty to “conserve” wolverine must be the focus of the Flathead’s revised Forest Plan and drive all management decisions concerning wolverine and other species proposed for listing or candidate species. Persistence and survival of wolverine is insufficient; the Flathead must provide ecological conditions necessary to avoid listing.

To date, however, no such steps are being taken and the revised Forest Plan includes fails to include the necessary components (standards, guidelines, desired conditions and objectives) to “conserve” wolverine.

Notably, because the revised plan is insufficient to ensure the conservation of wolverine – as written – the Flathead must develop “species specific plan” components, including specific standards and guidelines for the species. 36 C.F.R. § 219.9(b). No such standards are included in the draft ROD, however. This is a mistake. The Flathead must develop and adopt meaningful standards to manage wolverine (as it does with other ESA protected species, including grizzlies and lynx) and not simply rely on discretionary desired conditions and guidelines.

In addition, the Flathead cannot (and has not explained how it can) comply with its obligations to manage for a diversity of species, including its duty to “contribute to the recovery” of federally protected ESA species and “conserve” candidate species and species proposed for ESA listing, *see* 36 C.F.R. § 219.9(b), like wolverine, in the absence of enforceable and meaningful standards.

Now that a sizeable body of research about the habitat and life-cycle needs of wolverines is available, and given the importance the Flathead plays in wolverine conservation, the Flathead should exercise its authority under NFMA, comply with its legal obligations under the 2012 planning rule to “conserve” wolverine, 36 C.F.R. § 219.9(b), and adopt protective standards for wolverine as part of the revision process. This would include standards designed to protect denning habitat, protect wolverine from trapping, restrictions on travel planning, standards to preserve connectivity, and other standards designed to protect wolverine from human disturbance.

In addition, the Forest Service should work with FWS and other experts to prepare a Wolverine Conservation Assessment and Strategy (“WCAS”), enter into conservation agreements with the FWS, and then develop region-wide management direction for wolverine including a Northern Rockies Wolverine Management Direction that amends *all* Forest Plans within wolverine habitat.

Proposed Solution: Develop and implement meaningful standards (not discretionary desired conditions, objectives, and guidelines) to conserve wolverine on the Flathead National Forest.

B. Designate Wolverine a Species of Conservation Concern

If, prior to completion of the revised Forest Plan and resolution of the objection process, the FWS elects not to list wolverine as a threatened or endangered species and the species is no longer proposed for listing (or a candidate for listing), then the Flathead should – as a fallback – designate and manage wolverine as a species of conservation concern.

A species of conservation concern is a species other than a federally protected species that is “known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area.” 36 C.F.R. § 219.9(c).

With respect to wolverine, the best available science reveals the species is unlikely to persist in the contiguous United States due to loss of habitat (and increased habitat fragmentation) from climate change and an extremely small population size (both actual and effective). *See Defenders of Wildlife v. Jewell*, 176 F. Supp. 3d 975 (D. Mont. 2016) (discussing best available science regarding climate change and small population threats); 78 Fed. Reg. 7864 (February 4, 2013)(proposed rule to list wolverine).

Designating wolverine as a species of conservation concern is therefore warranted should the FWS decide not to provide protective status for wolverine under the ESA. Our May 15, 2015 scoping comments provide extensive comments explaining – in detail – why wolverine qualify as a species of conservation concern pursuant to the Forest Service’s regulatory and Handbook criteria. These comments are hereby incorporated by reference.

Proposed Solution: Designate wolverine a species of conservation concern if FWS elects not to list wolverine (currently proposed for listing) as a threatened or endangered species under the ESA.

C. Failure to Acquire the Data Necessary to Make Informed Forest Planning Decisions Regarding Wolverine

The Flathead concedes that very little is known about wolverine on the forest. This is because no recent research or studies have been conducted on the Flathead even though it is likely home to the highest concentration of wolverine remaining in the contiguous United States. The last study on the

Flathead - Hornocker and Hash (1981)- occurred in 1981 and since that time the forest has been relying on unreliable and now outdated trapping records and random reports and observations of wolverine. This is insufficient.

In order to effectively conserve and manage for wolverine on the Flathead, and properly analyze the direct, indirect, and cumulative impacts to the species from the revise Forest Plan, the Forest Service must first acquire and map information on the local population (actual and trend), where wolverine reside and are denning (both maternal and natal), and where they are traveling/moving within the forest. The Flathead should also use one methodology or model to clearly define and map wolverine denning habitat and range in the Flathead. The models discussed in Copeland (2010) and Inman (2013), or Weaver (2014) – which combines the verified models from the Copeland and Inman papers - are all considered valid approaches.

Proposed Solution: Acquire and map information on the local wolverine population (actual and trend) inhabiting the Flathead and information on where wolverine reside and are denning (both maternal and natal), and where they are traveling/moving within the forest.

D. Failure to Take a Hard Look at the Impacts From Winter Recreation

The Forest Service’s FEIS and Draft ROD do not adequately analyze the direct, indirect or cumulative impacts on wolverine maternal and natal denning habitat from human disturbance, specifically winter recreational activities. Nor, as noted above, does the draft revised plan include the necessary provisions and standards to protect denning habitat (both maternal and natal) from human disturbances.

The best available science (all of which was provided and described in our comments on the DEIS and draft revised Forest Plan, including the Heinemeyer and Squires papers) reveal that dispersed recreational activities – especially winter recreational activities – have the potential to adversely impact wolverine because they disrupt and limit use of wolverine natal denning areas.

The Forest Service’s statement in the FEIS that this information suggests “wolverine are generally tolerant of human disturbance associated with recreational developments and activities” is therefore incorrect and the Forest Service has yet to take a hard look at the potential impact such activities have on wolverine (specifically maternal and natal denning behavior). Steps should therefore be taken to continue to study the effects of dispersed recreation on wolverines and, where necessary, minimize the harm from such activities. This, however, is not occurring.

For example, the revised Forest Plan includes a guideline (FW-GDL-WL-04) stating that if activities are authorized or conducted that are known to disrupt known wolverine maternal denning habitat (from February 15 to May 15), measures “should be” implemented to avoid adverse impacts to their key habitats during key time periods. This guideline only applies to “low flying helicopter and landing sites” and does not apply to winter recreation in general, existing roads and trails or existing winter recreation areas or routes, or developed areas. And, without question, this “guideline” should be an enforceable standard that applies to all winter recreation in denning habitat (starting in February, when wolverines typically give birth) and directs the Forest Service to take specific action (including closures) to protect wolverine during the denning season. The same is true with respect to FW-GDL-REC-04 pertaining to winter motorized recreation in modeled denning habitat; it is merely a “guideline” that should be followed.

Notably, even though the effects of winter recreation on wolverine denning habitat are still being analyzed (Heinemeyer and Squires expect to have results published this year), the Flathead suggests in the FEIS that there are no (or nominal) negative impacts to wolverine from winter recreation. As we explained in our comments on the DEIS, this finding is premature, inaccurate and not consistent with Heinemeyer's research to date, including Heinemeyer et al. (1999), Heinemeyer et al. (2001), Heinemeyer et al. (2012), Heinemeyer et al. (2013), Heinemeyer et al. (2014), Heinemeyer et al. (2015), and a new paper published in Ecology and Conservation – F.E.C. Stewart et al. 2016. *Wolverine Behavior Varies Spatially with Anthropogenic Footprint: Implications for Conservation and Inferences About Declines* (attached to our comments on the DEIS)

The Flathead's attempt, therefore, to downplay and discount the impacts to wolverine from winter recreation in the FEIS is premature, inaccurate and contrary to the best available science. The conclusion is not supported by (and in some instances is squarely contradicted by) the best available science. There is an obvious disconnect between the facts found and the decision made that needs to be corrected in the final rule. See *Gifford Pinchot Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1065 (9th Cir. 2004).

Proposed Solution: Take a hard look at the direct, indirect, and cumulative effects of winter recreation on wolverine denning habitat (maternal and natal) and, until the impacts are better understood, adopt standards (not discretionary guidelines) to protect denning habitat from winter recreation.

E. Failure to Take Proactive Steps to Minimize the Risk of Wolverine Being Caught and Killed in Traps and Snares Set for Other Species

In the FEIS and Draft ROD, the Flathead notes that the mortality of wolverine from trapping and snaring is outside its authority and control: "MFWP has the authority over wolverine trapping." The Flathead also downplays any potential impact mortality from trapping (including incidental take) may have on wolverine. This is a mistake.

As explained in our comments on the DEIS, the incidental trapping of wolverines is a significant non-climate stressor that can and should be minimized by the Flathead during the Forest Plan revision in order to maximize wolverine resiliency and ability to adapt to the impacts of climate change. And, contrary to the Forest Service's position in the FEIS, Draft ROD, and revised Forest Plan, the Agency does have broad authority to restrict and regulate activities – including trapping and snaring – on National Forest lands in order to conserve its wildlife resources. See Nie, M. et al., *Fish and Wildlife Management on Federal Lands: Debunking State Supremacy*, Environmental Law, 47, no. 4 (2017) (attached).

As such, in order to minimize and avoid the loss of individual wolverines on the forest, the Flathead should, at a minimum: (a) close or restrict motorized access to remote management areas known to be occupied by resident wolverines on the Flathead, including denning sites (both maternal and natal) during the trapping season; (b) prohibit or restrict the use of Wildlife Services' federal predator control programs in areas known to be occupied by resident wolverines on the Flathead; and (c) create special management areas for areas known to be occupied by resident wolverines, including denning sites, that include standards prohibiting the use of certain types of traps, snares and baits within and adjacent to the management area. The Flathead should also explore other ways to regulate, restrict and limit all forms of trapping, snaring and poisoning in occupied wolverine habitat (including dispersal corridors) within the Flathead.

As mentioned earlier, 94% of the currently occupied wolverine habitat in the contiguous United States is federally owned, with most managed by the Forest Service. 78 Fed. Reg. at 7874. And, the Flathead is likely home to the largest subpopulation of wolverines in the entire contiguous United States. Restricting all forms of trapping and snaring in occupied habitat on National Forest lands within the Flathead would thus help alleviate a major threat to subpopulations (and certainly benefit other listed species like lynx) and assist in the conservation of the species.

Proposed Solution: Adopt standards that restrict or regulate the use of certain types of traps, snares, and poisons to protect wolverine in the Flathead National Forest.

F. Failure to Analyze the Direct, Indirect, and Cumulative Impacts of Forest Management on Wolverine

The Forest Service explains that logging or other types of vegetation management likely has no impact on wolverine as they are not thought to be dependent on specific vegetation or habitat features that might be manipulated by land management activities. At this stage, however, it is premature to assume no impacts from vegetative management. In other words, the “lack of evidence” that logging does not pose a threat to wolverine does not mean no threat exists because very little study has occurred and there is certainly no consensus.

As outlined in our comments on the DEIS, some studies might suggest wolverines are able to “tolerate” logging and prescribed burning. Other studies, however, suggest logging – especially industrial logging in occupied habitat – may be a concern because it adversely impacts prey species. Because 94% of the currently occupied wolverine habitat in the contiguous United States is in Federal ownership, with most on National Forest land, how National Forest lands in occupied by wolverine habitat are managed is extremely important and requires further study and research.

The Forest Service, therefore, should not be making any broad-brush conclusions regarding impacts from logging and forest management in the absence of further analysis. Instead, in the face of such uncertainty, the Forest Service should apply the precautionary principle and “give the benefit of the doubt to the species.” *Conner v. Burford*, 848 F.2d 1441, 1454 (9th Cir. 1988); *accord Defenders of Wildlife v. Babbitt*, 958 F. Supp. 2d 670, 677, 680 (D.D.C. 1997). Doing so is critical in order to maximize the wolverine’s resilience by minimizing non-climate stressors.

Proposed Solution: Take a hard look at the direct, indirect, and cumulative impacts of vegetation management on wolverine.

G. Failure to Ensure Connectivity for Wolverines is Maintained and Restored

Restoring and maintaining connectivity among species like wolverine that are threatened by climate change is critical to “conserving” the species and should be one of the highest management priorities for the Flathead.

Wolverines in the contiguous United States likely exist as a meta-population. Aubry et al. 2007. As explained by FWS, a meta-population “is a network of semi-isolated populations, each occupying a suitable patch of habitat in a landscape of otherwise unsuitable habitat. . . . Meta-populations require some level of regular or intermittent migration and gene flow among subpopulations, in which individual populations support one another by providing genetic and demographic enrichment through mutual exchange of individuals. Individual subpopulations may go extinct or lose genetic viability, but are then ‘rescued’ by immigration from other subpopulations, thus ensuring the

persistence of the meta-population as a whole.” 75 Fed. Reg. at 78031. Some of the subpopulations within this meta-population – including those inside the Flathead National Forest – are extremely small and vulnerable, with some consisting of less than 10 individuals. 78 Fed. Reg. at 7867.

According to the best available science, if the meta-population dynamics break down, either due to changes within the subpopulation or due to the loss of connectivity (from climate change or development) then “the entire meta-population may be jeopardized due to subpopulations becoming unable to persist in the face of inbreeding or demographic and environmental stochasticity.” 78 Fed. Reg. at 7867.

As such, it is extremely important for the Flathead, in concert with other federal (BLM, FWS, Forest Service, Park Service) and state land management agencies to take any and all available steps to maintain, protect and restore connectivity between isolated subpopulations of wolverine. Existing “linkage zones” between subpopulations of wolverines within and adjacent to the Flathead should be identified and protected, especially when those areas overlap with public lands (federal or state). So too should corridors or linkage zones between subpopulations in Montana and the contiguous United States and populations to the north in Canada. 78 Fed. Reg. at 7885. According to FWS, “The apparent loss of connectivity between wolverines in the northern Rocky Mountains and Canada prevents the influx of genetic material needed to maintain and increase genetic diversity in the contiguous United States. The continued loss of genetic diversity may lead to inbreeding depression, potentially reducing the species’ ability to persist through reduced reproductive output or reduced survival.” 78 Fed. Reg. at 7885.

As noted by Brock (2007), safe places where wolverines can find food, shelter, and security while moving across the landscape between areas of suitable habitat must be identified and protected. “Appropriate management of wolverine linkage zones in public ownership . . . is crucial.” Brock 2007 at 30. The revised Flathead Forest Plan, however, fails to include any meaningful direction or standards for maintaining and restoring connectivity or protecting linkage zones for wolverine.

Proposed Solution: Adopt forest-wide direction to protect and restore important corridors and/or linkage zones for wolverine.

H. Failure to Consider the Overall, Cumulative Effects to Wolverine

The FEIS fails to take a hard look at, and carefully consider, the overall cumulative effects to wolverine. Cumulative impacts are “the impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. Cumulative impacts can result from “individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7.

The proper consideration of cumulative impacts requires “some quantified or detailed information; general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided.” *Great Basin Mine Watch v. Hankins*, 456 F. 3d 955, 971 (9th Cir. 2006). Moreover, the “analysis must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects.” *Id.* The Flathead “must do more than just catalogue relevant past projects in the area.” *Id.* It must give a “sufficiently detailed catalogue of past, present, and future projects and provide adequate analysis about how these projects, and the difference between the projects, are thought to

have impacted the environment.” *Id.* Some “quantified assessment of their combined environmental impact” is required. *Id.* at 972.

With respect to wolverine, the DEIS and FEIS provide a list of potential threats to the species. Missing from the DEIS and FEIS, however, is a meaningful analysis of cumulative impacts to wolverine from climate change in combination with other non-climate stressors including but not limited to forest management, mortality from trapping, small population size, dispersed recreation, increased access into core habitat, and transportation corridors. To date, the Flathead has only considered these activities in isolation, not in combination with other existing threats such as climate change, trapping, and an already small population size.

Proposed Solution: Take a hard look at the cumulative effects to wolverine as required by NEPA.

I. Failure to Develop an Accurate Monitoring Program for Wolverine

Pursuant to the Forest Service’s 2012 planning rule, the Flathead is tasked with developing a monitoring program for the revised plan that, among other things, tracks the status of all focal species to assess various ecological conditions, including conditions necessary to “conserve proposed and candidate species” and conditions necessary to “maintain a viable population of each species of conservation concern.” 36 C.F.R. § 219.12(a)(5). Such a monitoring program is needed for wolverine but not included in the revised plan.

Importantly, wolverine monitoring should test “relevant assumptions” (36 C.F.R. § 219.12) associated with the relationship between the Forest Plan and wolverine persistence, including assumptions and uncertainty regarding management impacts, particularly motorized recreation, on wolverine persistence. Wolverine monitoring should also be coordinated and integrated with the development of a broad-scale monitoring program for wolverines and other forest carnivores (*see* 36 C.F.R. § 219.12(b)), and should be developed and implemented with key stakeholders, including WildEarth Guardians (*see* 36 C.F.R. § 219.12(c)(3)), which was included in Appendix B as a potential management approach and possible action. Wolverines should also be considered as a focal species representing the ecological integrity of alpine ecosystems.

Wolverine monitoring, for example, should address and explore the following types of questions: (1) are measurable changes in temperature and precipitation affecting the amount of available snow cover, including persistent spring snow cover, on the Flathead? (2) are measurable changes in temperature and precipitation affecting where and when wolverine den and wolverine persistence in the plan area? (3) what is the relationship between decreases in persistent spring snow, demand for winter motorized recreation, denning success and wolverine persistence? (4) are plan components effectively providing for wolverine movement within and across the Forest? (5) is there any indication that human disturbance (and access) is impacting the condition of wolverines on the Forest or wolverine denning success on the Forest? (6) are plan components designed to provide for “little human disturbance” effectively providing for wolverine denning and security needs and conserving the species? Human activities, in particular, should be included in terms of wolverine monitoring (via various proxies presumably offered in the biophysical settings).

Proposed Solution: Establish a wolverine monitoring program that evaluates whether Forest Plan components need to change to better conserve the wolverine in the planning area.

V. BULL TROUT

A. INFISH

Both FWS and the Courts have determined that INFISH is an insufficient long-term management strategy that will not allow bull trout to recover. *Friends of Wild Swan, Inc. v. U.S. Forest Serv.*, 966 F. Supp. 1002, 1019 (D. Or. 1997) (determining that long-term application of INFISH is inadequate to fulfill the Forest Service’s viability responsibilities to bull trout); Bull Trout BiOp at 59 (bull trout will not recover under INFISH); *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 524 F.3d 917, 931-33 (9th Cir. 2008) (agencies required to provide for survival and recovery of species). However, instead of bolstering the protections from INFISH, the Forest Plan undercuts even those modest protections to further under-protect bull trout in the Forest. The Forest Service fails to adequately explain these reductions in bull trout protections and why the Forest Service chose to deviate from the carefully crafted INFISH standards applied to the Flathead’s 1986. *Encino Motorcars, LLC v. Navarro*, 136 S.Ct. 2117, 2125-26 (2016) (when changing an existing policy, an agency must: (1) display awareness that it is changing its position; (2) provide a rational explanation for that change; and (3) provide a rational explanation for disregarding facts and circumstances that underlay or were engendered by the prior policy).

1. **Replacing Riparian Goals under INFISH with the Region 1 Aquatic and Riparian Conservation Strategy**

Riparian Goals under INFISH are comprehensive goals that ensure the integrity of riparian habitats and their ability to support the species that depend on those habitats. DEIS Comments at 28. We challenged the Forest Service’s incorporation and integration by reference of the Region 1 Aquatic and Riparian Conservation Strategy (“ARCS”), which the Forest Service said replaces INFISH for maintenance and restoration of watersheds in the Forest. DEIS Comments at 28 (citing Draft Plan at 17). In response, the Forest Service admits the ARCS is actually still being developed, but says that the Forest Plan is still aligned with it. FEIS Appendix 8-80. However, NEPA’s implementing regulations prohibit incorporation by reference unless the material to be incorporated is “reasonably available for inspection by potentially interested persons within the time allowed for comment.” 40 C.F.R. § 1502.21; *see also Natural Res. Def. Council v. Duvall*, 777 F. Supp. 1533, 1538 (E.D.Cal.1991) (describing these incorporation requirements as “relatively rigid”). Not only is the ARCS not available for inspection, a final version does not even exist yet. Furthermore, the Forest Service cannot be sure the Forest Plan is aligned with the ARCS because the ARCS has not been completed.

Proposed Solution: The Forest Service must complete and distribute the ARCS before it can incorporate and rely on it. The Forest Service must base its decision on the best available science and must disclose its basis to the public.

2. **Desired Conditions under the Forest Plan are an insufficient replacement for Riparian Goals**

Riparian Goal (1)

INFISH’s Riparian Goal (1) is to provide for water quality that provides for stable and productive riparian and aquatic ecosystems. DEIS Comments at 29. The desired conditions in the Forest Plan fail to replace this requirement. The Forest Service states that “INFISH direction to provide for stable and productive habit for all stream reaches at the same time, the current understanding of best available scientific information no longer supports this concept.” FEIS Appendix 8-80. However,

the Forest Service provides no support for this conclusory statement.

Proposed Solution: Institute Riparian Goal (1) or a strengthened version of it to ensure that management will provide for water quality that provides for stable and productive riparian and aquatic ecosystems.

Riparian Goal (6b)

INFISH's Riparian Goal (6b) is for riparian vegetation to provide adequate summer and winter temperatures within riparian and aquatic zones. The Forest Plan does not provide any standards mandating that native plants provide thermal regulation sufficient to maintain, or obtain, suitability of the stream as habitat for bull trout. DEIS Comments at 29-30. Additionally, while RMZ Desired Condition 01 discusses the ability of RMZs to provide for thermal regulation, it does not require that this thermal regulation be sufficient to maintain or restore suitability for bull trout. This is particularly egregious given that bull trout are believed to be the most thermally sensitive salmonid native to western Montana, making cold water temperatures extremely important to the species. DEIS Comments at 29.

As discussed below, the restrictions on vegetation management within RMZs allow vegetation management in more situations than under INFISH. Additional vegetation removal in RMZs will result in increased stream temperatures. These restrictions therefore do not serve as an adequate replacement for Riparian Goal (6b).

Proposed Solution: Make clear that riparian vegetation in the Forest must provide adequate summer and winter temperatures within riparian and aquatic zones to maintain or restore suitability for bull trout.

3. The Forest Plan's removal of RMOs will harm bull trout

The Forest Plan's elimination of RMOs without a better replacement ensures that bull trout will receive lesser protections under the Forest Plan than they have under INFISH. DEIS Comments at 30-31. The Forest Plan continues to eschew benchmarks that support quality bull trout habitat in favor of indeterminate, vague standards and guidelines that fail to provide objective measures of habitat suitability. For example, the Forest Plan replaces numerical woody debris objectives with the "requirement" that that woody debris be "within reference ranges." DEIS Comments at 30. By failing to provide information on what it would take to meet objectives and by weakening the test by which the Forest determines whether it is meeting these objectives, the Forest Plan fails to provide guidance that will be useful in making site-specific determinations. DEIS Comments at 30-31. This ensures that bull trout will receive less protection under the Forest Plan than under INFISH and also prevents the Forest Plan from adequately guiding future management decisions and adequately providing for bull trout in the Forest. See *Native Ecosystems Council v. Weldon*, 697 F.3d 1043, 1056 (9th Cir. 2012); 16 U.S.C. §§ 1604(g)(3)(B), (i).

Proposed Solution: The Forest should adopt science-based, numerical benchmarks that provide protections exceeding those provided by INFISH's RMOs. Without concrete guidance delineating objective criteria for bull trout habitat, determinations will be made in an ad-hoc, arbitrary, subjective way that will prevent the Forest from ensuring comprehensive protections for bull trout.

4. RHCAs vs. RMZs

RHCAs (INFISH) and RMZs (Forest Plan) are portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific measures. However, in adopting RMZs that are less protective of riparian areas than the RHCAs under INFISH, the Forest Plan reduces protection of, not just riparian areas, but also aquatic ecosystems and the species that rely on these habitats. DEIS Comments at 31. As discussed above, the elimination of RMOs weakens RMZs as compared to RHCAs plus RMOs under INFISH.

Bull trout are not habitat generalists. They have very precise habitat requirements that make flexible, subjective standards for protecting their habitat unsuitable. DEIS Comments at 29. By failing to provide numerical standards and objectives and bright line prohibitions and requirements to achieve habitat conditions necessary for bull trout, the Forest Plan fails to adequately provide for their conservation. DEIS Comments at 31.

Though RMOs are objectives that do not bind the agency in making future determinations, they did provide numerical objectives that were capable of quantification. By monitoring and observing streams, the Forest Service would be able to tell objectively whether a stream was meeting the various RMOs by, for example, recording pool frequency or water temperature. This created a system that was consistent and repeatable across the Forest. The elimination of RMOs removes this objective basis for comparison and assessment and may result in decisions that are all over the map, often under-protecting bull trout. DEIS Comments at 31.

The Forest Plan also exhibits an unwillingness to provide firm requirements with its desired conditions, objectives, and standards. Desired conditions for example are merely aspirational. DEIS Comments at 31 (citing Draft Plan at 4). Additionally, standards, while presented as being mandatory, are often heavily infused with discretion, making them vague and unenforceable. DEIS Comments at 31. For instance, RMZ Standard 06 states that “[v]egetation management shall only occur in the inner riparian management zone in order to restore or enhance aquatic and riparian-associated resources. Exceptions may occur as long as aquatic and riparian-associated resources are maintained. Exceptions shall be limited to (1) non-mechanical treatments such as prescribed fire, sapling thinning, or hand fuel reduction treatments; (2) mechanical fuel reduction treatments in the wildland-urban interface within 300 feet of private property boundaries; or (3) treatments that address human safety hazards (e.g., hazard trees) adjacent to infrastructure or within administrative or developed recreation sites.” Forest Plan at 22 (*see also* DEIS Comments at 31 (quoting Draft Plan at 23 (formerly RMZ Standard 03)). The exceptions in this “mandatory” standard are sufficiently broad that they could be read to allow many types of vegetation management projects to occur for a variety of reasons, whether or not those were adequately protective of the RMZ. As a result this standard does not guarantee that these areas will be protected or provide any real, objective measures to be taken should such projects be approved. DEIS Comments at 31.

Proposed Solution: The Forest Service should reinstitute rigorous, objective, science-based standards, like RMOs, for delineating whether forest management is yielding suitable bull trout habitat. The Forest Service should also tighten up its desired conditions, objectives, and standards to ensure that they are sufficiently definite that they can actually serve their purpose as guides for future actions across the Forest. The Forest Service should ensure that the bull trout protections it adopts exceed the insufficient measures from INFISH, and the multiple instances of backsliding on INFISH’s protections should be corrected. This should include limiting vegetation management in RMZs so that it is consistent with TM-1 under INFISH (a general blanket prohibition with limited exceptions).

5. The Forest Plan allows excessive vegetation management in the Outer RMZ and does not provide any standards prohibiting either short- or long-term degradation to aquatic and riparian conditions from this vegetation management

The Forest Service has further weakened protection of the outer RMZ since promulgating the Draft Plan. DEIS Comments at 31-32 (citing Draft Plan at 23). In the Draft Plan, RMZ Standard 04 allowed vegetation management in the outer RMZ “so long as project activities in RMZs do not result in long-term degradation to aquatic and riparian conditions.” Draft Plan at 23. Instead of amending this standard to also prohibit short-term degradation of aquatic and riparian conditions, the Forest Plan now includes no standards for vegetation management in the outer RMZ at all. Forest Plan at 20-22. The Forest Plan thus provides no standards prohibiting vegetation management in the outer RMZ, even where that activity would cause either short- or long-term degradation to aquatic and riparian conditions. The Forest cannot rely on non-binding guidelines that recommend actions as a basis for avoiding a strong standard that requires an outcome that is sufficiently protective of the Forest.

Proposed Solution: The Forest should create a new RMZ standard for vegetation management in the outer RMZ that is consistent with TM-1 from INFISH (a general blanket prohibition with limited exceptions) and that also makes it clear that vegetation management cannot cause short- or long-term degradation to aquatic and riparian conditions.

6. New RMZ boundaries provide less riparian protection than RHCAs under INFISH

The Forest Plan’s adoption of RMZs as a replacement for RHCAs under INFISH results in significantly less protected riparian area. DEIS Comments at 31-33. For example, removing the descriptive expander “or to the outer edges of riparian vegetation” from the Category 1 RMZ description shrinks protected area. Forest Plan at 20. However, reduced protection of RMZs as compared to RHCAs is not limited to the removal of these expanders. As is explained elsewhere in our Comments and Objection, the desired conditions, objectives, standards, and guidelines in the Forest Plan weaken protections riparian areas had under INFISH. In addition, even the limited protections in the Forest Plan are further weakened by designating an inner and outer RMZ and by providing the outer RMZ with much weaker protections. For example RMZ Standard 06 in the Forest Plan provides weaker-than-INFISH requirements for vegetation management in the inner RMZ. As discussed above, the Forest Service has now removed the even weaker standard for the outer RMZ (Draft Plan RMZ Standard 04), leaving the outer RMZ much more vulnerable to vegetation management that would compromise riparian and aquatic areas and species. By splitting the RMZ into an inner RMZ (with less protection than RHCAs under INFISH) and an outer RMZ (with even less protection than the inner RMZ), the Forest Plan seriously reduces protection of these areas even if the total RMZ size may be larger than the more protected RHCAs under INFISH.¹ Claiming that RMZ boundaries have been expanded and that protection of RMZs has thus increased is therefore a boondoggle because the Forest Plan increases the size of RMZs but decreases their protection. By way of example, the Forest Service could have 20 mile RMZ that

¹ Instead of expanding RMZ boundaries to make them more protective in response to comments on the Draft Plan, the Forest actually further reduced protection of some riparian areas by re-classifying ponds, lakes, reservoirs, and wetlands as category 4 rather than category 3. Compare Draft Plan at 23 with FEIS at 62. For smaller ponds, lakes, reservoirs, and wetlands this reduced both the inner and outer RMZs to *one-third* of their size under the Draft Plan. Forest Plan at 21. Proposed Solution: Given the importance of these areas, this reduction and re-classification was arbitrary and should be reversed.

would be much worse if they allowed clearcutting and mining.

Proposed Solution: The Forest should increase protections of RMZs to exceed those provided to RHCAs under INFISH. These protections should be consistent across both the inner and outer RMZs in order to adequately protect habitat and species, and the borders of the RMZs for all RMZ categories should extend at least as far as the corresponding RHCA borders under INFISH.

7. The Forest Plan fails to provide the CWN with protections in excess of those for all other riparian areas

Although each forestwide direction within the Forest Plan should contain both standards and guidelines, the forestwide directions that apply to the Conservation Watershed Network (“CWN”) fail to include standards in excess of those for all other riparian areas. DEIS Comments at 33.

Proposed Solution: The Forest should provide standards for the CWN that are in excess of those for other riparian areas to offer them further protection in recognition of their special status and importance.

8. Mandatory language from INFISH should not be compromised by making it discretionary in the Forest Plan

Much of the mandatory direction from INFISH is now in discretionary guidelines, or in standards that contain language eliminating their mandatory proscriptions in the Forest Plan. DEIS Comments at 33.

Proposed Solution: Improve conservation certainty by improving discretionary guidelines and standards that contain language eliminating their mandatory character. This would include not removing any mandatory requirements/language from INFISH.

9. The Forest Plan does not adequately address livestock grazing

The Forest Plan Standard (FW-STD-GR) 08 contains insufficient protections within RMZs and is weaker than INFISH standards. This standard only addresses new livestock handling and/or management facilities whereas INFISH requires that existing facilities inside RHCAs do not prevent attainment of RMOs and directs facilities to be closed or relocated if objectives cannot be met. Furthermore, the Forest Plan has reduced protections from INFISH by relegating what were enforceable standards to discretionary guidelines. In particular, INFISH GM-1 requires the modification of grazing practices that “retard or prevent the attainment of RMOs” including the suspension of grazing if necessary whereas Guideline (FW-GDL-GR) 01 is a discretionary and does not include a mechanism to suspend grazing if adjustments to management practices are insufficient. Similarly, Guideline (FW-GDL-GR) 04 addressing stream bank trampling constitutes a weakening of protections compared to INFISH Interim RMOs which require no more than 20% bank alteration.

Proposed Solution: The Forest Service should institute protections for RMZs that are at least as protective as INFISH GM-2. The Forest Service should develop livestock grazing standards that are at least as protective as INFISH GM-2 and include requirements to achieve conditions that are greater than or equal to INFISH interim RMOs.

10. Timber management standards in the Forest Plan represent serious backsliding from INFISH and insufficiently protect riparian areas

As discussed above, INFISH's TM-1 prohibits timber harvest in RHCAs except for limited circumstances such as to recover from catastrophic natural disasters and perform salvage cutting. RMZ Standard 06 allows timber harvest in many circumstances. Also, as discussed above, the Forest Plan removed RMZ Standard 04 from the Draft Plan, leaving even lesser protections in the outer RMZ, an area often comprising half of the total RMZ width. This further reduced protection of the RMZ area beyond the protection provided to the RHCA under INFISH TM-1, and even beyond the insufficient protection provided in the Draft Plan. DEIS Comments at 33-34.

Proposed Solution: The Forest Service should institute protections from vegetation management that are at least as protective as INFISH TM-1 and that cover both the inner and outer RMZ equally.

11. Roads Management Under the Forest Plan is Insufficient to Protect Riparian Areas

INFISH's RF-2 directs agencies to meet RMOs to avoid effects to fish by completing watershed analyses prior to road or landing construction in RHCAs in priority watersheds, minimizing road and landing locations in RHCAs, implementing a Road Management Plan or TMP with specified elements, avoiding road sediment delivery to streams, and avoiding disruption of natural hydrologic flow paths. DEIS Comments at 34. RMZ Guideline 11 states only that "new roads (including temporary roads) and new landings should not be constructed in category 1, 2 or 3 riparian management zones, except where it is necessary for a road to cross a stream. Exceptions may be considered where site-specific analysis and implementation of mitigation measures are determined appropriate by a Forest aquatics specialist to protect aquatic and riparian resources." Even for subwatersheds in the CWN, Conservation Watershed Network Guideline 01 only provides that "net increases in stream crossings and road lengths should be avoided in [RMZs] unless the net increase improves ecological function in aquatic ecosystems." This allows constructing new roads and landings in RMZs, new stream crossings, and does away with the watershed analysis requirement. The Forest Plan also entirely does away with the requirement for a road management plan. DEIS Comments at 34. The Forest's 2014 Travel Analysis Report does not cure these deficiencies (see more on that below).

INFISH's RF-2 also directs agencies to meet RMOs to avoid effects to fish by avoiding road sediment delivery to streams, avoiding disruption of natural hydrologic flow paths, and avoiding side-casting of soils or snow (prohibited in RHCAs). DEIS Comments at 34. Forest Plan Infrastructure Guideline 03 provides that roads and trails "*should* have water drainage systems that possess minimal hydrological connectivity to waterbodies (except at designated stream crossings) to maintain the hydrologic integrity of watersheds and protect them from the delivery of water, sediment, and pollutants." (emphasis added). Infrastructure Guideline 06 provides that roads and trails "*should* not be located on lands with high mass wasting potential," in order to "maintain and/or improve watershed ecosystem integrity and reduce road-related mass wasting and sediment delivery to watercourses..." (emphasis added). Infrastructure Standard 06 directs the Forest Service to not side-cast fill material from new road construction and reconstruction of existing road segments. This does not address side-casting of snow or fill material from maintenance of existing roads, which can also introduce sediment to watercourses. For those situations, Infrastructure Guideline 09 merely provides that for road maintenance activities, such as road blading and snow plowing, the Forest "*should* not side-cast into or adjacent to waterbodies." (emphasis added). This is not the same as INFISH's prohibition on side-casting in RHCAs. These guidelines need to follow a best management practices standard. DEIS Comments at 34.

Proposed Solution: The Forest should adopt road management protections at least as stringent as those found in INFISH's RF-2.

12. The Forest Plan does not adequately address existing roads

INFISH's RF-3 directs agencies to determine each road's effect on native fish and meet RMOs to avoid adverse impacts. The Forest Plan does not provide any binding targets or actions targeting existing roads to reduce effects on native fish. DEIS Comments at 34. See more on this topic below.

Proposed Solution: The Forest Plan should provide analysis of existing roads and date-certain commitments by which the Forest Service will take action addressing those existing roads and their related impacts.

13. The Forest Plan inadequately addresses stream crossings and the risk caused by those crossings

INFISH's RF-4 does not allow the construction of new and improvement of existing stream crossing structures if "improvements would/do pose a substantial risk to riparian conditions" and then defines what "substantial risk" structures would be. DEIS Comments at 35. The Forest Plan only provides a guideline for subwatersheds included in its CWN that would not apply to all riparian areas. Conservation Watershed Network Guideline 01 provides only that "net increases in stream crossings and road lengths should be avoided in [RMZs] unless the net increase improves ecological function in aquatic ecosystems." This does not address the risk posed by these activities. DEIS Comments at 35.

Proposed Solution: Similar to INFISH, the Forest Plan should bar construction of new and improvement of existing stream crossing structures across all RMZ if improvements would/do pose a substantial risk to riparian conditions and should define what substantial risk structures would be. The Forest Service should also provide direction indicating that there should be a focus on reducing the number of stream crossings and road miles in light of the Forest Service's Subpart A duties. Note that as to this last point, the Forest Service failed to respond to our DEIS Comments, in violation of NEPA's implementing regulations.

14. The Forest Plan fails to address insufficient maintenance of the road and trail system now and into the future

Despite recognizing that it is insufficiently maintaining its existing road and trail system, and that this situation is likely to continue to deteriorate into the future, the Forest Service is still choosing to weaken its management of roads in the Forest Plan in ways that are sure to harm bull trout and their habitat. DEIS Comments at 35.

Proposed Solution: The Forest Service should take this opportunity to provide strong roads management directives that will reverse the harm and habitat degradation that bull trout have already faced from the Forest's road and trail system and that can stand as a bulwark to future harm in the face of the worsening outlook for roads and trails in the Forest.

15. The Forest Plan fails to address recreation management

INFISH's RM-3 directs agencies to address RMO attainment and effect on inland native fish in recreation management plans. The Forest Plan makes no mention whatsoever of recreation management plans, despite some forms of recreation, such as off-road vehicle (ORV) use, having a potentially huge impact on riparian areas. DEIS Comments at 35-36. The Forest Service's response does not actually address this issue as it only applies to "recreation facilities within riparian areas" and does not address ORVs or recreation management plans. FEIS appendix 8-85 (citing FW-GDL-REC-06).

Proposed Solution: The Forest Service should constrain ORV usage to protect riparian areas subject to the requirements of the 2005 Travel Management Rule and its duty to locate designated trails and areas open to motorized use with the objective of minimizing, inter alia, harassment of wildlife and disruption of wildlife habitat.

16. The Forest Plan eliminates several important protections related to mineral operations and structures

INFISH's MM-1 to MM-6 include standards or guidelines that address mineral operations or structures in riparian areas so as not to adversely affect inland native fish. The Forest Plan omits many of these requirements, including those related to inspection, monitoring, and reporting requirements; surface occupancy within RMZs; and location of support facilities. DEIS Comments at 36. Although we raised this issue in our DEIS Comments, the Forest Service failed to respond to, in violation of NEPA's implementing regulations.

Proposed Solution: The Forest Plan should include standards and guidelines at least as protective as INFISH's MM-1 to MM-6 to address mineral operations or structures in riparian areas so as not to adversely affect inland native fish.

17. The Forest Plan must include adequate guidance related to issuance of leases, permits, rights-of-way, and easements

INFISH's LH-3 directs agencies to issue leases, permits, rights-of-way, and easements to avoid effects that would prevent RMO attainment and avoid effects on inland native fish. The Forest Plan has no standards or guidelines for leases, permits, rights-of-way, or easements in relation to riparian areas. DEIS Comments at 36.

Proposed Solution: The Forest Service should not rely on ad-hoc decisionmaking here, and the Forest Plan should include standards and guidelines addressing these decisions.

18. The Forest Plan must include adequate guidance related to land acquisition, exchange, and conservation easements

INFISH's LH-4 directs agencies to use land acquisition, exchange, and conservation easements to meet RMOs and facilitate restoration of fish stocks and other species at risk of extinction. The Forest Plan has no standards or guidelines regarding land ownership changes or conservation easements in relation to riparian areas. DEIS Comments at 36.

Proposed Solution: The Forest Service should not rely on ad-hoc use of the Land and Water Conservation Fund to guide its land acquisitions, exchanges, and conservation easements, and the Forest Plan should include standards and guidelines to guide those transactions in order to ensure they best meet conservation goals.

19. The Forest Plan substitutes reliance on the best available science in favor of weaker management

In the Forest Plan, the Forest must understand and implement measures that follow the best available science, including information about the status of bull trout and threats to its survival and recovery (including climate change). The planning regulations require that Forest Planning decisions must follow the best available science. 36 C.F.R. § 219.3. However, the Forest Plan does not rely on the best available science and, instead, departs from the Forest Planning requirement in favor of weaker management direction. DEIS Comments at 36-37.

Proposed Solution: The Forest Service must support its decisions with reference to the best available science and cannot rely on conclusory statements to reach less burdensome management decisions that will not adequately protect bull trout and its habitat.

20. The Forest Plan should provide the CWN with additional, substantive protections

The CWN is largely managed in the same way as all other riparian areas, namely through RMZs and standards and guidelines. Specifically, the Forest Plan provides that RMZs provide a buffer between certain activities and the watercourse. Essentially, the Forest is ignoring actual risks created by individual projects as long as they honor the RMZ buffers. The CWN desired conditions, objectives, and guidelines that are additional to the provisions for all RMZs do not create mandatory protections and instead offer only flexible and/or aspirational guidance. Forest Plan at 19; DEIS Comments at 37.

Proposed Solution: The Forest Service should provide the CWN with additional, substantive protections that recognize its importance. This should include objective, numerical protections that can help ensure that Forest management adequately protects the CWN.

21. The Forest Plan fails to require sufficient analysis before actions are taken in RMZs or the CWN

The Forest Plan does not require sufficient analysis before actions can be undertaken in RMZs or the CWN. Though the identification of the CWN was apparently the result of multi-scale analysis, the Forest Plan does not require that another multi-scale analysis be undertaken before actions can occur. In addition, even if the Forest Service were to undertake a voluntary multi-scale analysis, it would be a weak measure. First, as discussed above and unlike watershed analysis, multi-scale analysis does not require the Forest Service to study the area and thus create up-to-date data. Instead, the Forest Service is free to rely on whatever data it already has, regardless of whether it is adequately reflective of current conditions. DEIS Comments at 38. In addition, in its discussion of an example of multi-scale analysis that the Forest Service could undertake in relation to a project, the Forest Service says that it would consider the impact on the population at issue in relation to the status of bull trout in the Flathead Basin. FEIS Appendix C-11. However, the Flathead Basin is not a reasonable reference point as it is already a disturbed area that presents too low of a goal. DEIS Comments at 38.

Proposed Solution: The Forest Plan should reinstitute the requirements of preparing watershed analyses and should ensure that any reference populations it uses in any analyses represent a

reasonable goal.

22. The Forest Plans lacks additional measures protecting priority watersheds

Though the Forest Plan has identified five “Class 2 – functioning at risk” watersheds, it provides no further protections for bull trout in those watersheds. The Forest Plan provides no heightened standards or objectives for Class 2 watersheds and at best provides a few objectives that give these watersheds some sort of un-quantified “prioritization” in their general management guidelines. Even under the weak INFISH there were additional standards designed to protect bull trout in priority watersheds. DEIS Comments at 38.

Proposed Solution: The Forest Plan should adopt additional protection for priority watersheds that are at least a protective of those watersheds as INFISH.

23. The Forest Plan should retain the Watershed Analysis requirements from INFISH

The Forest Plan envisions using multi-scale analysis to inform decision-making. Forest Plan Appendix C. This is problematic because, as discussed earlier, multi-scale analysis does away with the data gathering requirement from watershed analysis, instead choosing to rely on whatever information may already be available, regardless of whether that information is taken from a variety of disparate scales and whether it may no longer reflect reality on the ground. In addition, unlike the requirement to complete watershed analyses in the INFISH standards and guidelines, there are no similar requirements in the Forest Plan, leaving the Forest Service to complete multi-scale analyses, or not complete them as the case will often be, whenever it wants, regardless of whether projects occurring in the Forest will likely impact a watershed. This will often result in decisions that do not understand the broader scale ecological context of taking certain actions. Comments at 39.

Regardless of which type of analysis it uses, the Forest Service should consider certain core areas important for bull trout recovery. DEIS Comments at 39. Much of the Flathead National Forest falls within the Columbia Headwaters Recovery Unit for bull trout. See U.S. Fish & Wildlife Service, Columbia Headwaters Recovery Unit Implementation Plan for Bull Trout (*Salvelinus confluentus*) (2015) (attached to our DEIS Comments), page D-3, Figure D-1 (Map of the Columbia Headwaters Recovery Unit for Bull Trout). This recovery unit includes 35 bull trout core areas, only one of which is considered at Low Risk. Id. at D-7. To address habitat threats in the Flathead Lake Core Area, the Service recommends “to continue to strengthen connectivity and consolidate habitat gains in headwater SR tributaries while seeking to secure sources of cold water in the SR tributaries” as a way to address climate change and water quality issues. Id. at D-94.”

Proposed Solution: The Forest Plan should reinstitute the watershed analysis requirements that existed under INFISH and develop protective core areas for bull trout.

24. The Forest Plan generally fails to adequately address threats to bull trout and to adequately protect the species from ongoing harm

While INFISH is indeed inadequate as a long-term management strategy for native fish, the Forest Plan’s discretionary direction fails to achieve even INFISH’s level of protection for inland native fish. The Forest Plan will thus result in reduced aquatic ecosystem integrity and bull trout viability. The Flathead National Forest must consider and address these issues in its environmental and endangered species analyses. These analyses must provide a basis for determining whether the plan

components could provide ecological conditions that contribute to recovery of bull trout and provide habitat for viable populations of bull trout once they are recovered. To do this, the Forest must explain how the Forest Plan will not only meet INFISH's specific plan components, but improve upon them in ways that will aid bull trout. The analysis must be based on the best available science and needs to consider spatial distribution and habitat aspects of bull trout and westslope cutthroat trout, as well as the relative importance of different subpopulations, especially in the context of climate change. DEIS Comments at 39-40.

Proposed Solution: Because the FEIS and Forest Plan grossly fail to protect bull trout and improve upon INFISH's components in ways that will aid bull trout, the Forest Plan's current subjective, flexible, aspirational, or vague Forest Plan components should be changed to make them coextensive with, or in excess of, all mandatory requirements from INFISH in terms of stringent conservation measures. The Forest should also look at other ways to use the Forest Plan to ensure that bull trout recover in the Forest. These decisions must analyze, disclose, and incorporate the best available science, which the FEIS and Forest Plan fail to do.

25. American Rivers et al's comments

We continue to support the statements made by American Rivers et al. in their Flathead National Forest Draft Proposed Action scoping letter dated May 15, 2015, that streams with critical habitat for sensitive, threatened or endangered species should be given a Fisheries or Wildlife Outstandingly Remarkable Value as a matter of definition of the words "rare" and "significant," of which they are both. We also support and incorporate herein the specific eligibility suggestions they make in regards to stream segments that serve as critical bull trout habitat. DEIS Comments at 40.

Proposed Solution: The Forest Plan should give a Fisheries or Wildlife Outstandingly Remarkable Value to all streams with critical habitat for sensitive, threatened or endangered species and should adopt the eligibility suggestions in regards to stream segments that serve as critical bull trout habitat that American Rivers et al. made in their Flathead National Forest Draft Proposed Action scoping letter dated May 15, 2015.

B. Revised plan components to protect bull trout fail to comply with the 2012 Planning Rule and are inconsistent with Forest Service directives

In developing a Forest Plan revision, the Forest Service must "[r]eview relevant information from the assessment and monitoring to identify a preliminary need to change the existing plan and to inform the development of plan components and other plan content." 36 C.F.R. § 219.7(c)(2)(i). It must, *inter alia*, "[c]onsider conditions, trends, and stressors (§219.6), with respect to the requirements for plan components of §§219.8 through 219.11. *Id.* § 219.7(c)(2)(iv)." And it must "[i]dentify questions and indicators for the plan monitoring program (§219.12)." *Id.* § 219.7(c)(2)(x). Our comments urged the Forest Service to comply with the 2012 planning rules. 2016 DEIS Comment at 27-41.

1. Best Available Science

The Forest Service must use the best available scientific information to inform the planning process, and in doing so must determine what information is the most accurate, reliable, and relevant. 36 C.F.R. § 219.3. It must document how the best available information was used, and explain how the information was applied to the issues considered. The Forest Service responds that it considered the best available scientific information as part of the assessment and analysis in the FEIS. FEIS,

App. 8 at 8-50. As set forth below in the sections outlining how the analysis of infrastructure plan components fails to comply with NEPA or the ESA, the Forest Service fails to use best available scientific information.

2. Diversity

The revised plan components do not provide the ecological conditions necessary to contribute to the recovery of federally threatened bull trout and its designated critical habitat. 36 C.F.R. § 219.9(b)(1).

For example, the forest-wide standards for Riparian Management Zones (RMZs) allow vegetation management, including ground-disturbing treatment, and create exceptions for vegetation management in inner RMZs. *See, e.g.*, Revised Plan at 22 (FW-GDL-RMZ-08, 09, 10). The forest-wide guidelines further create exceptions for new roads, including temporary roads, in RMZs. Revised Plan at 23. In addition, the revised plan eliminates road management direction from Amendment 19 and weakens the annual culvert monitoring program from annual to every sixth year (with every other year monitoring reporting, see below). Given the very real, harmful impacts forest roads pose to bull trout, bull trout designated critical habitat, and water quality, and given the 4,610 miles of forest roads on the Flathead's landscape, the revised plan components for RMZs, aquatic ecosystems, watersheds, and infrastructure are insufficient to provide the ecological conditions necessary to contribute to the recovery of federally threatened bull trout and its critical habitat. 36 C.F.R. § 219.9(b)(1).

3. Monitoring

Under the 2012 planning rules, the Forest Service must develop a monitoring program that enables the responsible official to determine if a change in plan components is needed. 36 C.F.R. § 219.12(a). The revised Forest Plan monitoring program must address the status of a select set of the ecological conditions required under § 219.9 to contribute to the recovery of federally listed threatened and endangered species. *Id.* §219.12. The Forest Service identifies indicators to determine whether forest activities are moving towards habitat objectives for native fish. For example, indicators include the number of fish passage barriers removed or created, number of culverts removed or upgraded, and number of roads decommissioned within the riparian management zone. However, the Forest Service will complete monitoring evaluation reports (yet to be developed) only every other year. Revised Plan at 154. And even then, the report will not address all questions or indicators, but will focus on new data and results to validate or invalidate assumptions. *Id.* As a result, many years may pass before the Forest Service ever reviews indicators validating—or invalidating—progress towards habitat objectives for native fish. As such, the monitoring program fails to address the status of ecological conditions required under § 219.9 to contribute to the recovery of bull trout.

This relaxed approach to monitoring only some parameters (at the Forest Service's discretion) every year represents a major weakening and loosening of the adaptive management approach under the 1986 Forest Plan. For example, the 1986 Forest Plan required annual monitoring of indicators for fish and water quality. In contrast, under the revised plan the Forest Service proposes to (possibly) measure these same parameters every other year. In light of the lack of information that already exists regarding water quality and threats to bull trout, this relaxed approach to monitoring will not meet the information needs that are critical for informed management of resources, as required by 36 C.F.R. § 219.12(a)(4)(i). What's more, given the continuing status of bull trout as a threatened

species despite annual monitoring requirements over the past two decades, it does not follow that the Forest Service should adopt a relaxed monitoring program under this revised plan.

4. Forest Service Directives

According to Forest Service directives, features of adaptive management include “[t]esting assumptions and collecting data using data collection protocols at appropriate temporal and spatial scales.” FSH 1909.12, zero code 06.2. As explained above, the Forest Service will complete monitoring evaluation reports every other year as part of the monitoring program to implement an adaptive management approach. Revised Plan at 154. The monitoring plan also allows the Forest Service complete discretion on which indicators to report on, or not, every other year. *Id.* This is problematic for an effective adaptive management approach, in light of extended time periods for collecting information under the revised plan. For example, despite the risk culvert failures pose to water quality and bull trout, the Forest Service will only monitor a selection of forest road culverts every six years. *See* U.S. Fish and Wildlife Service, Biological Opinion on the Revised Forest Plan for the Flathead National Forest (Nov. 22, 2017) (hereafter, 2017 BiOp), II-48 (describing how the revised “monitoring plan develops a rotating panel of culverts on the FNF in an effort to survey the condition of existing culverts, and correct problems that may be identified”). This weakened approach to culvert monitoring contrasts with annual culvert monitoring required by FWS in the terms and conditions of numerous pre-existing BiOps. When combined with the weakened approach to monitoring, the Forest Service’s approach under the revised plan fails to collect data at appropriate temporal and spatial scales, contrary to the Forest Service directives. It is practically incapable of testing assumptions relied on in the revised plan and 2017 BiOp.

Proposed Solution: Revise the plan components intended to protect bull trout and its critical habitat to reflect best available scientific information, comply with the 2012 planning rule requirements for diversity, and include a monitoring plan with meaningful timelines and parameters consistent with the 2012 planning rules and Forest Service directives that enables the responsible official to determine if a change in plan components is needed.

C. The Forest Service’s analysis and conclusions regarding impacts to bull trout and its critical habitat violate NEPA

Revision of a Forest Plan requires the Forest Service to prepare an EIS. 36 C.F.R. § 219.7(c)(1). Our comments urged the Forest Service to disclose how the revised plan will impact bull trout and its critical habitat. 2016 DEIS Comment at 27-41.

1. Inaccurate Baseline

Because Alternative A represents the baseline of existing conditions, the Forest Service must ensure that baseline is accurate. “A no action alternative in an EIS allows policymakers and the public to compare the environmental consequences of the proposed action.” *Ctr. for Biological Diversity v. U.S. Dep’t of the Interior*, 623 F.3d 633, 642 (9th Cir. 2010). A baseline that is invalid or inaccurate will render the analysis of the effects of other alternatives inaccurate. *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008) (holding a “no-action” alternative invalid under NEPA because it improperly included decisions that had previously been found invalid). Here, the Forest Service presents an inaccurate baseline under Alternative A, the no-action alternative.

As just one example, the Forest Service states in the revised plan and throughout its analysis that over the last several years, it has been working to restore soil, watershed, and aquatic habitat by, *inter alia*, removing unneeded roads, removing man-made fish migration barriers, and improving road

conditions. Revised Plan at 15. This description fails to disclose how the Forest Service has consistently delayed implementation of Amendment 19. *See, e.g.*, U.S. Fish and Wildlife Service, Biological Opinion on Amendment 19 (A-19) Revised Implementation Schedule, BULL TROUT (Nov. 22, 2010) (hereafter, 2010 Amendment 19 BiOp), page 46 (assessing effects of delayed implementation of the Amendment 19 Project on bull trout and its critical habitat, noting the “delay in meeting the objectives were due to budget cuts, increased costs in NEPA, and local resistance to road closures.”). The objection section on infrastructure and the sustainable minimum road system identifies additional examples of inaccuracies in the baseline of 2011 road levels. The inaccurate baseline set forth under Alternative A skews the analysis of alternatives in the FEIS and prevents meaningful public comment.

2. Fails to Consider Direct, Indirect, and Cumulative Impacts to Bull Trout & its Critical Habitat

The analysis in the FEIS fails to consider and analyze many direct, indirect, and cumulative impacts to bull trout and its critical habitat that will result from the revised plan. For example, the Forest Service lists only the presence and expansion of non-native species and climate change as the major threats to bull trout. *See* Revised Plan at 14. It ignores the ongoing harmful impacts from forest roads and forest road culverts. *See, e.g.*, 2010 Amendment 19 BiOp at 45 (“Plugged culverts and fill slope failures are frequent and often lead to increases in stream channel sediment, especially on old abandoned or unmaintained roads”). Plus, despite identifying climate change as a major threat to bull trout survival and recovery, and noting the harmful impacts of forest roads to water quality generally (*see, e.g.*, FEIS at 115-117), the analysis fails to consider the cumulative impacts of forest roads and climate change on bull trout and its designated critical habitat. As another example, the revised culvert monitoring plan in the 2017 BiOp (see ESA section, below) authorizes and commits the Forest Service to take specific action with direct impacts that are not considered in the FEIS analysis.

3. Decision Unsupported by Analysis

The Forest Service has a duty to examine the relevant data and articulate a satisfactory explanation for its action including a “rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (citing *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)). It fails to do so here.

As one example, INFISH amendments to the 1986 Forest Plan included more protective standards and guidelines for bull trout, as outlined in the section above assessing this revised plan’s variance from the INFISH protections. The INFISH amendments were necessary to reduce risk to loss of inland native fish (including bull trout) populations and potential negative impacts to aquatic habitat. The INFISH amendments have proven effective. The Forest Service notes, “INFISH standard and guidelines have shown to improve habitat conditions since their implementation in 1995.” FEIS, App. 8 at 8-73.

But in response to comments urging continuation of these effective standards and guidelines, the Forest Service states “[t]here is no justification from best available science that standards that *exceed* INFISH are needed.” *Id.* Rather than urging the Forest Service to *exceed* INFISH standards, however, we simply urge the Forest Service to *continue* to apply INFISH standards and guidelines in light of demonstrated improvements to habitat conditions and best available science showing the continuing threatened status of bull trout. Bull trout have not yet recovered on the Flathead. *See, e.g.*, Revised Plan at 14 (noting a decline in migratory bull trout numbers during the past several

decades). And waters important to bull trout survival and recovery are still impaired by sediment. Yet the Forest Service's draft ROD relaxes plan components protecting bull trout and its critical habitat, as well as its road management strategy in the infrastructure plan components. This decision is not supported by the facts in the agency's analysis.

Proposed Solution: Revise the analysis in the FEIS to accurately describe and clarify baseline conditions so as to provide a meaningful and valid basis for comparing alternatives, and to disclose direct, indirect, and cumulative impacts to bull trout and its critical habitat. Because bull trout continue to struggle to survive and recover on the Flathead, and in light of the numerous harmful impacts from management approaches proposed under this revised plan, the Forest Service must revise the draft ROD and plan components to continue bull trout protections, including INFISH standards and guidelines and a comprehensive road improvement plan like that of Amendment 19. The facts and analysis in the FEIS support these revisions to the revised plan components.

D. The Forest Service fails to ensure the revised plan complies with the ESA regarding impacts to bull trout and its critical habitat.

Forest Plan revisions must comply with the ESA. 36 C.F.R. § 219.1(f). FWS's 2017 BiOp assessing the impacts of the revised Forest Plan on bull trout and its critical habitat fails to comply with the ESA. Given the Forest Service's independent legal duty to ensure the Forest Plan revision complies with the ESA, its reliance on the flawed BiOp is unreasonable. Our comments urged the Forest Service to comply with the ESA and provide necessary habitat protections to aid the survival and recovery of bull trout populations on the Flathead. 2016 DEIS Comment at 40-41. We were unable to comment on the veracity of the FWS's analysis in the 2017 BiOp because it was not available during the public notice and comment period.

The 2017 BiOp for bull trout is arbitrary and capricious because it ignores relevant factors. For example, the 2017 BiOp ignores direct, harmful impacts to water quality and bull trout that will result from the revised proposed action to amend culvert monitoring requirements. *See* 2017 BiOp at I-4 (noting that on July 5, 2017, the Flathead submitted a revised culvert monitoring plan indicating the Forest Service "will include the culvert monitoring plan as part of the 'proposed action' under the Revised Forest Plan consultation.").

Terms and conditions in pre-existing BiOps require the Forest Service to conduct annual culvert monitoring to prevent culvert failure, which poses a very real, harmful threat to bull trout. FWS's 2015 BiOp on the effects to bull trout and bull trout critical habitat from road-related activities in Western Montana states:

Culverts that remain in the road behind gates and berms that are not properly sized, positioned, and inspected . . . have an increased risk for failure by reducing awareness of potential maintenance needs. The accumulation of debris has the potential to obstruct culverts and other road drainage structures. Without maintenance and periodic cleaning, these structures can fail, resulting in sediment production from the road surface, ditch, and fill slopes. The design criteria to address drainage structures left behind gates and berms require annual monitoring of these structures.

See U.S. Fish and Wildlife Service Montana Ecological Services Office, Biological Opinion on the Effects to Bull Trout and Bull Trout Critical Habitat From the Implementation of Proposed Actions Associated with Road-related Activities that May Affect Bull Trout and Bull Trout Critical Habitat in

Western Montana (April 15, 2015) (hereafter, 2015 Roads Programmatic BiOp), pages 45-46.²

Despite finding annual culvert monitoring necessary to prevent harms from culvert failures, the 2017 BiOp approves a revised culvert monitoring plan to review a set of culverts once every six years. *See* 2017 BiOp at II-71 (“The Service agrees that the Culvert Monitoring Plan Version 1.0 will replace the culvert monitoring requirements contained in the Terms and Conditions issued in the following past biological opinions . . .”). The 2017 BiOp is arbitrary and capricious because it fails to articulate a rational connection between the facts found and the choice made to eliminate annual culvert monitoring requirements in the terms and conditions of pre-existing BiOps. The 2017 BiOp is also flawed because it fails to consider how this change in culvert monitoring will affect bull trout and its critical habitat.

What’s more, the 2017 BiOp improperly authorizes modifications to culvert monitoring plans required under the terms and conditions of separate, pre-existing BiOps issued for activities unrelated to this Forest Plan revision. Despite making these changes to legally required terms and conditions, that will have direct harmful effects on bull trout and its critical habitat, the 2017 BiOp lacks an incidental take statement (ITS). Thus not only are the terms and conditions of pre-existing BiOps (requiring annual culvert monitoring) improperly amended through this unrelated 2017 BiOp for the Forest Plan revision, but FWS also improperly removes any teeth requiring implementation of the new culvert monitoring plan by omitting an ITS and corresponding reasonable prudent measures and implementing terms and conditions.

Proposed Solution: Refrain from any final decision related to the revised plan unless and until the flaws related to Section 7 consultation identified above have been addressed in a revised bull trout BiOp.

VI. SUSTAINABLE MINIMUM ROAD SYSTEM

A. Infrastructure plan components are inconsistent with the 2012 planning rule requirements and Forest Service directives

We urged the Forest Service to comply with the substantive mandates of the 2012 planning rule and Forest Service directives. DEIS Comment at 81-82, 88-90, 93-95. But the revised plan components do not comply with the 2012 planning rule or Forest Service directives because they fail to consider best available scientific information, fail to provide standards and guidelines consistent with the sustainability and diversity requirements, lack a sufficient monitoring program, and fail to provide for a realistic and sustainable desired infrastructure.

1. Best Available Science

The Forest Service must use the best available scientific information to inform the planning process, and in doing so must determine what information is the most accurate, reliable, and relevant. 36 C.F.R. § 219.3. It must document how the best available information was used, and explain how the information was applied to the issues considered. As set forth below in the sections outlining how the analysis of infrastructure plan components fails to comply with NEPA or the ESA, the Forest Service fails to use best available scientific information.

² In its response to comments, the Forest Service notes the 2015 Roads Programmatic BiOp “still applies, and the Forest will continue to use this programmatic biological opinion for certain projects.” FEIS, App. 8 at 8-95.

2. Sustainability & Diversity

This revised plan lacks standards or guidelines for sustainable infrastructure to maintain or restore the ecological integrity of terrestrial ecosystems in the plan area. 36 C.F.R. § 219.8(a)(1). It fails to include infrastructure standards or guidelines to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. 36 C.F.R. § 219.9(a)(2). The revised plan components (forest-wide and species-specific) do not provide the ecological conditions necessary to contribute to the recovery of federally threatened grizzly bears. 36 C.F.R. § 219.9(b)(1).

The Forest Service recognizes that management actions from the 1986 Forest Plan, including Amendment 19, “have contributed importantly to the increasing population size and distribution of the grizzly bear across the NCDE.” FEIS, App. 8 at 8-44. However, it appears to assume its work is done, stating that “supporting a healthy, recovered grizzly population through time will depend on the Forest Service’s continued effective management of the NCDE grizzly bear habitat.” *Id.* In reality, the NCDE grizzly bear population is still listed as threatened—the Forest Service mischaracterizes this population as recovered. Infrastructure plan components focused on simply *sustaining* this recovering population are insufficient under the agency’s ESA obligation to work towards survival and *recovery* of the species.

Instead of working towards maintaining or restoring the ecological integrity of terrestrial ecosystems and diversity of ecosystems and habitat types, the infrastructure plan components focus on sustaining baseline road levels from 2011. For example, FW-STD-IFS 02 applies a “no net increase” standard for maintaining baseline (2011 level) open motorized route density and total motorized route density during the non-denning season. Further watering down this protection, forest-wide standard FW-STD-WL 03 for threatened, endangered, proposed, or candidate wildlife species allows temporary changes in the open motorized route density, total motorized route density, and secure core for project roads in the NCDE primary conservation area during the non-denning season, based on estimated changes for each year of the project, which are then incorporated into the 10-year running average required by FW-STD-IFS-03. Revised Forest Plan at 51. Plus, forest-wide desired condition FW-DC-IFS 01 focuses the Flathead’s approach to roads on “sustaining the recovery of the grizzly bear population in the NCDE.” Revised Plan at 64. These plan components are insufficient to maintain or restore the ecological integrity of terrestrial ecosystems, diversity of ecosystems and habitat types, or the recovery of threatened grizzly bears.

3. Monitoring Program

Under the 2012 planning rules, the Forest Service must develop a monitoring program that enables the responsible official to determine if a change in plan components is needed. 36 C.F.R. § 219.12(a). Monitoring is meant to increase knowledge and understanding of changing conditions, uncertainties, and risks identified in the best available scientific information as part of an adaptive management framework. *See* Revised Plan at 7. The requirement to consider best available science is meant to help identify indicators that address associated monitoring questions, and to further development of the monitoring program. FSH 1909.12, § 07.11. The Forest Service’s monitoring parameters for roads and trails fails to comply with these requirements.

As one example, part of monitoring for the draft Grizzly Bear Conservation Strategy, the Forest Service will coordinate updates and maintenance of the motorized access database; document changes in motorized access route density and levels of secure core habitat every other year. Revised Plan at 157. Given that forest-wide standard FW-STD-IFS 03 allows temporary changes in the open motorized route density, total motorized route density, and secure core for projects within

bear management subunits in the NCDE primary conservation area, and is based on 10-year running averages, monitoring that may or may not be required every other year is insufficient to achieve the purpose and requirements of the 2012 planning rules or the planning directives.

The Forest Service will complete a monitoring evaluation report (yet to be developed) only every other year, further exacerbating the implementation problems with this monitoring approach. Revised Plan at 154. And this report will not address all questions or indicators, but will focus on new data and results to validate or invalidate assumptions. *Id.*

As another example, the Forest Service relies on inspection and monitoring of culverts under MON-IFS-02 to address concerns about culvert failure and erosion deposits into streams, and provide maintenance. FEIS at 117. Yet as explained in the section on bull trout, the culvert monitoring plan that requires assessments only every six years under the 2017 BiOp fails to address the risks these culverts pose to the system, is not based on the best available science, and will not lead bull trout to recovery. When combined with the monitoring plan that may or may not require reporting on parameters in a report submitted only every other year, the six-year culvert monitoring plan fails to provide information critical for informed management of resources, as required by 36 C.F.R. § 219.12(a)(4)(i).

There are no monitoring parameters for some infrastructure standards, despite those standards including numeric limits. For example, FW-STD-IFS 01 allows administrative motorized use of roads within the NCDE primary conservation area, capped at six trips per week or one 30-day unlimited use during the non-denning season, with an exception for emergency situations. Revised Plan at 65-66. There is no correlating monitoring questions or indicators to even track this limit, rendering it meaningless.

4. Forest Service Directives

This revised plan fails to comply with Forest Service directives. For example, under the Forest Service's planning directives, plan components should "reflect the extent of infrastructure that is needed to achieve the desired conditions and objectives of the plan" and "provide for a realistic desired infrastructure that is sustainable and can be managed in accord with other plan components including those for ecological sustainability." FSH 1909.12, ch. 20 § 23.231(1)(b), 23.231(2)(a).

But here, the revised plan components for infrastructure fail to even consider whether the desired condition of maintaining 2011 baseline levels for roads is needed to achieve the desired conditions and objectives of the plan. And the desired infrastructure is not sustainable. Forest-wide objective FW-OBJ-IFS 03 seeks to annually maintain up to 1,000 miles of operational maintenance level 2 through 5 roads. Revised Plan at 65. But in 2015, only 494 miles of system roads—that's only 10 percent of the total 4,610 miles on the forest—were maintained. *See* FEIS at 116. Given the economic realities and limited agency capacity disclosed in the FEIS analysis, the 2011 baseline level for roads is not sustainable and cannot be managed in accord with other plan components including those for ecological integrity. The infrastructure plan components are not "within . . . the fiscal capability of the unit." FSH 1909.12, ch. 20 § 23.231(1)(c). Indeed, the forest-wide objective FW-OBJ-IFS 01 to decommission or place into intermittent stored service only 30 to 60 miles of roads further demonstrates how the revised plan components for infrastructure fail to comply with the directives.

Proposed Solution: Revise the infrastructure plan components to reflect best available scientific information, comply with the 2012 planning rule requirements for sustainability and diversity, and

include a monitoring plan with meaningful timelines and parameters that enables the responsible official to determine if a change in plan components is needed. Revise infrastructure plan components to work towards a realistic desired infrastructure that is sustainable and can be managed along with plan components for ecological sustainability, consistent with the planning directives.

B. Plan direction is inconsistent with Forest Service rules under subpart A

Our comments urged the Forest Service to consider its duties under subpart A as part of its analysis of infrastructure plan components, and to include plan components that work towards establishing an economically and environmentally sustainable minimum road system. 2016 DEIS Comment at 80-81, 87-99. We applaud the Forest Service for revising the infrastructure plan components to include a reference to the Flathead's travel analysis report. Revised Plan at 65, n.21. However, the revised plan components still fail to meaningfully address the Flathead's road system.

First, the plan components lack direction to work towards a minimum road system, consistent with subpart A of the agency's own rules. Forest-wide desired condition FW-DC-IFS 06 refers to a "sustainable transportation system." Revised Plan at 65. But the revised plan lacks any infrastructure objectives, standards or guidelines to move the forest towards a minimum road system that is economically and environmental sustainable. Instead, many of the guidelines apply to *new* road, trail, or stream crossing construction. *See, e.g.*, Revised Plan at 68-69 (FW-GDL-IFS 03, FW-GDL-IFS 06, FW-GDL-IFS 07, FW-GDL-IFS 08, FW-GDL-IFS 10, FW-GDL-IFS 12, FW-GDL-IFS 15). In its response to comments, the Forest Service states that its "environmentally and fiscally sustainable minimum road system was assessed in the Travel Analysis Report for the Flathead National Forest (USDA, 2014c)." FEIS, App. 8 at 8-191. Yet the Flathead's forest-wide travel analysis report did not *identify* the minimum road system, as required by subpart A. 36 C.F.R. § 212.5(b)(1) ("For each national forest, . . . the responsible official *must identify* the minimum road system needed for safe and efficient travel"). Indeed, the Flathead's travel analysis report is merely the first step towards compliance with subpart A, identifying recommendations for working towards the minimum road system. To the extent the Forest Service claims the 2014 travel analysis report constitutes compliance with subpart A, that interpretation is wrong.

Ultimately the Forest Service must comply with its own regulation and identify the minimum road system. By failing to address this duty in the revised plan components, and instead establishing infrastructure direction that emphasizes "no net increase" to 2011 road density values, the Forest Service's direction is inconsistent with its own rules.

The revised plan also fails to prioritize unneeded roads for decommissioning. The plan components envision decommissioning or putting in intermittent stored service 30 to 60 miles of roads. *See* Revised Plan at 65 (FW-OBJ-IFS 01) (Forest-wide objective to decommission or place into intermittent stored service 30 to 60 miles of roads). Out of a total of about 4,610 road miles on the Flathead, FEIS at 116, the revised plan directs the agency to decommission or store a maximum of 1 percent of the roads on the forest landscape. This is very disappointing, considering the plethora of harmful impacts forest roads cause to water quality, aquatic life including bull trout, wildlife like grizzly bears, and wildlife habitat. It runs contrary to the Forest Service's own rules under subpart A and Forest Service policy. 36 C.F.R. § 212.5(b); 66 Fed. Reg. 3206 (Jan. 12, 2001) ("The intended effect of this rule is to help ensure that additions to the National Forest System network of roads are those deemed essential for resource management and use; that, construction, reconstruction, and maintenance of roads minimize adverse environmental impacts; and finally that unneeded roads are decommissioned and restoration of ecological processes are initiated.").

Identifying a resilient future road network is one of the most important endeavors the Forest Service can undertake to restore aquatic systems, water quality, and wildlife habitat, facilitate adaptation to climate change, ensure reliable recreational access, and operate within budgetary constraints. And it is a win-win-win approach: (1) it's a win for the Forest Service's budget, closing the gap between large maintenance needs and drastically declining funding through congressional appropriations; (2) it's a win for wildlife and natural resources because it reduces negative impacts from the forest road system; and (3) it's a win for the public because removing unneeded roads from the landscape allows the agency to focus its limited resources on the roads we all use, *improving* public access across the forest and helping ensure roads withstand strong storms.

Proposed Solution: Revise the infrastructure plan components to provide direction for achieving an ecologically and fiscally sustainable minimum road system, as required under the 2012 planning rule and subpart A of the Forest Service's travel rules, 36 C.F.R. part 212.

C. Analysis of infrastructure plan components fails to comply with NEPA

1. Inaccurate Baseline

Providing an accurate description of the baseline is essential to allowing for meaningful comparison of alternatives and impacts. *See, e.g., Ctr. for Biological Diversity v. U.S. Dep't of the Interior*, 623 F.3d 633, 642 (9th Cir. 2010) ("A no action alternative in an EIS allows policymakers and the public to compare the environmental consequences of the proposed action."); *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008) (holding a "no-action" alternative invalid under NEPA because it improperly included decisions that had previously been found invalid). Our comments highlighted misrepresentations and inaccuracies of the Forest Service's approach to and the status of the road system on the Flathead. 2016 DEIS Comment at 84-87. The revised plan continues to rely on inaccurate baseline information disclosed in the FEIS, which renders the analysis of impacts from each of the action alternatives inaccurate.

For example, the Forest Service's description of existing roads on the forest (FEIS at 116-117) and reference to 2011 baseline levels is inaccurate. For many years, the Forest Service has sought to substitute "impassable" roads for "reclaimed or decommissioned" roads (required to be re-vegetated, no longer function as a road, and removal of all stream-aligned culverts) so as to keep roads on the landscape and yet appear to limit or lower Total Motorized Route Density in grizzly bear habitat. *See, e.g., Forest Service 2012 Amendment 19 report to FWS* ("If there was a signed decision stating the road was to be impassable (by natural vegetation, a bridge or large culvert removed, or the entrance obliterated), the road would not be included in TMRD calculations."). This approach essentially nullified any cap on total system road miles under Amendment 19, allowing an unlimited number of roads to exist on the landscape.

This is particularly concerning given the revised plan's emphasis on 2011 road levels as a baseline for implementing all of the "no net loss" standards meant to protect grizzly bears, Canada lynx, and wolverine from roads and motorized recreation. According to Forest Service counts, as of June 2011, 37 of 47 subunits meet Amendment 19 open motorized access density (OMAD) or amended OMAD, 31 of 47 subunits meet Amendment 19 total motorized access density (TMAD) or amended TMAD, and 25 of 47 subunits meet Amendment 19 security CORE or amended CORE. *See Flathead National Forest Evaluation and Compliance with National Forest Management Act Requirements to Provide for Viability and Diversity of Animal Communities* (Feb. 2017) at 96-97. Compare that with more recent numbers. *See 2016 Annual Flathead National Forest, Forest Plan Amendment 19 Implementation Monitoring Report and Responses to Amendment 19 Revised*

Implementation Schedule Terms and Conditions (Jan. 2018) (made available to us after the close of the public comment period, but attached as Attachment 6), page 2 (listing 31 of 47 subunits as meeting Amendment 19 security CORE or amended CORE), page 3 (correcting road density calculations due to, *inter alia*, the presence of stream-aligned culverts on closed or impassable roads). Given the inaccuracies in not reporting “impassable roads,” these calculations are inaccurate. Ultimately, this misrepresents the Alternative A, no-action description and skews any analysis of the alternatives. Because many infrastructure plan components relate to road densities, an accurate baseline description is essential to not only understanding the impacts, but also application of the infrastructure plan components moving forward.

What’s more, the Forest Service has failed to comply with Amendment 19 reporting requirements over the past few years. *See, e.g.*, DEIS at 117-118 (noting the Forest Service had a culvert inventory and monitoring program from 2007 to 2009, and is reinitiating the program in 2017—despite annual monitoring and reports being legally required under the terms and conditions of pre-existing BiOps). This information is essential to understanding an accurate baseline of the Flathead’s infrastructure, as well as any analysis of proposed alternatives. Indeed, throughout its response to comments the Forest Service relies on “a considerable amount of restoration [that] has occurred on the Forest over the past two decades” as justification for reducing requirements to right-size its road system under this revised plan. *See, e.g.*, FEIS, App. 8 at 8-65. By failing to accurately disclose the status of culvert monitoring on the Flathead, despite the changes made to the culvert monitoring program under the 2017 BiOp that this revised plan relies on, the Forest Service skews its analysis and precludes informed, meaningful public comment. Reliance on an inaccurate baseline allows the agency to ignore current circumstances, historic agency practices, and the latest science, precluding an accurate analysis of alternatives and meaningful comment.

2. Fails to Consider Impacts

The Forest Service’s analysis fails to consider or disclose many impacts. Our comments provided recent scientific information for the agency to consider demonstrating the Flathead’s forest road system is economically and environmentally unsustainable, and highlighted the harmful impacts of forest roads to safe public access, water quality, and connected wildlife habitats. 2016 DEIS Comment at 82-84. We urged the Forest Service to consider and disclose the significant impacts associated with the Flathead’s road system. *Id.* at 85-87. But it fails to do so here.

For example, in its description of the effects to water quality from Flathead National Forest roads under Alternative A (no action), the Forest Service states that under Amendment 19 requirements to the 1986 Forest Plan, an additional 518 miles of roads would need to be addressed as reclaimed or taken off the system through decommissioning. FEIS at 117. It notes that this approach “might benefit” water resources in the long term. *Id.* This description fails to disclose the annual culvert monitoring program that would continue under the no action alternative, and which benefits water quality and bull trout by addressing culverts remaining on closed or decommissioned roads that pose a risk of failure and sediment additions to receiving waters.

In describing effects to water quality from Flathead National Forest roads under Alternatives B modified, C, and D, the Forest Service notes that INFISH amended forest and road management, and that revised forest-wide plan components “would further mitigate the effects of roads on water resources.” FEIS at 118. It fails to disclose how the revised forest-wide plan components actually weaken the INFISH standards to desired conditions, objectives, or guidelines, or simply eliminate the substantive protections entirely (see bull trout section above). For example, the analysis fails to disclose changes to bull trout culvert monitoring plan that will result in adverse impacts from roads

not disclosed in this analysis. In addition, it fails to disclose how the revised plan components (FW-GDL-IFS-04 and FW-GDL-IFS-05) weaken standards under Amendment 19 by eliminating the requirement to remove stream-aligned culverts from closed roads. In fact, rather than addressing the water quality risks of leaving culverts behind roads closed with physical barriers, guideline FW-GDL-IFS 05 instructs the Forest Service to ensure road drainage features are in place. Revised Plan at 68. The new revised plan lacks standards to address the risks these stream-aligned culverts pose to bull trout.

The analysis also states that effects of new road construction to bull trout would be minimal due to the “no net increase” standard for road densities in the primary conservation area. FEIS at 120. Problems with implementing this ten-year rolling average based on every-other-year reporting for projects lasting four and possibly five years is not disclosed. Nor is the fact that this is a major departure from the Amendment 19 standards working to *reduce* road densities on the Flathead, not just maintain the 2011 status quo.

The analysis fails to consider the latest information regarding the status of roads (i.e., baseline conditions) that is essential to understanding the impacts of the forest road system (see above). It fails to assess the impacts of freezing the road system at 2011 level, and failing to achieve road density standards set forth under the Amendment 19 requirements of the 1986 Forest Plan.

The Forest Service fails to consider cumulative impacts of the road system when combined with effects from climate change, as advocated in our comments. 2016 DEIS Comment at 86-87. In its response to comments, the Forest Service points to the Conservation Watershed Network and explains that FW-DC-CWN-01 addresses climate change and challenges for fisheries. FEIS, App. 8 at 8-65. It fails to assess the cumulative impacts of climate change and forest roads. *See* FEIS, App. 8 at 8-127 – 8-131.

3. Fails to Consider a Reasonable Range of Alternatives

Our comments urged the Forest Service to consider a reasonable range of alternatives related to infrastructure plan components. 2016 DEIS Comment at 85, 87. We noted that Alternative A (under which the Forest Service would continue Amendment 19 road direction and would still need to reclaim over 500 miles of roads), and Alternatives B, C, and D (under which plan direction would seek to maintain “no net increase” to a baseline system of roads from 2011) fail provide a meaningful comparison among alternatives related to road management and infrastructure. It sets up a comparison between action and no-action, instead of the required reasonable alternatives to the proposed action. 36 C.F.R. § 220.5(e) (“An alternative should meet the purpose and need and address one or more significant issues related to the proposed action.”). Because public comments heavily focused on road issues, the Forest Service should have considered a range of alternatives for management.

4. Decision Unsupported by Analysis

The Forest Service must articulate “a rational connection between the facts found and the conclusions made.” *Or. Natural Res. Council v. Lowe*, 109 F.3d 521, 526 (9th Cir. 1997). It fails to do so here for many of its management decisions regarding roads.

Our comments highlighted the harmful impacts of forest roads, including harms to water quality and bull trout designated critical habitat. 2016 DEIS Comment at 34-35. The Forest Service recognizes the harmful impacts of forest roads in its analysis and revised plan. *See, e.g.*, FEIS at 114-117

(outlining the harmful effects of forest roads to sediment and water quality). It says the “mere presence of roads” is damaging; decommissioning and obliteration are preferred; and, “Cook and Dresser (2007) found that stream crossings that were restored through decommissioning delivered to the stream only 3 to 5 percent of the amount of fill material that was originally located at each crossing.” FEIS at 116. It recognizes it is unable to maintain its existing road and trail system. *See* FEIS at 116-117 (noting that in 2015, only 494 miles of system roads—that’s only 10 percent of the total 4,610 miles on the forest—were maintained, and 2,130 miles (46%) are closed system roads, which no longer receive maintenance and pose a risk to aquatic resources).

In its final decision, the Forest Service states that the revised plan “updates management direction for wildlife and aquatic species, including lynx, grizzly bear, and bull trout, which will allow for improved and more efficient habitat management.” Draft ROD at 6. It also states the plan “updates grizzly bear direction to no longer require the Forest to close roads or trails currently open to public motorized vehicle use,” abandoning the direction from Amendment 19 of the 1986 Forest Plan. Draft ROD at 6-7 (stating “it is not necessary to further reduce public access by about 518 miles”).

However, numerous revised plan components weaken protections from the 1986 Forest Plan, INFISH standards and guidelines, and Amendment 19 that were intended to address the very real, harmful impacts from forest roads, road failures, and culverts. As just one example, for FW-OBJ-WTR-02 (requiring enhancement or restoration of stream habitat through, *inter alia*, stormproofing) the Forest Service explains that it “lowered the objective to 25-50 miles [from 50 to 100 miles of stream habitat] because a considerable amount of restoration has occurred on the Forest over the past two decades.” FEIS, App. 8 at 8-65. This, despite a history of failing to address culverts and high-risk roads (explained above) threatening to degrade water quality and bull trout critical habitat. Further, the Forest Service defines “hydrologically stable condition” as “a road that has been essentially stormproofed through a series of proactive steps and activities so that further maintenance will not be needed and significant erosion will not occur.” FEIS, App. 8 at 8-67. And it defines a “stormproofed road” as “one where measures have been taken to either upgrade or decommission the road so as to minimize the risk and potential magnitude of future erosion and sediment delivery,” which “generally consists of reducing hydrologic connectivity; identify and treating potential road failures (mostly fill slope failures) that could fail and deliver sediment to streams; and reducing the risk of stream crossing failures and stream diversion.” FEIS, App. 8 at 8-65. Notably, these definitions contain no requirements, leaving full discretion to the Forest Service to determine what is a hydrologically stable condition or stormproofed road. There is no mention of—much less a requirement to—remove or address under-sized culverts or culverts as risk of failure. Yet the Forest Service relies on FW-OBJ-CWN-01 (prioritizing stormproofing of 15 to 30 percent of roads in the conservation watershed network) “to reduce potential culvert failure of undersized culverts.” FEIS, App. 8 at 8-97.

As another example, the infrastructure plan components impose a “no net increase” to road levels from 2011. Revised Plan at 65-66 (FW-STD-IFS-02). There are two major problems with this approach. First, in 2011 the Forest Service had not yet achieved the Amendment 19 standards identified as necessary for protecting and recovering grizzly bears. *See* Flathead National Forest Evaluation and Compliance with National Forest Management Act Requirements to Provide for Viability and Diversity of Animal Communities (Feb. 2017) at 96-97 (noting that as of June 2011, 37 of 47 subunits meet Amendment 19 open motorized access density (OMAD) or amended OMAD, 31 of 47 subunits meet Amendment 19 total motorized access density (TMAD) or amended TMAD, and 25 of 47 subunits meet Amendment 19 security CORE or amended CORE). Second, by setting the baseline for “no net increase” at 2011 road levels, the Forest Service in no way “updates

management direction” or provides “improved” habitat management for grizzly bears. Instead, the revised plan sets up a weakened approach to managing roads that is likely to harm grizzly bears.

Despite acknowledging the harmful impacts of forest roads to grizzly bear and bull trout, the current status of grizzly bear and bull trout as threatened under the ESA, and the success of INFISH and Amendment 19 direction in addressing those harms, the Forest Service chooses to abandon its tried and true approach to managing roads.

The analysis relies on many unsupported assumptions that do not flow from the underlying facts. For example, the analysis assumes future road building will be confined to realignment, and states the forest’s main emphasis would continue to be on decommissioning roads with a resulting net effect of reallocating more area back to productive purposes would be largely positive. *See, e.g.*, FEIS at 101. This is an improper assumption, given the lack of any standards restricting future road construction to realignment. In fact, many of the infrastructure guidelines apply to *new* road, trail, or stream crossing construction. *See, e.g.*, Revised Plan at 68-69 (FW-GDL-IFS 03, FW-GDL-IFS 06, FW-GDL-IFS 07, FW-GDL-IFS 08, FW-GDL-IFS 10, FW-GDL-IFS 12, FW-GDL-IFS 15). This creates an impression that the forest will continue new road construction, subject to “no net increase” to 2011 baseline road levels and its many exceptions.

5. Ignores Public Sentiment

As part of its rationale, the Forest Service states it chose Alternative B because “It has the best mix of management areas that reflects what I heard the public wanted.” Draft ROD at 6. It largely ignores the outpouring of public support for continuing many of the management approaches, including the integrated road management plan under Amendment 19 and standards and guidelines from INFISH. *See, e.g.*, FEIS, App. 8 at 8-39. According to the Forest Service’s own numbers, 98% of all public comments favor recommending all roadless areas as Wilderness and the continuation of Amendment 19 grizzly bear protections and road decommissioning. FEIS, App. 4. This is a significant showing of public support for these measures, given the Forest Service received a total of 33,744 comments. *Id.* Despite overwhelming support for all roadless lands becoming Wilderness and the continuation of road decommissioning and other grizzly bear habitat security programs, the revised Flathead Forest Plan recommends only 39% of IRAs for wilderness and eliminates its current Amendment 19 bear and road decommissioning programs.

Proposed Solution: Revise the analysis in the FEIS to accurately disclose the current infrastructure baseline and include an accurate and complete inventory of roads to allow for meaningful analysis and comparison of alternatives. Revise the analysis in the FEIS to a “hard look” at the direct, indirect, and cumulative impacts from forest roads, including climate change stressors and forest roads, and to consider a reasonable range of alternatives related to infrastructure plan direction. Revise the plan components and draft ROD to show a rational connection between the facts found and the conclusions made. And revise the infrastructure plan components to be consistent with the overwhelming public support for continuing Amendment 19 road management direction.

D. The Forest Service fails to ensure the infrastructure plan components comply with the ESA

Best available science demonstrates that forest roads negatively impact grizzly bear and bull trout, both listed as threatened under the ESA. FWS 2017 BiOp assessing the impacts of the revised Forest Plan on grizzly bear and bull trout fails to comply with the ESA. Given the Forest Service’s independent legal duty to ensure the Forest Plan revision complies with the ESA, its reliance on the

flawed BiOp is unreasonable. *See* Draft ROD at 29-32. Our comments urged the Forest Service to comply with the ESA and provide necessary habitat protections to aid the recovery of grizzly bear and bull trout. DEIS Comment at 6, 15, 21, 40-41. We were unable to comment on the veracity of the FWS's analysis in the 2017 BiOp because it was not available during the public notice and comment period.

The 2017 BiOp is flawed because it mischaracterizes or ignores best available science. For example, the Forest Service mischaracterizes and relies on Boulanger and Stenhouse (2014) to justify excessive route densities, while improperly dismissing Mace and Waller (1997) research on road densities necessary for protecting grizzly bears. As another example, the revised plan components greatly reduce protections for bull trout and waters designated as bull trout critical habitat, particularly from forest roads and infrastructure, despite best available science demonstrating that forest roads have and continue to be a primary source of sediment impacts to developed watersheds. 2016 DEIS Comment at 34-35. INFISH RF-2 required, *inter alia*, the Forest Service complete watershed analyses before constructing roads or landings in RHCAs in priority watersheds, minimize road and landing locations in RHCAs, avoid road sediment delivery to streams, and avoid disrupting natural hydrologic flow paths. In contrast, the revised Forest Plan eliminates the requirements to complete watershed analyses before constructing roads in riparian management zones, and allows commercial logging within riparian management zones. What's more, the temporary increases in motorized use and temporary decreases in security core (FW-STD-IFS-03) have no justifiable scientific basis, the ten-year running average artificially manipulates the true impacts of specific projects, and projects lasting four years cannot be considered temporary. 2016 DEIS Comment at 12.

The 2017 BiOp relies on flawed assumptions and fails to consider relevant factors. The problems concerning the accuracy of the 2011 baseline level of roads, which all road density standards under the revised plan are based on, is discussed above. As another example, the Forest Service proposes to eliminate the integrated road management plan under Amendment 19. It states the revised plan "will maintain the baseline conditions for motorized road access across the Forest that contribute to the continued recovery of the grizzly bear but will not require additional closure of roads and trails currently open to public." The Forest Service's proposed revised plan improperly assumes the NCDE grizzly bear populations are recovered as part of the basis for eliminating Amendment 19 protections, and FWS relies on this assumption in its 2017 BiOp. The road management plan under Amendment 19 restores and protects water quality for bull trout and reconnects wildlife habitat for grizzly bears by removing damaging, unneeded forest roads and culverts. Eliminating this program based on flawed assumptions that NCDE grizzly bears have recovered renders the 2017 BiOp flawed.

The 2017 BiOp is also flawed because it improperly eliminates annual culvert monitoring requirements in existing BiOps for site-specific projects unrelated to the revised plan (see more on this in the bull trout section).

Proposed Solution: Refrain from any final decision related to the revised plan unless and until the flaws related to Section 7 consultation identified above have been addressed in a revised grizzly bear and bull trout BiOp.

VII. SUSTAINABLE RECREATION PLANNING AND MANAGEMENT

A. Sustainable recreation plan components fail to comply with 2012 planning rule

We urged the Forest Service to revise the plan components to comply with the 2012 planning rule requirements. 2015 Scoping Comment at 47; 2016 DEIS Comment at 65-66. The 2012 planning rule requires plan components, including standards and guidelines, to ensure achievement of the substantive provisions related to ecosystem integrity, sustainability, and diversity of plant and animal communities. 36 C.F.R. §§ 219.8, 219. By failing to provide meaningful direction for managing motorized recreation, the revised plan components for sustainable recreation fail to comply with the 2012 planning rule requirements.

1. Sustainability

This revised plan lacks standards or guidelines to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area. 36 C.F.R. § 219.8(a)(1).

As one example, the sustainable recreation plan components include only one forest-wide standard related to OSV use impacts to wildlife. It requires no net increase in percentage of area or miles of routes designated for OSV use on National Forest Service lands within modeled grizzly bear denning habitat in the NCDE primary conservation area during the den emergence time period. Revised Plan at 62 (FW-STD-REC 05). This “no net increase” approach allows for changes to OSV routes and areas within the NCDE primary conservation area, thereby ignoring cumulative impacts and residual effects to grizzly bears during den emergence time period. By allowing new disruption and habitat fragmentation as a result of changes to routes or areas within a “net” existing footprint, this standard fails to maintain or restore the ecological integrity of terrestrial ecosystems, contrary to the 2012 planning rules.

For similar reasons the human use guideline HU G11 (FW-GDL-REC-05) fails to comply with the sustainability requirements of the 2012 rule. It states there should be no net increase in the miles of designated OSV routes, groomed routes, or areas where motorized OSV use would be suitable. The Forest Service fails to assess whether existing levels of OSV use are sustainable, not just for grizzly bear but for the recovery of other imperiled species like Canada lynx and wolverine. It assumes, without justification that “no net increase” from current OSV use is sustainable.

Forest-wide guideline applying a “no net increase in miles of designated routes for motorized over-snow vehicle use, groomed routes, or areas” to support Canada lynx (FW-GDL-REC 03) fails for the same reasons. Because the “no net increase” in that guideline is predicated on suitability determinations in B-11, it would allow, for example, new groomed routes within areas suitable for motorized use (but which may not have previously hosted OSV use). This is especially true given the forest-wide desired condition for sustainable recreation to provide groomed motorized OSV routes consistent with the desired winter ROS settings. Revised Plan at 60 (FW-DC-REC 20). In turn it would result in new localized noise and disruption to Canada lynx. The Forest Service fails to show how this “no net increase” based on suitability (rather than OSV area designations) maintains or restores the ecological integrity of ecosystems. The same logic applies to forest-wide guideline applying a “no net increase in percentage of modeled wolverine maternal denning habitat where motorized over-snow vehicle use is identified as suitable” (FW-GDL-REC 04).

2. Diversity of Plant & Animal Communities

Compliance with the ecosystem sustainability requirements (above) is meant to provide ecological conditions to maintain diversity and support persistence of native species. 36 C.F.R. § 219.9. For the same reasons the revised plan sustainable recreation components fail to meet the ecosystem integrity requirements, they likewise falls short under this diversity requirement.

The revised plan fails to include standards or guidelines for sustainable recreation to maintain or restore the diversity of ecosystems and habitat types throughout the plan area. 36 C.F.R. § 219.9(a)(2). For example, it lacks any standards protecting Canada lynx or wolverine from recreational use. In fact, certain recreation plan components—like the “no net increase” standard for grizzly bear primary conservation area and guideline for Canada lynx—expose threatened wildlife species to new harms and threaten key characteristics associated with terrestrial and aquatic ecosystem types.

As another example, forest-wide desired conditions for sustainable recreation state the amount and distribution of motorized OSV use does not have demonstrated adverse effects to maternal denning of wolverines or female grizzly bears with cubs during the den emergence time period. Revised Plan at 60 (FW-DC-REC 22). The component is based on “demonstrated adverse effects” to maternal denning of wolverine or female grizzly bears with cubs. But the 2012 planning rules require standards or guidelines for sustainable recreation to *maintain* or *restore* the diversity of ecosystems and habitat types, and provide ecological conditions necessary to contribute to the *recovery* of threatened species, and *conserve* proposed species. 36 C.F.R. § 219.9. By basing its direction on demonstrated harm to the detriment of grizzly bear and wolverine, instead of maintaining, restoring, recovering, or conserving the species, the Forest Service fails to comply with the 2012 planning rules.

The revised plan lacks any standards or guidelines to protect denning grizzly bears from winter motorized recreation; to protect grizzly bears emerging from dens that are outside of Montana state’s modeled denning habitat; or to protect grizzly bears denning or emerging from dens outside of the primary conservation area. The revised plan lacks standards and guidelines to maintain or restore ecological conditions on the Flathead to maintain a viable population of grizzly bears within its range. 36 C.F.R. § 219.9(b)(2).

3. Suitability

In developing a Forest Plan revision, the Forest Service must “[i]dentify the suitability of areas for the appropriate integration of resource management and uses, with respect to the requirements of plan components of §§219.8 through 219.11, including identifying lands that are not suitable for timber production.” 36 C.F.R. § 219.7(c)(2)(viii). “Specific lands within a plan area will be identified as suitable for various multiple uses or activities *based on the desired conditions* applicable to those lands.” 36 C.F.R. § 219.7(e)(v) (emphasis added). Contrary to the 2012 planning rules, the Forest Service skipped integrated planning in making changes to motorized OSV routes and area suitability, instead modifying suitability determinations in response to Whitefish Range Partnership recommendations. *See, e.g.*, 2016 DEIS at 67. As a result, the changes to suitability do not reflect integrated planning or the agency’s substantive duties to achieve sustainable recreation. Issues with relying on suitability determinations to establish compliance with subpart C are addressed below.

4. Sustainable Opportunities & ROS Settings

The revised plan also lacks standards or guidelines for ROS settings. The 2012 planning rule requires standards and guidelines that provide for sustainable recreation, including recreation settings, opportunities, and access. 36 C.F.R. § 219.10(b)(1)(i). We urged the Forest Service to include a standard making the ROS settings enforceable, given the 2012 planning rule requirement to include standards and guidelines that provide for sustainable ROS settings. 2016 DEIS Comment at 69. The revised Forest Plan includes a standard that prohibits new motorized routes or areas in primitive or semi-primitive non-motorized desired ROS settings (FW-STD-REC 03). We support this plan component as a standard, but it creates a low standard as a minimum floor for ROS settings. And it assumes without considering whether the current levels of recreational use are sustainable. This is especially concerning to the extent that the ROS settings and other plan components anticipate changes to motorized use within those settings, so long as there is “no net increase.” *See, e.g.*, FW-GDL-REC-05. These plan components that simply continue the status quo of recreation management, and in no way provide for or work towards *sustainable* recreation. At bottom, there are no standards or guidelines related to ROS settings that work towards sustainable recreation settings, opportunities, or access.

5. Monitoring

Under the 2012 planning rules, the Forest Service must develop a monitoring program that enables the responsible official to determine if a change in plan components is needed. 36 C.F.R. § 219.12(a). Monitoring is meant to increase knowledge and understanding of changing conditions, uncertainties, and risks identified in the best available scientific information as part of an adaptive management framework. *See* Revised Plan at 7. The requirement to consider best available science is meant to help identify indicators that address associated monitoring questions, and to further development of the monitoring program. FSH 1909.12, § 07.11.

The Forest Service’s monitoring parameters for sustainable recreation fail to comply with these requirements. None of the sustainable recreation monitoring questions or indicators track whether recreational uses on the forest are sustainable. *See* Revised Plan at 168, Table 56. For example, there are no monitoring questions or indicators to validate—or invalidate—progress toward FW-DC-REC-02 (envisioning increases in the number and capacity of developed recreation sites a levels that contribute to sustaining the recovery of the NCDE grizzly bear population). No monitoring parameters or indicators assess the Flathead’s compliance with FW-STD-REC-01 (limiting developed recreation sites to one increase above the baseline in number or capacity per decade per bear management unit in the NCDE primary conservation area) or FW-STD-REC-05 (limiting OSV use routes and percentage of area to “no net increase” within grizzly bear denning habitat modeled by MFWP in the NCDE primary conservation area). Because both of these standards rely on caps related to baseline or cumulative totals, they require tracking and monitoring to provide any force or effect. Omitting monitoring parameters for these standards renders them meaningless. The monitoring program indicators that are included for sustainable recreation are not based on best available science.

Proposed Solution: Revise sustainable recreation plan components to include standards or guidelines to maintain or restore the ecological integrity of terrestrial and aquatic ecosystems and watersheds in the plan area; to maintain diversity and support persistence of native species; reconsider suitability determinations in light of integrated planning and desired conditions; and to provide for sustainable recreation settings, opportunities, and access. In particular, this would include a clear commitment to site-specific winter travel planning within the areas deemed suitable

for OSV use, within a specific time frame. We suggest the Flathead commit to site-specific winter travel planning within one year of completing this Forest Plan revision. Revise sustainable recreation monitoring plan questions and indicators to track whether recreational uses on the forest are sustainable, and require annual reporting of compliance with FW-STD-REC-01 or FW-STD-REC-05.

B. Sustainable recreation plan components fail to comply with Forest Service directives

Our comments urged the Forest Service to comply with its planning directives, including developing a “coherent system of sustainable and socially compatible recreation opportunities.” 2015 Scoping Comment at 48-49; 2016 DEIS Comment at 66-69. The planning directives require the Forest Service to develop plan components necessary to close the gap between existing and desired ROS settings in a specific amount of time. But because the Forest Service relied on existing conditions to establish its ROS settings, rather than describing *desired* ROS settings based on legal and practical suitability of the desired conditions for those lands, the revised plan ignores any need to close the gap between existing and desired ROS. The Forest Service’s approach to creating plan components for ROS settings here fails to comply with the planning directives. Again, by simply continuing the status quo the Forest Service fails to develop a coherent system of sustainable and socially compatible recreation opportunities, as required by the planning directives.

According to Forest Service directives, the objective of a plan monitoring program is to, *inter alia*, enable the responsible official to determine if a change in plan components or other plan content applicable to the plan area may be needed, and to inform the management of resources on the plan area, through means such as testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving the plan’s desired conditions or objectives. FSH 1909.12, ch. 30.2. As explained above, none of the sustainable recreation monitoring questions or indicators track whether recreational uses on the forest are sustainable, or assess the Flathead’s compliance with FW-STD-REC-01 or FW-STD-REC-05, both of which rely on caps related to baseline or cumulative totals for implementation. Thus the Forest Service’s monitoring plan components for sustainable recreation fail to comply with Forest Service directives.

Proposed Solution: Reconsider ROS settings and the analysis in the FEIS to disclose existing ROS settings, identify desired ROS settings based on suitability determinations (instead of existing conditions), and revise sustainable recreation plan components to close the gap between existing and desired ROS settings in a specific amount of time. Revise sustainable recreation monitoring plan questions and indicators to track whether recreational uses on the forest are sustainable, and require annual reporting of compliance with FW-STD-REC-01 or FW-STD-REC-05.

C. Sustainable recreation plan components fail to comply with NEPA

1. Inaccurate Baseline

Providing an accurate description of the baseline is essential to allowing for meaningful comparison of alternatives and impacts. *See, e.g., Ctr. for Biological Diversity v. U.S. Dep’t of the Interior*, 623 F.3d 633, 642 (9th Cir. 2010) (“A no action alternative in an EIS allows policymakers and the public to compare the environmental consequences of the proposed action.”); *Friends of Yosemite Valley v. Kempthorne*, 520 F.3d 1024, 1038 (9th Cir. 2008) (holding a “no-action” alternative invalid under NEPA because it improperly included decisions that had previously been found invalid). Our comments highlighted inaccuracies in how the Forest Service described the scope and effect of

Amendment 24, which sets the baseline for motorized winter travel on the Flathead. 2016 DEIS Comment at 79.

The 1986 Forest Plan and Amendment 19 (grizzly protections) included springtime restrictions on snowmobiling in the grizzly recovery zone after March 15, but these restrictions were largely unenforced. In response to a 1999 lawsuit by the Montana Wilderness Association, the parties entered a settlement agreement resulting in Amendment 24. Amendment 24 to the 1986 Forest Plan increased OSV use by allowing snowmobiles on 52,400 acres within the grizzly bear recovery zone during the non-denning period (eliminating the March 15 seasonal restriction for that area). U.S. Fish and Wildlife Service, Biological Opinion on the Effects of Amendment 24 on Grizzly Bears (Dec. 19, 2008), page 5. But Amendment 24 only designated specific routes and areas for OSV use in the Whitefish Range. For the remainder of the forest, Amendment 24 identified areas suitable and not suitable for OSV use; it did not establish OSV route and area designations.

In describing this revised plan, the Forest Service states Amendment 24 provided direction for over-snow winter motorized recreation in compliance with the 2001 Travel Management Rule. *See* FEIS at 10. It fails to disclose that Amendment 24 only designated routes and play areas for a small portion of the forest, while *programmatically* addressing the rest of the forest through suitability determinations.³ And it improperly states that winter travel management on the Flathead is in compliance with the 2015 OSV rule. Draft ROD at 43 (“The Forest also has completed subpart C through amendment 24 to the 1986 Forest Plan, and that is displayed in the Forest’s Over-Snow Vehicle Use Map as required by 36 CFR 212 subpart C”). By providing an inaccurate baseline, the Forest Service improperly skews analysis of alternatives and impacts of this Forest Plan revision. *See, e.g.*, 2017 BiOp at III-57 (“previous amendments to the Forest Plan (e.g., amendments 19 and 24) would no longer be part of the Revised Forest Plan,” but “these past actions have created the current environmental baseline that would be maintained over the long-term.”).

2. Failure to Accurately Disclose Essential Information

The Forest Service fails to accurately disclose the nature of its proposed actions related to winter motorized recreation, precluding meaningful public comment in violation of NEPA. This is closely related to the failure to establish an accurate baseline. The Forest Service appears to conflate suitability determinations and ROS settings for OSV use (programmatic level, Forest Plan direction) with OSV use designations (a project-level site-specific decision). *See, e.g.*, Revised Plan at 62-63 (FW-GDL-REC 04, “Specific locations of routes or areas suitable for motorized over-snow vehicle use are specified in figure B-11”). We explained the need to distinguish between suitability or ROS determinations, from project level OSV route and area designations in our comments. 2016 DEIS Comment at 77-78.

On the one hand, the Forest Service describes its proposed action as programmatic in nature, with no site-specific or project level effects. *See, e.g.*, Draft ROD at 3. But on the other hand, it identifies specific OSV routes and areas, which are site-specific project-level decisions with direct and immediate impacts. *See, e.g.*, Draft ROD at 7 (describing the addition of OSV use opportunities “on

³ Compare FEIS at 10 (“The amendment designated specific routes and play areas as well as seasons for motorized over-snow vehicle use per §212.81 of the 2001 Travel Management Rule”), with 2006 Amendment 24 Record of Decision (“Figures WW-1 through WW-4 contain maps from the final Selected Alternative showing where over-snow motorized use is programmatically allowed and prohibited across the Forest”), and 2008 Biological Opinion (“Snowmobiling would be ‘programmatically’ allowed on approximately 787,200 acres”). *See also* 2017 BiOp at III-67 (acknowledging that “[t]he proposed action does not include restrictions in motorized over-snow use during den emergence period outside of the PCA, but *most of this area is currently open.*”) (emphasis added).

nearly 61,000 acres”). The confusion is also apparent in the Fish and Wildlife Service’s consultation documents. *Compare* U.S. Fish and Wildlife Service 2017 BiOp at I-21 (“The Revised Forest Plan provides a framework and text that guides day-to-day resource management options. It is a strategic, programmatic document and does not make project-level decisions or irreversible or irretrievable commitments of resources. These decisions will be made during a more detailed, site specific analysis of any proposed future action.”), *with id.* at III-89 (referring to specific, quantifiable areas and routes open to OSV use: three percent of the potential denning habitat within the primary conservation area currently overlapped by known late-season OSV use and 19 miles of routes within the area). By failing to clearly articulate its proposed action, it is impossible for the public to understand and comment on the impacts.

3. Fails to Consider Impacts and Best Available Science

Our comments urged the Forest Service to take a hard look at the impacts of OSV use on wildlife and the forest landscape. 2016 DEIS Comment at 53-58, 74-76. In addition, our comments identified a list of scientific studies that the Forest Service ignored in its analysis, and asked the Forest Service to consider and incorporate the studies or explain why the studies do not represent the best available scientific information. 2016 DEIS Comment at 74-75. Forest Service regulations require the use of best available scientific information to inform the planning process for revising a plan and monitoring. 36 C.F.R. § 219.3. The rules also require the agency to identify the information determined to be the best available scientific information, explain the basis for its determination, and explain how the information was applied to the issues considered. *Id.* The Forest Service’s revised plan and FEIS fail to consider and analyze the best available science regarding direct, indirect, and cumulative impacts that will result from the proposed motorized recreation aspects of the plan components. In particular, the Forest Service fails to consider best available science regarding the impacts of OSV use on grizzly bears, Canada lynx, and wolverine. As explained in the section below, the Forest Service relies on a flawed BiOp from FWS that ignores or mischaracterizes best available science showing how human activities disrupt grizzly bears during denning and upon den emergence.

4. Fails to Consider Reasonable Range of Alternatives

Our comments urged the Forest Service to consider a range of alternatives to properly take a “hard look” and assess the impacts of OSV use suitability determinations. 2016 DEIS Comment at 71. The Forest Service fails to consider a reasonable range of alternatives for sustainable recreation plan direction. The alternatives ranged from making 25 percent to 32 percent of the forest suitable for OSV use:

- Alternative A would continue to make OSV use suitable on 31 percent of the forest. FEIS at 23.
- Alternative B would make OSV use suitable on 31 percent of the forest, including shifts in areas suitable for OSV that represent a net increase of 567 acres open to OSV use. FEIS at 25.
- Alternative C would make OSV use suitable on 25 percent of the forest, and three areas currently suitable for late-season OSV use (after March 31) not suitable. FEIS at 29. In response to comments, the Forest Service states that it considered a range of alternatives for motorized OSV use. It notes that under Alternative C, only 3 percent of modeled wolverine maternal denning habitat would be suitable for OSV use, “a minor amount.” FEIS, App.8 at 8-61.

- Alternative D would make OSV use suitable on 32 percent of the forest. FEIS at 33.

In explaining why it did not consider an alternative with no winter motorized recreation, the Forest Service states that the “NCDE population has met the recovery goals stated in the grizzly bear recover[y] plan with existing motorized over-snow vehicle use.” FEIS at 34. This justification improperly assumes, without justification and beyond the authority of the Forest Service, that the NCDE grizzly bear population has recovered. The NCDE population of grizzly bears is currently listed under the ESA as threatened, and the Forest Service must disclose this in its reasoning. What’s more, the Forest Service provides no justification for failing to consider an alternative that would make OSV use after March 31 not suitable in all of the grizzly bear primary conservation area. By allowing OSV use to continue elsewhere on the forest but recognizing the threatened status of grizzly bear and harassment of grizzlies upon den emergence (see below), this is a reasonable and feasible alternative. The Forest Service’s failure to consider it violates NEPA.

5. Decision Not Supported by Analysis

The Forest Service has a duty to examine the relevant data and articulate a satisfactory explanation for its action including a “rational connection between the facts found and the choice made.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mutual Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (citing *Burlington Truck Lines v. United States*, 371 U.S. 156, 168 (1962)). It fails to do so here. There are numerous instances where the Forest Service’s analysis does not support, or even contradicts, the conclusions and decisions reached by the agency. As just one example, the Forest Service fails to explain why making late-season OSV use within modeled grizzly bear denning habitat in the primary conservation area is needed under the agency’s multiple use mandate to not just provide for recreation opportunities, but also ensure the recovery of federally threatened species like the grizzly bear—especially so long as the grizzly bear remains listed under the ESA. It fails to explain how that OSV use suitability determination complies the agency’s duty under the minimization criteria to minimize harassment of grizzly bears and disruption of grizzly bear habitat, despite recognizing the blatant overlap of OSV use and grizzly bears, including females and they young, emerging from grizzly dens. And it fails to explain its decision in light of advancements in OSV technology that allow snowmobiles to travel farther into backcountry and onto higher, steeper slopes.

Proposed Solution: Revise the analysis in the FEIS to accurately identify and disclose the baseline of winter motorized recreation on the forest to provide an accurate and valid basis for comparing alternatives. To ensure meaningful and informed public comment, the Forest Service must clarify the nature of its proposed action regarding winter motorized recreation. To comply with NEPA’s required “hard look,” the Forest Service must update its analysis in the FEIS to rely on the best available science and accurately disclose direct, indirect, and cumulative impacts. Revise the analysis in the FEIS to consider a reasonable range of alternatives related to sustainable recreation and possible suitability and ROS designations. Finally, revise the draft ROD and sustainable recreation plan components to ensure a rational connection between the facts and analysis, and the final decision. Specifically, remove plan components allowing late-season OSV use suitability in modeled grizzly bear den habitat.

D. Inappropriate to include site-specific winter motorized travel designations in a Forest Plan

Our comments highlighted the distinction between suitability determinations made through Forest Planning, and site-specific travel planning consistent with the Forest Plan suitability determinations. See, e.g., 2016 DEIS at 71-72. As noted above, the Forest Service fails to clearly articulate its

proposed action regarding winter motorized recreation. For example, forest-wide desired condition for winter semiprimitive motorized ROS (FW-DC-WREC 04) describes it as including routes that are “typically ungroomed but are often signed and marked,” with “vast areas to travel cross-country in designated areas.” Revised Plan at 59. Reference to routes and designated areas implies that the ROS settings designate routes and areas for winter motorized use.

To the extent the agency seeks to establish compliance with subpart C through its Forest Plan revision, this is inconsistent with Forest Service policy. Decisions about suitability determinations in the Flathead’s Forest Plan revision are not a substitute for the area designations that result from site-specific, project level winter travel planning. *Compare* FSH 7709.55, 11.2(1) (Land Management Plans) (“Approval of a plan, plan amendment, or plan revision should not include a final decision designating roads, trails, or areas for motor vehicle use or OSV use or otherwise restricting those routes. Rather, the land management plans provides information and guidance for travel management decisions.”) *with* FSH 7709.55, chs. 10 & 20; FSM 7703.11(1) (explaining that when designating roads, trails or areas for motorized use under subparts B or C, the Forest Service “shall . . . [u]se travel analysis . . . to consider and document application of the criteria in 36 CFR 212.55 in making the designation decision,” and any decisions must be informed by “site-specific environmental analysis and public involvement.”). Forest Plans are programmatic in nature and do not meet National Environmental Policy Act (NEPA) obligations to take a hard look at the site-specific impacts of motorized area and trail designations.

Proposed Solution: Clarify in the final ROD that forest-wide site-specific winter travel planning is required to designate OSV routes and discrete areas. Revise the final ROD and sustainable recreation plan components to commit to site-specific winter travel planning within areas deemed suitable for OSV use in the revised Forest Plan within one year of completion of the revised Forest Plan.

E. Failure to demonstrate compliance with the Travel Management Rule, 2015 OSV Rule, or Executive Order Minimization Criteria

Our comments urged the Forest Service to develop plan components that ensure compliance with the Forest Service’s travel management rule⁴, the 2015 over-snow vehicle (OSV) rule⁵, and Executive Orders 11644 and 11989⁶. 2016 DEIS Comment at 70-80. The revised plan lacks standards or guidelines that establish compliance with these requirements.

First and foremost, as explained above, because the winter designations under Amendment 24 do not cover entire forest the Forest Service must make clear in this record that winter travel planning is not complete under subpart C. Any route or area designations that are new or different from what is identified in Amendment 24 must demonstrate compliance with the minimization criteria. For example, the revised plan creates new trail connectors for high-elevation motorized loop trails for off-road vehicles. Draft ROD at 6. “[A]reas suitable for motorized over-snow vehicle use would be shifted from some parts of the Forest to others, resulting in a small (>0.1%) increase in the amount of Forest suitable to motorized over-snow vehicle use.” 2017 BiOp at I-19 – I-20. The Forest Service proposes to change areas suitable for OSV use by opening access in the lower end of

⁴ 36 C.F.R. §§ 212.50-212.57 (Subpart B—Designation of Roads, Trails and Areas for Motor Vehicle Use) (commonly referred to as the travel management rule).

⁵ 36 C.F.R. §§ 212.80-212.81 (Subpart C—Over-snow Vehicle Use).

⁶ Exec. Order No. 11,644, 37 Fed. Reg. 2877 (Feb. 8, 1972), *as amended by* Exec. Order No. 11,989, 42 Fed. Reg. 26,959 (May 24, 1977).

Big Creek from McGinnis Creek to the North Fork Road, south to Canyon Creek, while decreasing the same amount of open acreage in the upper end of Sullivan Creek, Slide Creek and Tin Creek. These new areas constitute new designations for which the Forest Service must demonstrate were located with the objective of minimizing impacts.

To the extent this plan revision attempts to make OSV area and route designations, the record fails to demonstrate compliance with the minimization criteria. Our comments identified extensive scientific research demonstrating how OSV use harasses and disrupts wildlife, including harmful impacts to grizzly bear, Canada lynx, wolverine, wolves, greater sage-grouse, black bear, and big game species. *See, e.g.*, 2016 DEIS Comment at 76. For example, best available science shows that dispersed winter recreation activities have the potential to adversely impact wolverine by disrupting and limiting use of wolverine natal denning areas. Yet the designations proposed in this revised plan appear to authorize OSV use based on suitability determinations, including allowing OSV use in areas important for grizzly bear, Canada lynx, and wolverine. For example, the sustainable recreation revised plan components related to protecting grizzly bear, Canada lynx, and wolverine all rely on “no net increase” to OSV use within locations of routes or areas suitable for motorized OSV use. Revised Plan at 62-63.

The Forest Service makes no attempt to demonstrate how it located the winter suitability determinations with the objective of minimizing harm to natural resources, harassment of wildlife, disturbance of wildlife habitat, or conflicts among uses. The revised plan lacks components to ensure motorized use designations comply with the minimization criteria, establish a monitoring strategy to assess the impacts of off-road vehicle use (including OSVs) on Forest Service lands, or providing a feedback loop to modify motorized designations immediately when considerable damage occurs.

Second, for designations that are included under Amendment 24 and carried forward in the revised plan, the Forest Service fails to demonstrate how these previous decisions comply with the minimization criteria, NEPA, or the ESA. Our comments explained the agency may not grandfather past decisions without ensuring those decisions considered and applied the minimization criteria, as well as other relevant legal requirements. 2016 DEIS Comments at 79.

As the court explained in *Swan View Coalition v. Barbouletos*, No. 06-73-M-DWM (Dt. Mt. May 28, 2008), Amendment 24 revised the 1986 Forest Plan to actually allow more spring snowmobiling than was permitted before under the 1986 Forest Plan. Amendment 24 allowed spring snowmobiling on 52,400 acres in designated areas in the grizzly recovery zone (the 1986 Forest Plan prohibited snowmobile use in these areas after March 15). Despite carrying these designations forward under this revised plan, the Forest Service fails to demonstrate in the record how designating spring snowmobiling on 52,400 acres in designated grizzly recovery zone areas and removing seasonal restrictions from the 1986 Forest Plan were done with the objective of minimizing harassment of grizzly bears or significant disruption of grizzly bear habitat.

The designations under Amendment 24 also do not account for significant new information (including increased speed, power, and other capabilities of current OSV technology allowing OSVs to travel further and higher) and more recent protections for imperiled species (including Canada lynx and wolverine). Thus the Forest Service fails to ensure these designations comply with NEPA or the ESA.⁷

⁷ As explained below, the 2017 ESA consultation is flawed making the Forest Service’s reliance on that analysis arbitrary and capricious.

Finally, to the extent the Forest Service interprets 36 C.F.R. § 212.81(b) as permitting adoption of OSV designation decisions that do not satisfy the minimization criteria, the agency's interpretation violates Executive Orders 11644 and 11989.⁸

Proposed Solution: Revise the final ROD to state that current winter travel management on the Flathead does not comply with subpart C, and that site-specific winter travel planning is necessary to designate specific OSV routes and discrete OSV areas in compliance with subpart C of the Travel Management Rule, including the minimization criteria.

In the alternative, the Forest Service must revise plan components and the analysis in the FEIS to demonstrate in the record how the Forest Service analyzed and located motorized use designations—particularly the late-season OSV use in the NCDE grizzly bear primary conservation area—with the objective of minimizing harassment of wildlife, disruption of wildlife habitat, and damage to forest resources. Revise the sustainable recreation plan components and analysis in the FEIS to show in the record how the agency located motorized designations with the objective of minimizing conflicts by locating specific areas, routes and trails for motorized use away from areas frequented by non-motorized uses. Revise the final ROD to eliminate designations for late-season OSV use in grizzly bear denning habitat.

F. The Forest Service fails to ensure the sustainable recreation plan components comply with the ESA

As discussed above in detail, Threatened Canada lynx and grizzly bear, as well as candidate species wolverine, exist on the Flathead. Best available science demonstrates that these species are affected by winter recreation use.

FWS's 2017 BiOp assessing the impacts of the OSV route and area designations adopted in this revised plan on lynx and grizzly bear does not comply with the ESA. Given the Forest Service's independent legal duty to ensure the Forest Plan revision complies with the ESA, it may not rely on the flawed BiOp for its OSV use decision. Our comments highlighted our concerns that the Forest Service did not properly consider the negative impacts of OSV use on grizzly bears and their denning habitat. 2016 DEIS Comment at 16. We were unable to comment on the veracity of the FWS's analysis in the 2017 BiOp because it was not available during the public notice and comment period. Outlined below are several examples of how the 2017 BiOp fails to comply with the ESA.

1. Inaccurate Description of Proposed Action

The FWS's BiOp inaccurately describes the proposed action, skewing any analysis of the impacts. *Compare* 2017 BiOp at I-1 (“This biological opinion does not provide an analysis for effects of specific actions”) *with id.* at III-89 (referring to specific, quantifiable areas (three percent of the grizzly bear primary conservation area) and routes (19 miles) open to OSV use as a result of the Forest Plan revision, and which forms the basis of the grizzly bear incidental take statement).

⁸ See *Winter Wildlands Alliance v. U.S. Forest Serv.*, No. 1:11-CV-586-REB, 2013 U.S. Dist. LEXIS 47728, at *32 (D. Idaho Mar. 29, 2013) (requiring the Forest Service to promulgate new OSV travel management rule that complies with the executive orders and making clear that the orders “require[] the Forest Service to ensure that *all* forest lands are designated for *all* off-road vehicles”).

2. Mischaracterizes or Ignores Best Available Science

The FWS's analysis in the 2017 BiOp mischaracterizes or ignores best available science regarding the impacts of OSV use on grizzly bears. As just one example, the FWS describes the literature review by Linnell and others (2000) as concluding "bears readily den within 0.6-1.2 mi of human activity (roads, habitations, industrial activity) and appear to be undisturbed by most activity that occurs further than 0.6 miles from the den site." 2017 BiOp at III-27. But it ignores other very important conclusions from that study—that three in five brown bears showed physiological responses of increased heart rate or increased physical activity in response to loud noises at a distance of one to two kilometers. See J.D.C. Linnell *et al.*, How vulnerable are denning bears to disturbance? 28 Wildlife Society Bulletin 2 (2000) (Attachment 4). Bear responses to denning disturbance appear to occur along a continuum. *Id.* Responses range from waking, to increases in temperature or heart rate, and to den abandonment. The costs increase to the bear as responses escalate. The study also identified studies showing brown bears sometimes abandoned dens when approached directly, citing to Harding and Nagy (1980) and Reynolds *et al.* (1986). But the FWS excludes this information in its analysis, apparently because these examples did not occur in the lower 48 states (the studies applied to grizzly bears in Canada and Alaska). 2017 BiOp at III-27.

As another example, Swenson *et al.* (1997) documented 9 percent of brown bears over 194 bear-winters abandoned or changed dens, and in 12 of the 18 events human activity was noted within 100 meters of the abandoned den. Swenson, J.E., *et al.*, Winter den abandonment by brown bears *Ursus arctos*: causes and consequences. Wildlife Biology 3 (1997) (Attachment 5). The FWS ignores this study, despite the fact that it is cited in the 2010 Grizzly Bear Biological Opinion for the Beaverhead-Deerlodge Forest Plan revision. Failure to consider and apply best available science improperly skews the analysis in favor of the Forest Service's weakened grizzly bear protections, and violates the ESA.

3. Improper Assumptions

As part of its basis for determining late-season OSV use will not have an adverse effect on individual grizzly bears within the primary conservation area, the FWS concludes that the current existing spatial overlap of late season OSV use and grizzly bear den emergence cannot increase in the future due to FW-STD-REC-05. 2017 BiOp at III-68. This ignores the fact that the standard provides only for no net increase in percentage of area or miles of routes designated for OSV use within modeled grizzly bear denning habitat within the NCDE primary conservation area. As recognized throughout the BiOp, grizzly bears choose different locations for dens, and often do not den in the same location year after year. See, *e.g.*, 2017 BiOp at III-88. See also *id.* at III-82 ("the NCDE grizzly bear population has greatly expanded its distribution on the landscape"). By limiting its application to MTFWP modeled grizzly bear denning habitat, the Forest Service severely limits the possible effect of this "no net increase" standard.

This is especially concerning because the revised plan does not include any restrictions on OSV use during den emergence period outside of the grizzly bear primary conservation area, which is mostly open to OSV use. See 2017 BiOp at III-67. Thus the FWS's assumption that the no net increase standard "[p]rovides additional assurance that potential impacts to bears, particularly females with cubs, would not *increase* over time" is flawed and ignores very real, harmful impacts to grizzly bears emerging from dens that are not located in the MTFWP modeled grizzly bear denning habitat. See III-67 (emphasis added).

The Forest Service’s assumption that effects to grizzly bears from late-season OSV use will only occur on three percent of denning habitat on the Flathead is similarly flawed. This assumption ignores effects to grizzly bears emerging from dens in areas outside of modeled denning habitat within the primary conservation area. Outside of that area, it appears from the proposed action that OSV use is generally open with no seasonal restrictions at all. Thus the FWS’s analysis ignores impacts to grizzly bears from the proposed winter motorized use, leading to flawed assumptions and a flawed conclusion.

4. Fails to Consider Relevant Factors

For example, in its assessment of late-season OSV use on grizzly bears during den emergence, FWS fails to recognize that any effects to grizzly bears would be difficult to quantify based on site-specific occurrences. *See, e.g.*, Flathead National Forest Evaluation and Compliance with National Forest Management Act Requirements to Provide for Viability and Diversity of Animal Communities (Feb. 2017), page 89 (“effects of displacement of grizzly bears from key habitats are difficult to quantify and may be measurable only as long-term effects on the species’ habitat and population levels (USDI-FWS 2005b).”). Instead, FWS should assess whether OSV use in grizzly bear den habitat during den emergence has a long-term effect on the species’ habitat and population levels. FWS never considers this factor.

As another example, FWS fails to evaluate the impacts of allowing OSV use in the grizzly bear primary conservation area during den emergence and throughout the spring (i.e., routes and areas open after March 31). The revised plan would allow OSV use within the primary conservation area from April 1 through November 30, as shown in Table III-8 from the 2017 BiOp:

Table III-8. Miles/acres suitable for motorized over-snow vehicle use within the primary conservation area (PCA)

Area	Motorized Over-Snow Vehicle Routes Open Dec. 1 to March 31 ¹	Motorized Over-Snow Vehicle Areas Open Dec. 1 to March 31 ¹	Motorized Over-Snow Vehicle Routes Open April 1 to Nov. 30) ²	Motorized Over-Snow Vehicle Acres Open April 1 to Nov. 30) ²
PCA	872 miles	516,134 acres	661 miles	59,017 acres

¹ This includes all routes and areas open during this time period.

III-42

² This includes all routes and areas open during this time period.

FWS fails to provide information regarding the length of late season OSV use, and yet concludes the risk of effect would be limited. According to the Forest Service’s proposal, OSV use is open from April 1 until November 30 (see Table III-8, above). FWS states, without justification, that “the risk of effect would be limited to the period of time from female and cub den emergence (2nd week of April) through spring snow melt (these dates vary year to year).” 2017 BiOp at III-76. *See also id.* at III-88 (“As spring season ends, the amount of motorized over-snow use decreases). Without providing data or details, the FWS skims over how long late season OSV use might actually overlap with grizzly bears—especially female grizzlies with cubs that tend to remain close to the den location for spring feeding.

FWS also fails to assess the cumulative impacts of allowing late season OSV use along with other impacts to grizzly bears. For example, it never assesses the cumulative impacts of allowing OSV use

during grizzly bear den emergence period in combination with increased opportunities for illegal kills. And it never assess the cumulative impacts of allowing OSV use during grizzly bear den emergence period in combination effects from climate change, which is likely to effect the length of time bears spend in dens, and thus directly relates to the amount of time late season OSV use overlaps with and harms emerging grizzly bears. See Attachment 4 (“Generally, length of time spent in dens is determined by climate and thereby habitat, latitude, and altitude.”). Climate change may also push OSV use deeper into backcountry and the higher, steep slopes that grizzly bears prefer for den locations. This is especially true when OSV users seek steep open basins for “high marking,” where there is a potential direct overlap between denning habitat and steep open slopes favored by snowmobilers.

The FWS never assesses or explains the draft NCDE Grizzly Bear Conservation Strategy, but relies on the revised plan’s consistency with this yet-to-be-finalized document to conclude that it “will lead to management approaches on the FNF that will contribute to a stable and expanding population of grizzly bears.” III-76 – III-77. By ignoring the content of the NCDE Grizzly Bear Conservation Strategy, and relying on hypothetical plan components, the FWS’s conclusion in the BiOp runs afoul of the ESA’s requirements.

The Forest Service and FWS also fail to consider the very relevant fact that OSV motorized use has not been properly designated pursuant to subpart C and the minimization criteria in assessing the likely impacts of the revised plan to Canada lynx. As explained above, the Forest Service improperly claims that current winter ROS suitability determinations and ROS settings establish compliance with subpart C. Actual compliance with subpart C will require the Forest Service to designate discrete areas and specific OSV routes through project level travel planning. As a result of the Forest Service’s misrepresenting the baseline and proposed action regarding winter motorized travel, the FWS’s analysis fails to consider that the suitability determinations and ROS settings are merely a blueprint for future winter travel planning, and fail to disclose how the suitability determinations and ROS settings might impact species threatened or proposed for listing.

Proposed Solution: Refrain from any final decision related to the revised plan unless and until the flaws related to Section 7 consultation identified above have been addressed in a revised grizzly bear BiOp.

G. Arbitrary and capricious to authorize OSV use in security core during grizzly bear den emergence.

Our comments urged the Forest Service to increase denning habitat protections from snowmobiles. 2016 DEIS Comment at 16. But in the draft ROD and revised sustainable recreation plan components, the Forest Service’s Alternative B modified makes late-season OSV use suitable within modeled grizzly bear denning habitat in the primary conservation area during grizzly bear den emergence. This is arbitrary and capricious.

The 1986 Forest Plan prohibited snowmobile use in designated areas in the grizzly recovery zone areas after March 15. OSV designations under Amendment 24 modified the 1986 Forest Plan to allow spring snowmobiling after March 15 on 52,400 acres within the designated grizzly recovery zone areas. Suitability determinations under Amendment 24 actually *increased* the amount of OSV use allowed on the forest as compared to the baseline under the 1986 Forest Plan. See *Swan View Coalition v. Barbouletos*, No. 06-73-M-DWM (Dt. Mt. May 28, 2008).

Continuing this approach under the revised Forest Plan fails to protect grizzly bears, a species listed as threatened under the ESA. It fails to consider cumulative impacts of spring OSV use and increased opportunities for poaching/malicious kills. *See* 2017 BiOp at III-21 (noting “Costello et al. (2016) estimated that poaching/malicious kills likely accounted for the highest proportion of total independent bear mortality (27 percent)”). The approach is illogically applied to only parts of the forest, where grizzly bears are most vulnerable and during the spring season when the species is most vulnerable. And it improperly prioritizes OSV use over protection of grizzly bears.

At bottom, this approach is inconsistent with best available science and precautionary principles. In light of FWS’s efforts to de-list the NCDE grizzly bear, it makes no sense to adopt outdated decisions that allow OSV use in grizzly bear recovery areas at a time when bears are most vulnerable.

Proposed Solution: Revise the Forest Plan to account for best available science and to ensure the continued survival and recovery of grizzly bears by restricting OSV use after March 31 across the Flathead. In the very least, restrict OSV use after March 31 within the entire grizzly bear primary conservation area, including areas within Lost Johnny, Six Mile, and Challenge/Skyland, to ensure survival and protection of emerging female grizzly bears and cubs.

VIII. GRAZING ALLOTMENT BUYOUT OPPORTUNITY

A. Flathead ROD/FEIS

The Forest Service failed to consider an alternative that includes a forest wide standard enabling the permanent retirement or closure of livestock grazing allotments when willing permittees voluntarily relinquish their preference for grazing permits where resource conflicts arise between grazing and other multiple uses or Forest Plan objectives. DEIS Comments at 106.

With the exception of the Swan Valley Geographic Area, the Forest Plan contains no direction for when opportunities arise with willing permittees to close livestock grazing allotments. Unfortunately, even in this case, it is only a discretionary guideline rather than a standard that would require such action in these specific circumstances.

The Forest Plan also partially addresses this topic in Appendix C – Potential Management Approaches “Eliminate grazing allotments or pastures as they become vacant *if there is no demand for grazing by potential permittees* or if desired vegetation and aquatic conditions cannot be met.” (emphasis added). The caveat relating to demand for grazing by potential permittees is a potentially severely limiting factor if the allotment has become vacant due to a voluntary buyout arrangement. In most cases, without the assurance that the allotment will be permanently retired, these voluntary agreements will not occur.

Furthermore, language pertaining to wildlife impacts, potential disease conflict, and recreation is omitted from this section. With specific regard to conflicts between livestock grazing and recreation, the Forest Service provided no analysis or direction to address this issue including in its response to comments on this issue.

Proposed Solution – Include a forest-wide direction as follows:

When resource conflicts arise between the management needs for productive grazing and drought, wildfire impacts, threatened and endangered species, recreation, water quality, water quantity,

economic viability of a ranching operation, disease conflict with native wildlife or other multiple uses, and the permittee is willing, retiring and permanently closing grazing allotments is a viable and permissible range management tool.

B. NCDE ROD/FEIS

The Forest Service also failed to incorporate or analyze voluntary grazing permit retirement as a component of the NCDE plan amendments for the Helena, Lewis and Clark, Kootenai, and Lolo National Forests. DEIS Comments at 106. Permit retirement has been a very effective tool in reducing conflicts between grizzly bears and domestic livestock in the Greater Yellowstone Ecosystem. This valuable tool can and should be employed in the five forests at issue here. Regardless of whether there are conflicts based on the current range of grizzly bears, potential expansion of grizzly bear range and climate change impacts on native food sources for bears may lead to situations where the best and only solution is the removal of livestock. This is a particularly important tool that could be utilized outside of the PCA and zone 1 where there are not currently standards that address livestock grazing allotments.

Proposed Solution – Include direction in the NCDE amendments as follows:

When resource conflicts arise between the management needs for productive grazing and drought, wildfire impacts, threatened and endangered species, recreation, water quality, water quantity, economic viability of a ranching operation, disease conflict with native wildlife or other multiple uses, and the permittee is willing, retiring and permanently closing grazing allotments is a viable and permissible range management tool.

IX. CONCLUSION

Thank you for this opportunity for continued engagement in the Flathead Forest Plan Revision and NCDE Amendments. We look forward to further discussion in the near future on the issues we have raised. Please keep all of the objectors on this submission apprised of any developments on these important issues.

Attachments

Attachment 1: WildEarth Guardians HBRC Comments, January 26, 2018.

Attachment 2: J. Squires, *et al.*, Response of Canada Lynx and Snowshoe Hares to Spruce-Beetle Tree Mortality and Wildfire in Spruce-Fir Forests of Southern Colorado, Progress Report 2016 (2017).

Attachment 3: Nie, M. *et al.*, Fish and Wildlife Management on Federal Lands: Debunking State Supremacy, Environmental Law, 47, no. 4 (2017).

Attachment 4: J.D.C. Linnell *et al.*, How vulnerable are denning bears to disturbance? 28 Wildlife Society Bulletin 2 (2000).

Attachment 5: Swenson, J.E., et al., Winter den abandonment by brown bears *Ursus arctos*: causes and consequences. *Wildlife Biology* 3 (1997).

Attachment 6: 2016 Annual Flathead National Forest, Forest Plan Amendment 19 Implementation Monitoring Report and Responses to Amendment 19 Revised Implementation Schedule Terms and Conditions.

January 26, 2018

Grizzly Bear Recovery Office
U.S. Fish and Wildlife Service
University Hall, Room 309
Missoula, MT 59812

Submitted via www.regulations.gov Docket # FWS-R6-ES-2017-0057; 7; FXES11130600000–178–FF06E00000 and via Email to: NCDE_grizzlies@fws.gov

Re: Grizzly Bear Recovery Plan Draft Supplement: Habitat-based Recovery Criteria for the Northern Continental Divide Ecosystem

Dear Recovery Coordinator Cooley,

We appreciate the opportunity to comment on the *Grizzly Bear Recovery Plan Draft Supplement: Habitat-based Recovery Criteria for the Northern Continental Divide Ecosystem (Draft Supplement)*. WildEarth Guardians (Guardians) submits these comments on behalf of the organization, our staff, board and over 202,000 members and supporters. Guardians is a non-profit organization dedicated to protecting and restoring the wildlife, wild places, rivers and health of the American West. Guardians maintains an office in Missoula, Montana and has over 202,000 members and supporters, many of whom live and recreate in grizzly country and historic grizzly habitat from which the bears remain absent. Our Wildlife and Wild Places program in particular work to protect and restore the native species and native ecosystems of Montana and the American West, including the grizzly bear and its habitat. We incorporate by reference our comments on the draft Conservation Strategy as well as our comments at both the scoping and Draft Environmental Impact Statement stages of the Flathead National Forest Plan Revision and all documents referenced therein.

As the Service notes in the announcement of the habitat based recovery criteria (HBRC) amendment for the Northern Continental Divide Ecosystem (NCDE), “[u]nder the ESA, recovery plans must include objective, measurable recovery criteria, including habitat-based recovery standards (16 U.S.C. 1533(f)(1)(B)(ii)).” Sadly, the Service here again fails to actually live up to that requirement. Unfortunately, the Service’s reliance on the inadequate draft Conservation Strategy also renders the draft HBRC inadequate.

Habitat Management Standards are not Equal to Habitat Based Recovery Criteria

Habitat based recovery criteria and habitat based management standards are not the same thing. The Service is impermissible conflating the two. We agree that habitat based standards are an essential part of ensuring grizzly bears’ habitat is protected, which will likely aid in the long-

term recovery of grizzly bears, but they are fundamentally different than true habitat based recovery criteria, which is what is required under the settlement and under the law. Habitat based management standards are not a proxy or valid basis on which to determine recovery.

As the Service should be well aware, the court ruling on the Recovery Plan from 1995 mandates that the Service must consider “how much habitat and of what quality is necessary for recovery.” *Fund for Animals v. Babbitt*, 903 F. Supp. 96, 112 (D.D.C. 1995). The court held the demographic criteria, including number of females and cubs, and occupancy, that apply to the recovery zone “do not measure present danger or destruction to grizzly bear habitat. Moreover, the two criteria do not seem capable of assessing the habitat of a larger, recovered grizzly bear population, let alone *threatened* habitat destruction.” (Emphasis is original). The Court was clear that more was needed to determine whether the NCDE grizzly bear population was indeed recovered. Unfortunately, the Service has thus far ignored the court’s crystal clear guidance: “[t]he purpose of the habitat recovery criteria is to measure the effect of habitat quality and quantity on grizzly recovery.... Such monitoring is not possible if there is no scale against which to gauge the status of the habitat. Defendants have not met their burden to develop objective, measurable criteria by which to assess present or threatened destruction, modification or curtailment of the grizzly bear’s habitat or range.”

Moreover, the Service ignores yet another key part of the court’s ruling when it limits application of the HRBC (and the flawed draft Conservation Strategy) to the Recovery Zone. The court was clear: “because past habitat loss was one of the factors specifically relied on by the FWS in listing the grizzly bear, and, because under the statute that factor alone may have been sufficient to justify listing the bear...the FWS must consider the historic habitat loss in its assessment of the quantity and quality of grizzly bear habitat.” *Id.* at 118 n.7. The Recovery Zone is far smaller than the currently occupied habitat, let alone the habitat that is likely to become occupied in the near future.

The Rationale for Using 2011 Habitat Conditions as a Baseline is Not Based on the Best Available Science

Unfortunately, as has become the Service’s habit, it picks and chooses statistics it likes while ignoring key science demonstrating its assumptions are incorrect. In 2016, Costello et al published science showing the actual growth rate for the NCDE grizzly population was not the 3% the Service premises its baseline assumptions on, but is actually 2.3% for 2004-2016. The Service also inaccurately states its 3% figure is for the period 2004-2011, when, as noted by a peer reviewer, the correct period is 2004-2009. Indeed, Dr. Richard Harris, a contributor to the Draft Conservation Strategy, has stated that the 3% growth rate does not meet “the conventional level of statistical certainty.” USFWS 2013. Moreover, population numbers and growth rate are not one of the Endangered Species Acts Section 4 listing and delisting criteria. USFWS 1988. Federal Judge Friedman has ruled that habitat quantity, quality, and sufficiency are the determining factors of recovery, not minimum population and distribution numbers. *Fund for Animals v. Babbitt*, 903 F Supp. 96, 113,118 (D.D.C. 1995).

Because the Service fails to rely on the best available science and incorrectly presents the

science on which it bases its 2011 baseline figure, that baseline is an inadequate premise for the HBRC. Given that error, picking 2011 has no actual justification. It is as if the Service plucked it out of thin air, a selection which in no way satisfies the science-based requirements of the Endangered Species Act. Indeed, as peer reviewer Morehouse noted (twice): “I am struggling with the assumption that the 2011 conditions contributed to the population growth observed from 2004-2011 because 2011 was the last year of the time period over which the grizzly bear population increase was documented.”

The Exceptions Allowed to the HBRC Swallow the Purported Protections

Shifting baselines are not permissible. Even were the choice of 2011 conditions as a baseline permissible, the Service’s assertion that 2011 conditions will be maintained is belied by the myriad exceptions and exemptions allowed and the convenient failure to include highways, county and private roads in the calculation of the baseline. The draft HBRC and 2013 draft Conservation Strategy both allow increases in roads, development and “temporary” projects. These “temporary” projects may displace bears for up to an astonishing five years. How is that “temporary” and how can the Service say with a straight face that it can validly ignore those impacts?

The Service creates exceptions that swallow the rule. Moreover, the Service states “[w]e defined the baseline for motorized access, secure core habitat, developed recreation sites, and livestock allotments based on conditions for these activities as of December 31, 2011, as modified by changes in numbers that we determined were acceptable levels during consultations on these activities with our Federal partners.” Draft Supplement at 3. The Service fails entirely to explain how the Service and its partners define “acceptable,” on the basis of what criteria, and how that “acceptable” change would in any way serve grizzly bears. It seems far more likely that “acceptable change” was aimed at satisfying political pressure to do just the opposite: benefit the very industries and practices (logging, grazing, off road vehicle use, snowmobiling, development) that threaten the species’ recovery.

The Service does not count new development outside of the denning season against the baseline, even though it is highly unlikely that such areas would continue to be used only in a single season once infrastructure is built. Proctor raised this very issue in the peer review: “This is a common pattern in ski areas in Canada – to encourage summer use with expanded recreation outside the ski area.” This is certainly true in the age of climate change where ski venues and other winter recreation sites are experiencing less snow, fewer visitors and decreasing revenues and increasingly engaging in attempts to attract visitors in other seasons. The Service must count all new development, regardless of season.

Grizzlies repeatedly or continuously displaced during the non-denning season will suffer impaired feeding, breeding, and denning, with potential consequences for their survival, and the survival of their cubs. USFWS 2014a. Grizzlies do not distinguish between agency, contractor, and public vehicles, and will be displaced by all of them – causing harm to them and their habitat.

Similarly, the Service fails to define what “restoration” means when discussing allowing

“temporary” projects which it ignores in measuring compliance with the baseline criteria. Will the Service require planting of native food sources for grizzlies such as huckleberry and service berry, or will a standard grass mix be allowed? How quickly will the restoration take place? How will noise impacts be abated?

The Service’s allowance for one new campground per year per Bear Management Unit is also hugely concerning. How big of a campground? How long will it be open? Where in the BMU? How many visitors will be allowed and for how many user days/year? As peer reviewer McLellan notes: “Just because the bear population grew when the number of campgrounds went from, for example, 1 to 2 in a decade, does not mean the bear population would be fine with 2 to 3 in the next decade or 12 to 13 a century from now.” Moreover, as peer reviewer Proctor noted: “[b]ecause increases to recreation sites did not appear to negatively affect the growing grizzly bear populations suggests to me that these developments were below an ‘impact threshold’ of some level. That doesn’t mean increases can’t eventually increase to the point they create an impact.” The HBRC also fail to denote requisite oversight of said new developments. Federal funding for parks and recreation areas is decreasing. How will bear safety education be provided to ever-increasing visitors? Will campgrounds only be allowed with hosts, bear boxes and other key precautionary measures in bear country? Will food storage measures be strictly enforced? The Service’s assumption that continued growth of developed camping sites is sustainable for bears into the future is unsupported and unsupportable.

Using Body Condition/Isotopes as a Proxy for Habitat is Flawed

Responding to earlier public comment on the importance of identifying key foods and assuring their monitoring and availability in future years, the Service asserts that “[b]ody condition and stable isotopes will be used as surrogate to measure habitat quality, including seasonal food availability, as discussed in the draft Conservation Strategy. This is an adaptive approach to changing use and availability of foods.” Draft Supplement at 17.

This approach is seriously flawed. We note, again, the lack of clear study of the habitat and food sources in the NCDE. Isotope analysis is a crude surrogate for diet. Little information other than differentiating meat from vegetation is available, giving very little insight into the actual diet of any given bear. Given the wide range of vegetation bears can and do consume, simply knowing they are eating vegetation provides little usable information. No indication of evolution of the vegetation based food sources or response to changing food availability will be produced. Likewise, isotopic analysis does not differentiate between domestic livestock and elk or deer meat, making it impossible to use the analysis to measure potential conflict.

Indeed, according to McLellan, changes in female body condition as measured through isotopic analysis “will be difficult to interpret without more research on what bears are actually feeding on and what these foods mean to their fitness and population size....The use of isotopes to infer changes in habitat quality may be misleading without knowledge of what the bears are actually feeding on.” McLellan 2017. Even were the science to improve, how would the Service deal with comparing measurements taken using changing methodologies over time?

To this day, neither the Service nor its conservation partners have undertaken any comprehensive analysis of grizzly bear habitat in the NCDE. Unlike work in the Greater

Yellowstone Ecosystem (GYE), the Service has failed to conduct any long-term study of food sources in the NCDE, a critical element of establishing objective, measurable HBRC. The Service makes no mention of the well documented lag effect of habitat condition changes due to impacts like climate change on slow reproducing species, of which the grizzly bear is a prime example. Additionally, emerging science is demonstrating that climate change may have a profound impact on key grizzly food sources, including berries. As the Service knows, berry productivity is directly correlated to grizzly mortality. *See* McLellan 2015 (showing evidence of lag effects between berry production and population growth for grizzly bears in the North Fork of the Flathead river drainage – within the NDCE. Thus, no valid baseline is available against which to measure recovery.

In the Greater Yellowstone Ecosystem annual monitoring is conducted for four key grizzly bear food sources (elk, whitebark pine cone, army cutworm moths and Yellowstone cutthroat trout). The Service should meet at least this basic level of objective measurement. Without even these basic analyses the Service fails to meet its duty under the ESA.

The Service's Road Density Measurement is Arbitrary

Roads have always been and remain a serious threat to grizzlies. The 1993 Grizzly Bear Recovery Plan (USFWS 1993) page 21-22 says:

Roads probably pose the most imminent threat to grizzly habitat today...The management of roads is one of the most powerful tools available to balance the needs of people with the needs of bears. It is strongly recommended that road management be given the highest priority within all recovery zones.

The impacts of logging, mining, livestock grazing, and many forms of recreation in grizzly habitat can be mitigated through well-designed management programs. But the presence of open roads in grizzly habitat often leads to increased bear-human contact and conflict, and can ultimately end in grizzly mortality. Accidental shooting, poaching, and habituation through direct human contact and/or food reward all increase with the use of even secondary, unpaved roads by humans.

And the Draft Conservation Strategy, at p. 20-21, echoes this basic scientific principle: "Open motorized route density is a predictor of grizzly bear survival on the landscape (Schwartz et al. 2010) and is useful in evaluating habitat potential for, and mortality risk to, grizzly bears (Mace et al. 1996).

The only motorized access standards based on a decade of grizzly research in the NCDE (Mace and Waller 1997) are those of Amendment 19 (A19) to the Flathead Forest Plan (USFS 1995) which have been examined and approved in FWS Biological Opinions (USFWS 1995, 2014).

The draft HRBC is deeply flawed in its treatment of road density and secure core habitat measurement. The primary flaw is the replacement of the science-based Amendment 19 with the arbitrary 2011 measurement, made worse by the many loopholes discussed above. All existing provisions under Amendment 19 to the current Flathead Forest Plan, and as adopted by other

NCDE Forests, must remain in place, and the Forests must move swiftly and effectively to designate, fund, and complete all remaining closure & restoration projects for the following. The Service should incorporate Amendment 19 into any HBRC because:

- A 19 is the only motorized access management framework in the NCDE that is firmly based upon the Best Available Science as required by law (USFWS 1988). Neither that science, nor that law have changed despite the attempt by the Service to substitute a politically contrived 2011 Baseline system in the Draft Conservation Strategy.
- The current grizzly population of the NCDE, estimated at approximately 1000 bears, reached that milestone due in large part to the increased security provided by Amendment 19 and related measures in other forests. It makes no sense to snatch defeat from the jaws of victory by abandoning this proven success story before it's completely implemented ecosystem-wide.

We object to the abandonment of Amendment 19 and note the writing is on the wall that the Flathead National Forest has every intention of abandoning the retirement and rewilding of roads proposed for removal based on the arbitrary assumption that 2011 conditions are somehow good enough for grizzlies.

The Service could and should also plan for the inevitable population and visitor growth in Montana. The trend is clearly toward ever-increasing permanent population in Montana, including in the Flathead Valley and other key NCDE habitat areas. Likewise, visitorship at Glacier National Park and other public lands in Montana is increasing annually. These increases are guaranteed to impact grizzly habitat. The Service cannot assume static conditions in the face of these clear changes. See <https://www.census.gov/quickfacts/MT>; http://missoulian.com/news/state-and-regional/glacier-national-park-s-m-visitors-in-july-breaks-record/article_e0dd23a9-50f7-5bca-bb61-1791ff938c1f.html; <http://flatheadbeacon.com/2017/07/10/glacier-national-park-shatters-june-attendance-record/>; Indeed, visitorship at Glacier increased by 1,093,117 from 2011-2016. [https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recr%20Visitation%20\(1904%20-%20Last%20Calendar%20Year\)?Park=GLAC](https://irma.nps.gov/Stats/SSRSReports/Park%20Specific%20Reports/Annual%20Park%20Recr%20Visitation%20(1904%20-%20Last%20Calendar%20Year)?Park=GLAC). That is right, over one million more people visited Glacier in 2016 than in the Service's baseline year on which it bases its static assumptions.

For a detailed discussion of the need to further reduce road density in the Flathead, see Guardians' scoping and DEIS comments on the proposed Flathead National Forest Plan Amendment. The best available science on grizzly habitat security and motorized access route density is Amendment 19 to the Flathead Forest Plan, (USDA 1995) which was adopted by the other NCDE Forests (USFWS 2007). Yet the draft HRBC and draft Conservation Strategy, based on estimated population of 1000 bears and a 3% growth rate would throw out this science and replace it with whatever road densities were present in the 2011 Baseline Year. Under the new 2011 Baseline Motorized Access "Standards" we would see the following (USFWS 2013, Appendix 3):

- 31 of 54 BMU Subunits (57%) would violate A19 scientific standards on the Flathead Forest.
- 1 of 3 BMU Subunits (33.3%) would violate A19 of Helena NF.

- 2 of 2 BMU Subunits (100%) would violate A19 on Kootenai NF.
 - 8 of 8 BMU Subunits (100%) would exceed A19 on Montana Department of Natural Resources (DNRC) lands. Although DNRC does not technically fall under A19, it does manage more than 500,000 acres in the NCDE, making this lack of security of serious concern.
 - Only the Lewis & Clark NF would meet A19 standards.
- This outcome is unacceptable.

The Service Fails to Adequately Address Climate Change Impacts

Glacier National Park is the heart of the NCDE grizzly population's habitat. It is also the poster child for the impacts of climate change. Glacier is predicted to lose the last 26 of its 150 namesake glaciers in the next two decades. *See* <https://www.theguardian.com/environment/2017/may/11/us-glacier-national-park-is-losing-its-glaciers-with-just-26-of-150-left>; <https://www.cnn.com/2017/05/10/us/montana-glaciers-shrinking/index.html>; <https://news.nationalgeographic.com/news/2009/03/090302-glaciers-melting.html>. And yet the Service ignores climate change except in limited response to public comments. Climate change must be a key factor in the establishment of true, science based habitat based recovery criteria. Climate change is, and will continue to significantly impact the NCDE ecosystem. Assuming that 2011 levels will stay static is simply akin to sticking the Service's head in the proverbial sand. It's a pipe dream. The Service must accept the realities of a changing climate, and incorporate the best available climate science into the establishment of true habitat based recovery criteria.

Failure to Adequately Address Threats Posed by Domestic Livestock Grazing

The draft HBRC make mention of bone yards without providing adequate information. While the draft says no boneyards will be established on National Forest lands, it fails to explain what will be done with livestock carcasses, and where and if boneyards will be established in the areas outside National Forest lands. Peer reviewer Morehouse likewise expressed concern:

Criterion #3 states that boneyards will not be established on National Forest lands. These lands constitute 61% of the federal lands in the recovery zone and all grazing allotments appear to be on National Forest lands (Table 4). Where will boneyards be established if not on National Forest lands? Because livestock are only grazed on NF lands, and boneyards cannot be established on NF lands, this would imply to me that any dead livestock will be removed. I question then, the establishment of boneyards at all. Past research has shown boneyards to be a major attractant not just for grizzly bears, but for all large carnivores (Morehouse and Boyce 2011, Northrup and Boyce 2012). Consequently, there has been a large emphasis in some regions of Montana as well as Alberta on removing boneyards (e.g. Blackfoot Challenge, Waterton Biosphere Reserve). If boneyards are going to be established, there should be more details provided (e.g. where are they allowed, minimum distances form other livestock pastures, minimum distances form roads or trails, etc.).

The draft does very little to address the continued threats to grizzlies posed by livestock grazing on our public lands. The Service should do more.

Connectivity is Essential for Long-term Grizzly Recovery

The Service is charged with recovering grizzly bears across their range, not just in isolated pockets of habitat. The agency asserts that habitat fragmentation is “not an issue in the NCDE.” However, the Service’s and partner agencies’ own studies show that habitat fragmentation between the NCDE and GYE core areas are likely preventing connectivity and genetic exchange. Grizzlies have not reestablished themselves in the Bitterroot Ecosystem and are far too rare in the Cabinet Yaak, Selkirks and North Cascades. Establishing connectivity between the populations should be a core tenant of any recovery plan and those linkages must be part of habitat based recovery criteria.

The Service punts to the draft Conservation Strategy to aid in establishing connectivity, but as expressed in Guardians’ and others’ comments on the draft, it utterly fails to do so. Moreover, the Service has failed to finalize the Conservation Strategy in more than 56 months. It remains in stale, draft form. Fragmentation by roads and railroads is a significant issue for grizzlies. As discussed above, not including all extant roads in the baseline is a fatal flaw of the draft HRBC.

Conclusion

The Service must go back to the drawing board and produce science-based legitimately habitat-based recovery criteria in accordance with the settlement agreement and the Endangered Species Act. The Service needs to abandon the random choice of 2011 conditions as a baseline, conduct the necessary research and establish truly habitat-based recovery criteria taking into account all extant and approved roads, development and motorized recreation, climate change, shifting food sources and human impacts without loopholes and exceptions. The Service should begin annually monitoring key food sources including ungulates, berries, and army cutworm moths. The Service should concentrate that research in key linkage and connectivity zones. The Service must establish the scale against which to measure future success. That measurement cannot be arbitrary, and must be grounded in the best available science.

Sincerely,



Bethany Cotton, J.D.
Wildlife Program Director
WildEarth Guardians

Response of Canada Lynx and Snowshoe Hares to Spruce-Beetle Tree Mortality and Wildfire in Spruce-fir Forests of Southern Colorado



Progress Report - 2016

Dr. John Squires, Dr. Joseph Holbrook, and Dr. Lucretia Olson
Research Wildlife Biologist, Rocky Mountain Research Station
800 E. Beckwith Ave
Missoula, MT 59801

Dr. Jake Ivan
Mammals Research, Colorado Parks and Wildlife
317 West Prospect
Fort Collins, CO 80526

Dr. Rick Lawrence
Professor and Director, Spatial Sciences Center
Montana State University
PO Box 173120
Bozeman, MT 59717-3120

Randy Ghormley
Wildlife Program Leader
Rio Grande National Forest
Monte Vista, CO 81144

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Purpose of Document

In this document, we first provide a brief annual report to meet reporting requirements for existing university agreements. Second, we conducted preliminary analyses of vegetation data collected within lynx home ranges (beginning page 9). These preliminary understandings were requested by the Rio Grande National Forest to inform forest management until final results are available later this year (2017).

Background Information

In March 2013, the Rio Grande National Forest (RGNF) contacted the Rocky Mountain Research Station (RMRS) Science Application & Integration Staff to ask for assistance in answering some key science questions related to an ongoing spruce-beetle outbreak on the forest. RMRS and RGNF staff worked together to define some of the key issues and questions, which fell into four broad categories of concern: vegetation, fuels, watershed, and wildlife. The group convened in November 2013, with representatives from the RO, RMRS, and all three districts of the RGNF.

The focus of the visit involved the rapid ecological changes occurring in the high-elevation spruce-fir zone on the RGNF due to an outbreak of the spruce bark beetle. The outbreak has influenced approximately 480,000 acres of spruce-fir on the Forest, and continues to spread at a rate of about 100,000 acres annually. The West Fork Fire Complex of 2013 added another ecological perspective to the landscape by burning approximately 110,000 acres of spruce-fir/aspens mix on the San Juan and Rio Grande National Forests. Initially starting on the west (San Juan NF) side of the Continental Divide, the fires involved about 88,000 acres on the RGNF. Much of the burn occurred in spruce-fir cover types that had significant rates of tree mortality due to the spruce beetle. The West Fork Complex offers an additional ecological research opportunity as well as discussion topics on disturbance regimes and bark beetles, future forests, and influences on other resource values such as wildlife habitat.

Issue

The Rio Grande National Forest (RGNF) includes some of the most important lynx habitat in Colorado. Approximately 85% of the 218 lynx reintroduced to Colorado from 1999-2007 were released on the RGNF. Although lynx have established home ranges in other parts of the state, most lynx remain and reproduce in the high-elevation spruce-fir zone of southwestern Colorado, including the RGNF. Lynx depend on spruce-fir forests with dense understories across their distribution. However, by 2013, a spruce beetle outbreak killed approximately 85% of mature spruce in the subalpine cover types on the RGNF. There is a strong desire by the US Forest Service and industry to salvage beetle-killed trees across broad landscapes in southern Colorado. However, the consequence of timber salvage to lynx or even what constitutes suitable lynx habitat in beetle-impacted forests is unknown. Biologists are therefore in the untenable position of being required to evaluate the impact of timber salvage to lynx without a scientific basis to support their decisions. ESA requires that agencies consider the impact of timber salvage to lynx as federally listed species.

Key Management Questions

1. How do spruce-beetle outbreaks affect the suitability of lynx habitat within the core use area of southern Colorado?
2. What forest structures and compositions are used by lynx in landscapes heavily influenced by spruce-beetle outbreaks?
3. How does forest structure and composition of insect impacted forests affect the relative density of snowshoe hares?
4. What areas and types of forest structure in the post-beetle landscape on the Rio Grande National Forest are most conducive to landscape restoration activities, including timber salvage, while minimizing potential impacts to lynx and snowshoe hare populations?

The Rocky Mountain Research Station, in cooperation with the RGNF, Region 2- USFS, Colorado Parks and Wildlife (CPW), and Montana State University initiated an administrative study in 2014 that investigates resource selection and movements of lynx that occupy spruce-beetle impacted forests. The purpose of the study is to address the key management questions associated with the maintenance of suitable habitat for lynx and primary prey species in relationship to spruce-bark beetle related forest disturbance, and to an expected increase in post-beetle forest management activities, such as timber salvage. We are studying what types of forest structure constitute the best habitat available for snowshoe hare and lynx in a post-spruce beetle epidemic landscape. Study objectives include: **1)** determine if Canada lynx exhibit seasonal changes in resource use of insect-impacted spruce-fir forests in the San Juan Mountains, CO; **2)** Map suitable lynx habitat in spruce-beetle impacted forests relative to proposed timber salvage; and **3)** determine how the relative abundance of snowshoe hares, the primary prey of lynx, is affected by spruce-beetle outbreaks in terms of forest structure.

Preliminary Results

Lynx Capture and Handling.

In 2015-2017, we instrumented lynx with GPS collars to plot their movements and resource-use patterns in beetle-impacted forests. In 2015 through 2017, we captured and/or handled a total of 19 lynx (6 adult females, 6 adult males, 7 kittens) in Colorado (Table 1); the 1 month-old kittens were handled at den sites. Of these animals, we instrumented and monitored the movements and resource-use patterns of 11 lynx (6 males, 5 Females) with GPS collars on the Rio Grande National Forest (Table 2). There were no injuries to any lynx as the result of trapping and/or handling. Of the 5 instrumented females, 2 denned in 2015 and produced 2 kittens each, and 1 female denned in 2016 and produced 2 kittens; denning of the 2017 female is not yet known. Preliminary results indicated that lynx continued to occupy home ranges in spruce-beetle impacted forests (Figure 1 and 2). In 2015 and 2016, we sampled vegetation at winter and summer GPS and random locations to determine the forest structure and composition that lynx selected within beetle impacted forests (Table 3). The majority of this progress report is the preliminary assessment of these field data.

Table 1. Total lynx captured and/or handled on the Rio Grande National Forest, Colorado from 2015-2017.

LynxID	Nickname	Gender	Estimated Age	ShoulderPIT
CO15F01	Ivy Female	Female	4 years	985120028461524
CO15M01	Ivy Male	Male	3	985120028460313
BC04F04	Love Lake Female	Female	12	985120021530398
CO15M02	Love Lake Male	Male	2	985121012392677
CO15F02	Love Lake Female 2	Female	2	985120028455351
CO15K01	Ivy Kitten 1	Unknown	1 month	not tagged
CO15K02	Ivy Kitten 2	Unknown	1 month	not tagged
CO15K03	Red Mountain Kitten 1	Unknown	1 month	985121009939252
CO15K04	Red Mountain Kitten 2	Unknown	1 month	985121009933845
CO16M01	Rio Grande Male	Male	5	985120028453055
CO04F15	Finger Mesa Female	Female	12	985120017855833
CO16K01	Thirty Mile Kitten	Unknown	9 month	
CO16F01	Squaw Creek Female	Female	6	985120028460384
	Squaw Creek Kitten1	Unknown	1 month	985121009786377
	Squaw Creek Kitten 2	Unknown	1 month	985121009801537
CO16M02	Hunter's Lake Male	Male	6	985121012575153
CO17AM01	Wager Gulch Male	Male	6	985120027224555
CO17AF01	Conejos Peak Female	Female	3	985120028456346
CO17AM02	Conejos Peak Male	Male	4	985120028179240

Table 2. Captured lynx instrumented with GPS collars on the Rio Grande National Forests in southern Colorado

Lynx	LynxID	StartDate	EndDate	# Pts
Rio Grande Male	CO16M01	1/24/2016	8/9/2016	3178
Finger Mesa Female	CO04F15	2/16/2016	8/10/2016	2466
Squaw Creek Female	CO16F01	2/19/2016	8/10/2016	2246
Hunter's Lake Male	CO16M02	3/1/2016	8/9/2016	2408
Love Lake Female	BC04F04	2/18/2015	8/1/2015	2219
Love Lake Male	CO15M02	2/20/2015	8/1/2015	2159
Ivy Female	CO15F01	2/13/2015	7/13/2015	2021
Ivy Male	CO15M01	2/17/2015	8/1/2015	2313
Conejos Peak Male	CO17AM02	2/23/2017		
Conejos Peak Female	CO17AF01	4/11/2017		
Wager Gulch Male	CO17AM01	1/28/2017		

Table 3. Number of used and random locations for each lynx sampled in the field during 2015 and 2016. Total sample currently is 413 locations.

Lynx	Summer (Used/Random)	Winter (Used/Random)
F01	25/22	24/22
F03	11/17	18/17
F05	13/15	8/9
F07	5/10	8/5
M02	23/16	24/14
M04	8/14	16/13
M06	NA	13/11
M08	NA	19/13

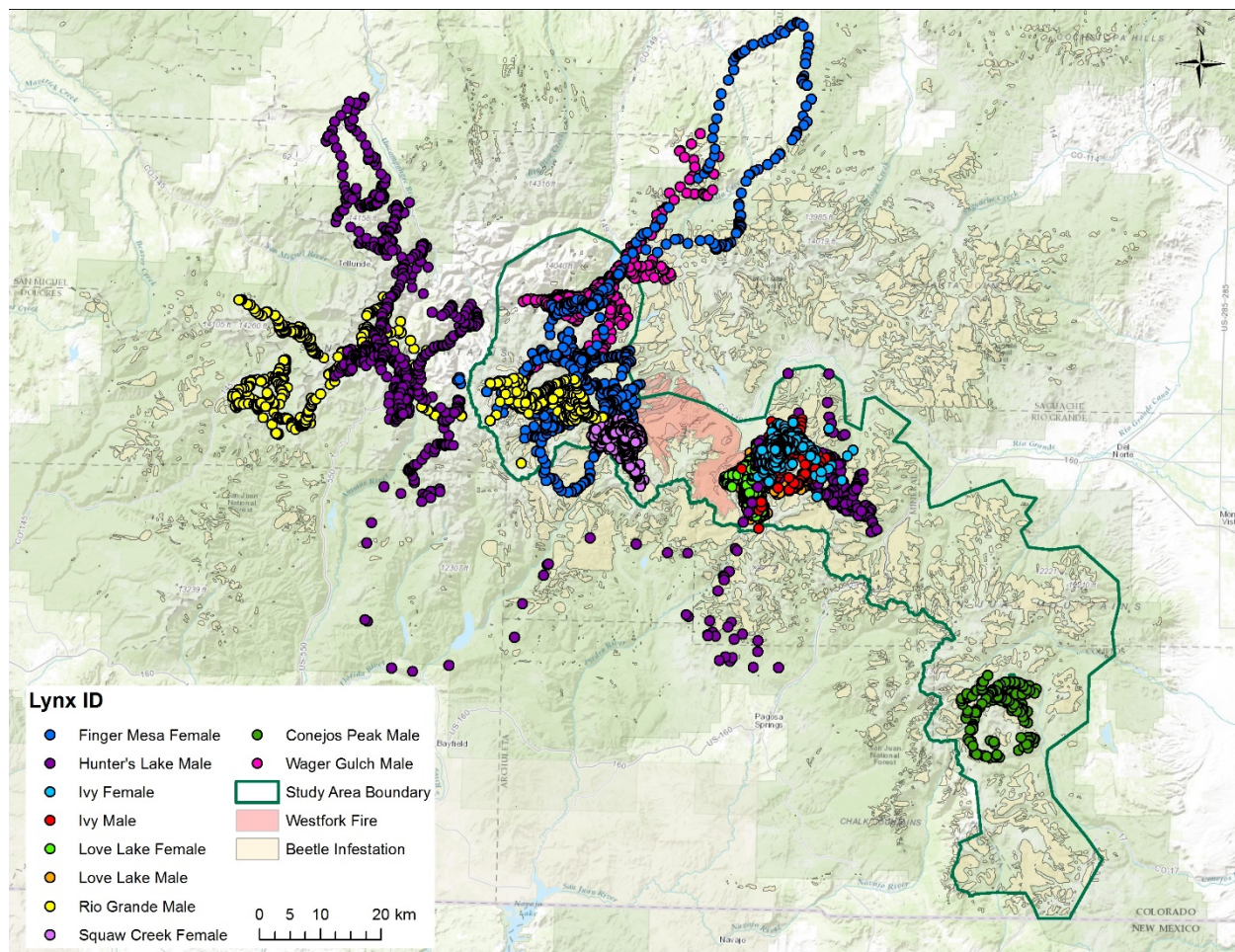


Figure 1. Lynx use of spruce-beetle impacted forests as documented with GPS telemetry for 10 different individuals, 2015-2017.

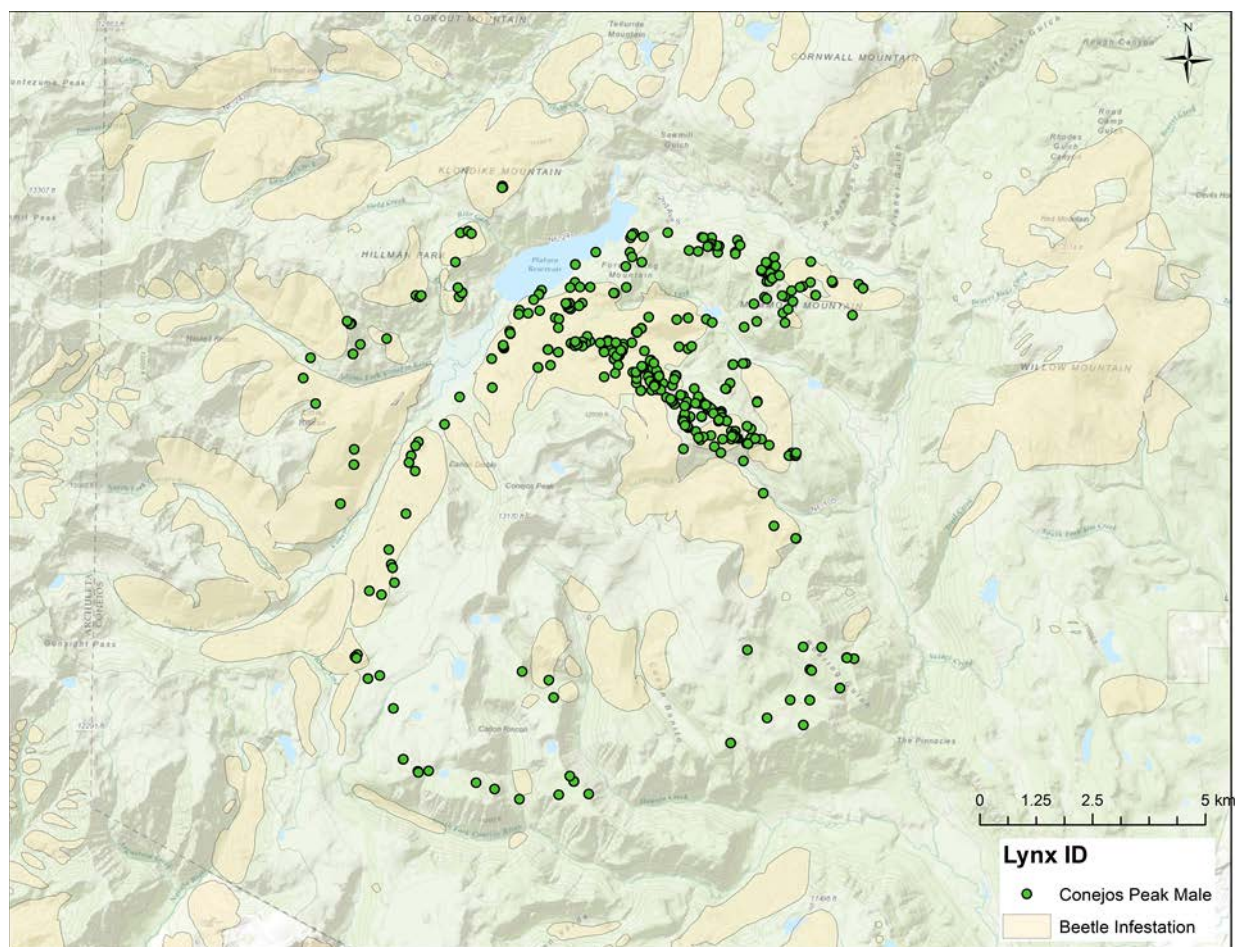


Figure 2. Conejos Peak Male using beetle-killed forests adjacent to Platoro Reservoir.

Forest Mapping

Forest mapping is a central aspect to the study given the need for accurate spatial layers of spruce-beetle kill for lynx resource-use modeling. A detailed account of mapping results are provide in the attached report by Savage et al. (2016) entitled “Lynx Habitat Use in Post-Beetle, Post-Fire Landscapes in the Rio Grande National Forest in southwestern Colorado.” To identify forest types in southwestern Colorado that are favored by Canada lynx (*Lynx canadensis*), we (1) successfully utilized current Landsat satellite imagery and zero-inflated classification models to map forest types within a 303,587 ha study area covering portions of the Divide and Conejos Peak ranger districts of the Rio Grande National Forest and (2) successfully mapped sub-canopy species counts within the same study area. The results demonstrated that our new zero-inflated models are able to map percent canopy cover and sub-canopy counts with fairly high accuracy (pseudo medians ranged from -1.08% to 2.47% and 95% confidence interval widths ranged from 3.27% to 13.11%; RMSEs ranged from 9.51% to 16.98% for percent canopy cover maps; mean differences ranged from -0.88 to 0.12 and 95% confidence interval widths ranged from 1.11 to 6.48; RMSE’s ranged from 2.99 to 16.89 for the sub-canopy count maps). A total of 11

predicted maps were created for the project – all with 30-m pixels: 4 PCC-by-species maps, 1 percent mortality map, 1 percent total sub-canopy cover map, 4 species count maps, and 1 total sub-canopy count map.

Schedule

Date	Activity
October 2014 – March, 2015	Trap and fit lynx with GPS collars in known areas of activity in or adjacent to insect impacted forests. In addition, conduct snow-track based surveys for lynx to locate additional activity areas in or adjacent to insect-impacted forests
June – September 2015	Conduct pellet-based surveys for hares in insect-impacted forests. Technicians will also sample vegetation plots used to “train” a map of forest structure and composition from remote sensing of insect-impact zones
October 2015 – March, 2016	Trap and fit lynx with GPS collars in known areas of activity in or adjacent to insect impacted forests. During this period, the SSC at MSU will develop a map (GIS data layer) of forest structure and composition of insect-impacted forests on the RGNF.
July 2016 – September 2016	Sample forest structure and composition at lynx-use and random locations for each collared lynx.
December 2016 – March 2017	Trap and instrument additional lynx in spruce-beetle impacted forests to improve sample size.
June – September 2017	Sample forest structure and composition at lynx-use and random locations for each collared lynx.
October – December 2017	Develop statistical models and spatial use surfaces of lynx and snowshoe hares in spruce-beetle impacted forests.

Research Activities – 2017-2018

We will search for dens in June 2017 to document kitten productivity for any collared females; kittens are marked on-site with a pit tags by Colorado Parks and Wildlife and immediately returned to the den. From June – August 2017, we will sample the structure and composition of forest vegetation present at lynx and random locations within home ranges. These data are needed to build resource selection models for lynx and snowshoe hares using spruce beetle-impacted forests. This information is needed to inform forest management such as tree harvest and timber salvage on the Rio Grande National Forest with direct application and relevance to national forests across western Colorado.

Habitat Use and Selection by Canada Lynx in Beetle-killed Forests within Southern Colorado: A Preliminary Assessment on Forest Structure and Composition

Summary

In this summary, we provide a general overview of preliminary analyses of vegetation data collected at used and available locations within Canada lynx home ranges. We will continue sampling this summer (2017) to augment these preliminary data. Therefore, we stress that these data should be viewed as “preliminary” and some understandings may change when we evaluate the complete dataset in September, 2017. That said, these preliminary understandings represent our best attempt to understand how lynx use beetle-impacted forests at the stand-level. In the final analysis, we will complement these stand-level understandings with landscape-level resource-use evaluations based on remotely-sensed environmental data. Both stand- and landscape-level evaluations are needed to fully understand the intersection of lynx habitat conservation and timber salvage.

For these preliminary analyses, we evaluated habitat use and selection for 8 different lynx (4 males and 4 females) using 413 field plots collected during 2015 and 2016 (Table 3). It is important to note that we expect to nearly double this sample during the 2017 summer field season. We examined differences in mean values of metrics between used GPS locations in home ranges to locations randomly available (both winter and summer) for each lynx. Winter was defined as January-April and summer as May-July. We recorded many different metrics at each plot, but this assessment focused on 1) horizontal cover, 2) pellet density of snowshoe hares, 3) stem density of understory, 4) canopy cover, and 5) tree density of larger-sized trees (i.e., ≥ 3 inches DBH). We used the Forest Vegetation Simulator to calculate stem density metrics. Below we have provided a brief synopsis of what we learned from each metric. We did not provide tables of specific values because, as aforementioned, we will be sampling many more plots over the 2017 field season, which will likely change the values. Instead, we provide many figures to capture our preliminary insights regarding the forest attributes that lynx select disproportionate to their availability.

Horizontal Cover

Horizontal cover was measured in 4 cardinal directions at a distance of 10 m from plot center at used and available locations.

Across both summer and winter nearly all lynx exhibited selection (i.e., use is greater than availability) for horizontal cover (Figure 3). However, this is not a static relationship. The differences between use and availability increases as availability decreases; in other words, selection for horizontal cover becomes stronger as availability of horizontal cover decreases (Figure 4). Finally, lynx tended to use areas with $\geq 50\%$ horizontal cover in the summer and $\geq 40\%$ in the winter.

Snowshoe Hare Pellet Density

Pellet density of snowshoe hares was recorded at 5 subplots (1 m²) evenly spaced along a north-south transect at used and available locations.

Similar to horizontal cover, nearly all lynx exhibited selection (i.e., use is greater than availability) for areas with higher snowshoe hare pellet densities (Figure 5), and selection remained relatively constant across changing availabilities (Figure 6). In the winter, when environmental conditions are most limiting, all lynx demonstrated selection for areas with higher snowshoe hare pellet densities relative to random expectation.

Stem Density of Understory Saplings

We hypothesized that forest understory was critical to lynx. Understory stem density was sampled across a 73 ft x 3.28 ft belt transect in a north-south orientation at used and available locations. All **LIVE** trees that comprised forest understory (i.e., generally between 4 – 10 ft tall) were included in the assessment. We documented subalpine fir (ABLA), bristlecone pine (PIAR), Engelmann spruce (PIEN), blue spruce (PIPU), Douglas fir (PSME), and quaking aspen (POTR) in the understory, however, ABLA, POTR, PIEN, and PIPU captured 98% of the trees we sampled. Thus, we focused on these species.

In summer, all lynx exhibited selection for higher total stem densities in the understory, however, during winter we observed an even split of avoidance (use less than availability) and selection (use greater than availability; Figure 7). We observed substantial individual variation across lynx for species-specific relationships with understory stem densities (Figures 8-11). However, across both summer and winter, nearly all lynx exhibited selection for higher stem densities of ABLA (Figure 8), which suggests that ABLA is an important understory species. This is particularly true when the availability of ABLA understory was low.

Canopy Cover at the Top Layer

We sampled forest canopy cover at the top layer across 25 points arranged in 66 ft x 66 ft grids centered at used and available locations. Similar to the understory aforementioned, we focused on the dominate species: ABLA, PIEN, PIPU, and POTR. We examined live canopy cover for all species, and calculated dead canopy cover for PIEN. We also combined live and dead canopy cover for a total overall examination of canopy cover.

In winter, most lynx exhibited selection for higher live-tree canopy cover, but in summer selection was more variable (Figure 12). When combining live and dead canopy cover, nearly all lynx exhibited selection for higher canopy cover during winter (Figure 13). The most consistent species-specific relationships we observed was selection for **LIVE** ABLA and PIEN canopy cover (Figures 14 and 16), despite the absolute values of canopy cover being low (e.g., ABLA = 1-10%, PIEN = 1-3%). In addition, 6 out of 8 lynx

exhibited selection for **DEAD** PIEN canopy cover during winter (Figure 18). All other relationships were quite variable (see Figures 14-18).

Tree Density of Large (≥ 3 inch DBH) Trees

Tree density was sampled across a 1/10 acre plot at used and available locations. Similar to the understory metrics, we focused on the dominate species: ABLA, PIEN, PIPU, and POTR. We examined tree density of live and dead trees as well as snags. In addition, we evaluated selection for tree density by size class using cut points of 3-4.9 inches (small), 5-8.9 inches (medium), 9-15.9 inches (large), and ≥ 16 inches (very large) DBH; we examined this for both live and dead trees. These size-class breaks were consistent with those used by foresters on the Rio Grande National Forest. Finally, we assessed live tree density by species and dead tree density for PIEN.

Lynx consistently selected forest stands with higher than random densities of **DEAD** trees (Figures 19-21), however, selection for **LIVE** tree density increased as availability of **LIVE** trees decreased (Figure 19). In other words, the selection that lynx exhibited for live trees increased as these trees became rarer in their home ranges. Density of snags was generally avoided by lynx (Figure 21). Lynx most consistently selected higher densities of large **LIVE** trees in the winter relative to small, medium, and very large trees (Figures 23-26). Similarly, tree density of medium, large, and very large **DEAD** trees were the most consistently selected by lynx, particularly as they become rarer on the landscape (Figures 27-30). Finally, lynx exhibited selection for **LIVE** ABLA and **DEAD** PIEN tree densities (Figures 31 and 35), however, when availability was low lynx exhibited selection for high **LIVE** PIEN tree densities as well (Figures 33). All other relationships were quite variable across individual lynx (see Figures 31-35).

Preliminary Take-Home Messages

- 1) Lynx actively selected forest stands with high horizontal cover and high snowshoe hares density.
- 2) Lynx selected forest stands with abundant ABLA in the understory. Total understory was less important largely because the very high density of POTR in home ranges during the winter tended to “swamp” the analysis of conifers. This could be due to heterogeneity of sampling across individual lynx, so the final analyses might indicate a more refined understanding.
- 3) Canopy cover (live + dead) is higher in stands selected by lynx relative to random; generally $>40\%$ in the winter. Live ABLA and PIEN as well as beetle-killed PIEN appear to be important components of lynx resource selection at the stand level.
- 4) Lynx selected forest stands with high tree (i.e., ≥ 3 inches DBH) densities; generally >400 trees/acre; this selection included both live tree density and dead tree density.
- 5) Abundant large live trees, and medium, large, and very large dead trees appear to be important forest components selected by lynx.

- 6) Live ABLA and PIEN tree (i.e., ≥ 3 inches DBH) densities as well as beetle-killed PIEN tree densities appear to be the species-specific components selected for by lynx.
- 7) Collectively, the forest metrics selected by lynx based on these preliminary analyses suggest they depend on stands in beetle-impacted forests that are also valuable for timber salvage. Therefore, an important strategy for facilitating timber salvage and lynx conservation will require careful consideration to the spatial configuration of harvest within designated lynx habitat as will be defined through landscape-level evaluations based on remote sensing. However, we stress that our analyses are preliminary and we will be completing more detailed results in the near future. Additionally, after data collection is complete (i.e., August 2017), we will be working to develop spatial maps highlighting high and low probabilities of use by lynx, which should be highly valuable to inform mitigation strategies and to spatially prioritize salvage.

Figures

Horizontal cover and snowshoe hares

Figure 3. Mean horizontal cover at used and available locations for each lynx by season.

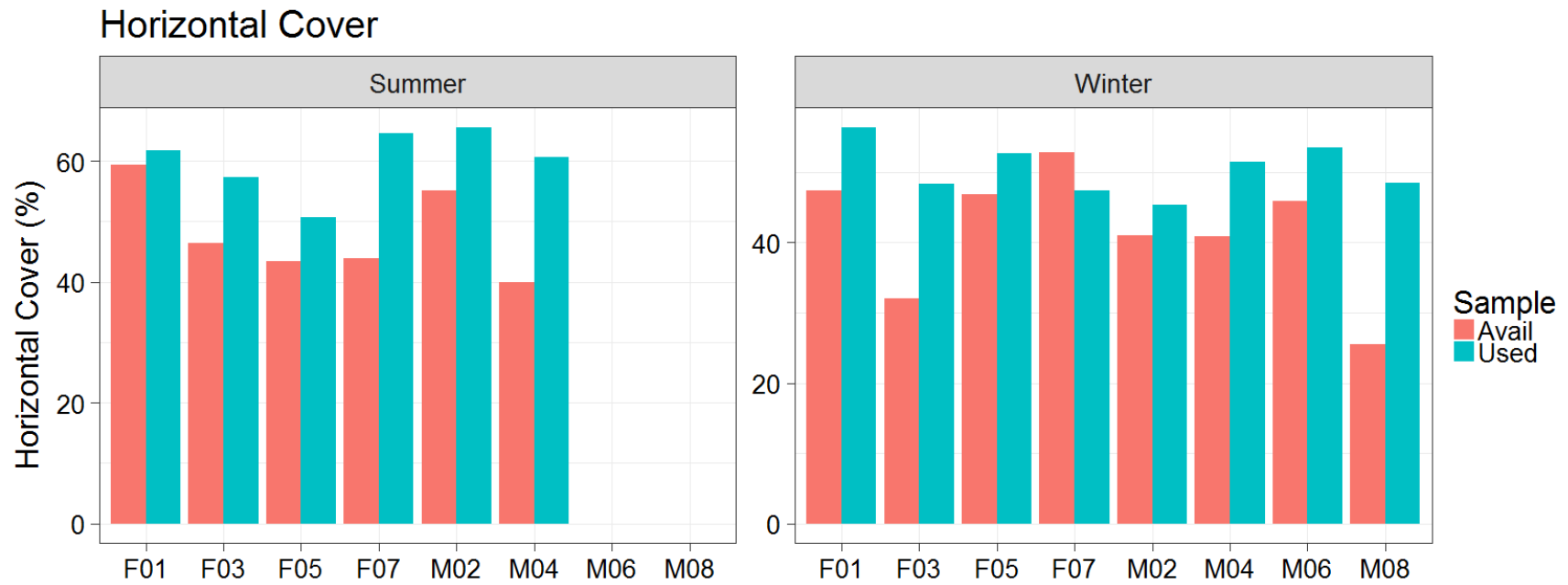


Figure 4. Mean horizontal cover (%) at used and available locations for each individual lynx by summer and winter. Dashed line (i.e., black) indicates *Random Use*, whereas data above the line indicate selection and data below the line indicate avoidance. Black dots represent each lynx.

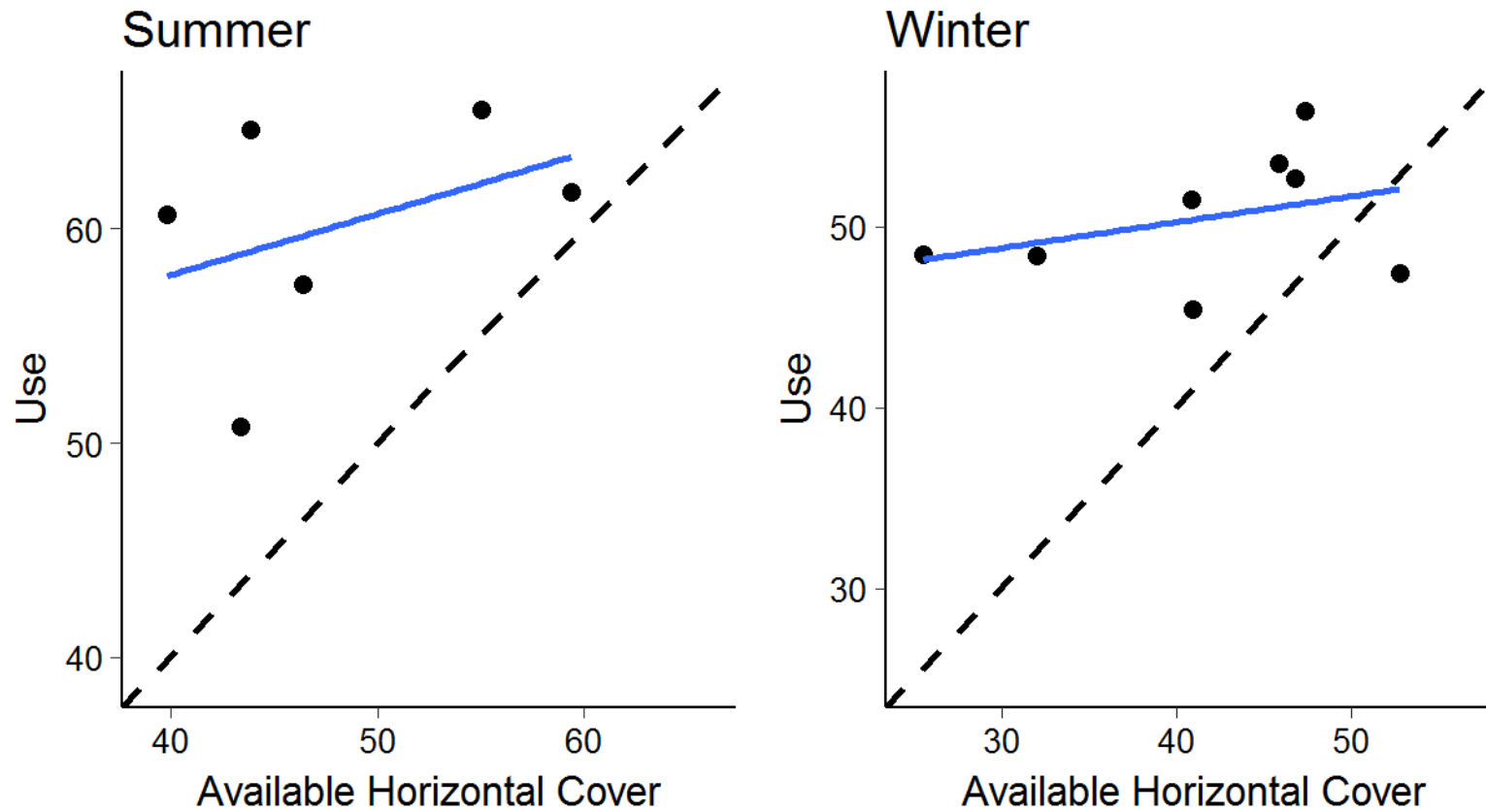


Figure 5. Mean pellet density per 1 m² plot at used and available locations for each lynx by season.

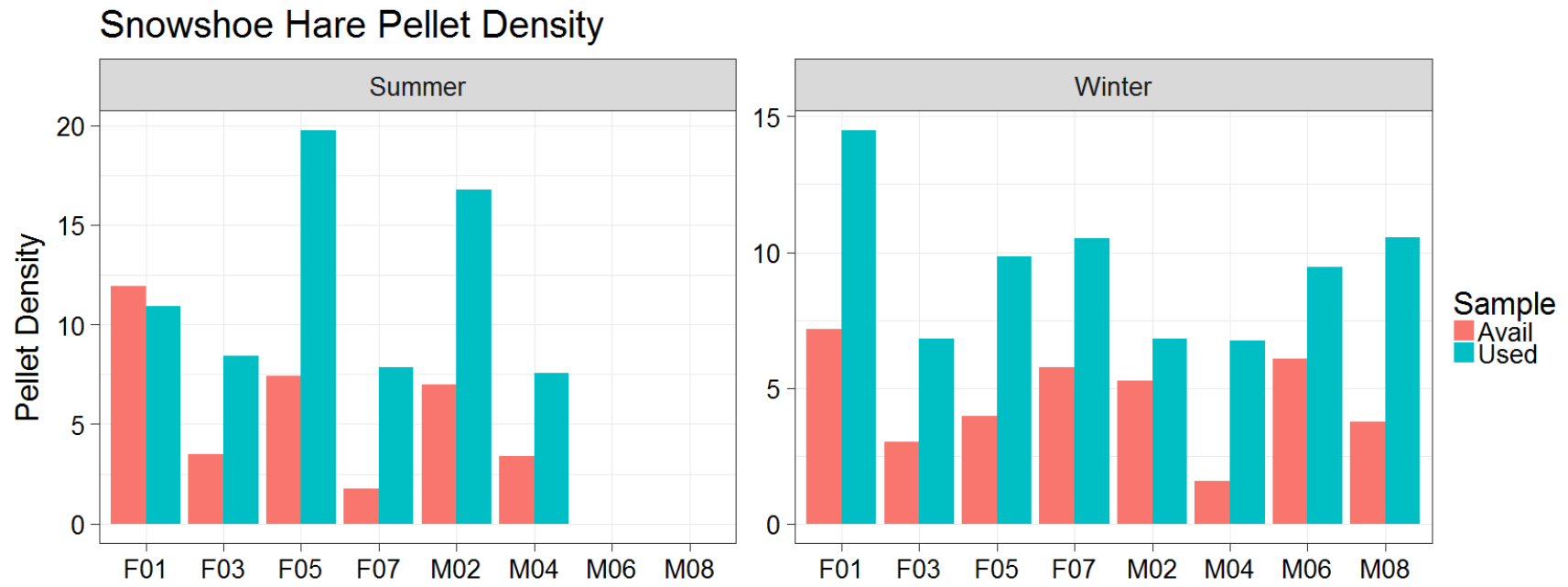
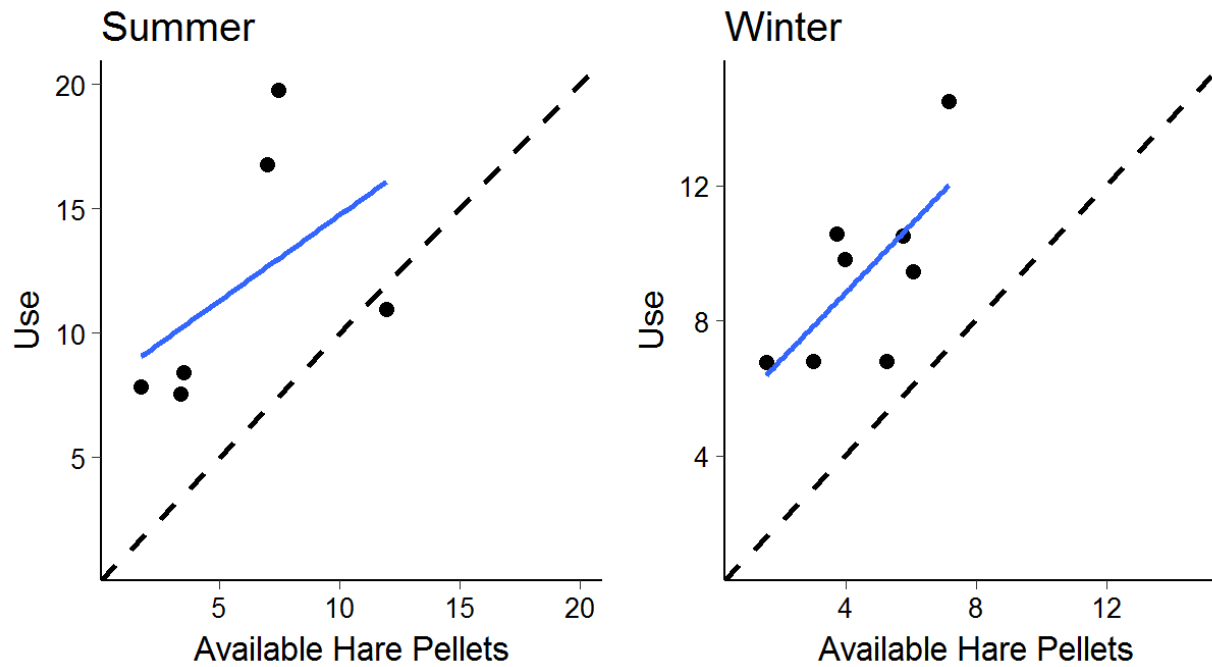


Figure 6. Mean pellet densities per 1 m² plot at used and available locations for each individual lynx by summer and winter. Dashed line (i.e., black) indicates *Random Use*, whereas data above the line indicate selection and data below the line indicate avoidance. Black dots represent each lynx.



Stem density of understory trees

Figure 7. Mean understory stem density (tree/ft²) for all live trees at used and available locations for each lynx by summer and winter.

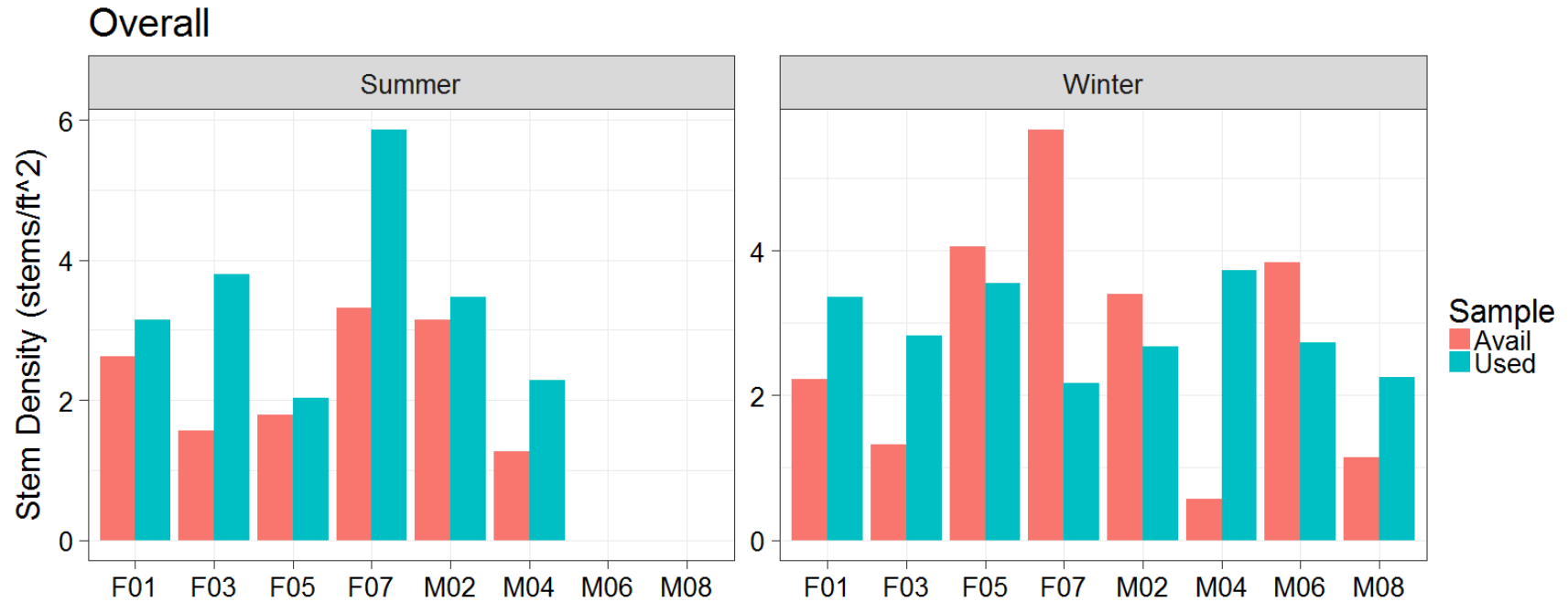


Figure 8. Mean understory stem density (tree/ft²) for live ABLA trees at used and available locations for each lynx by summer and winter.

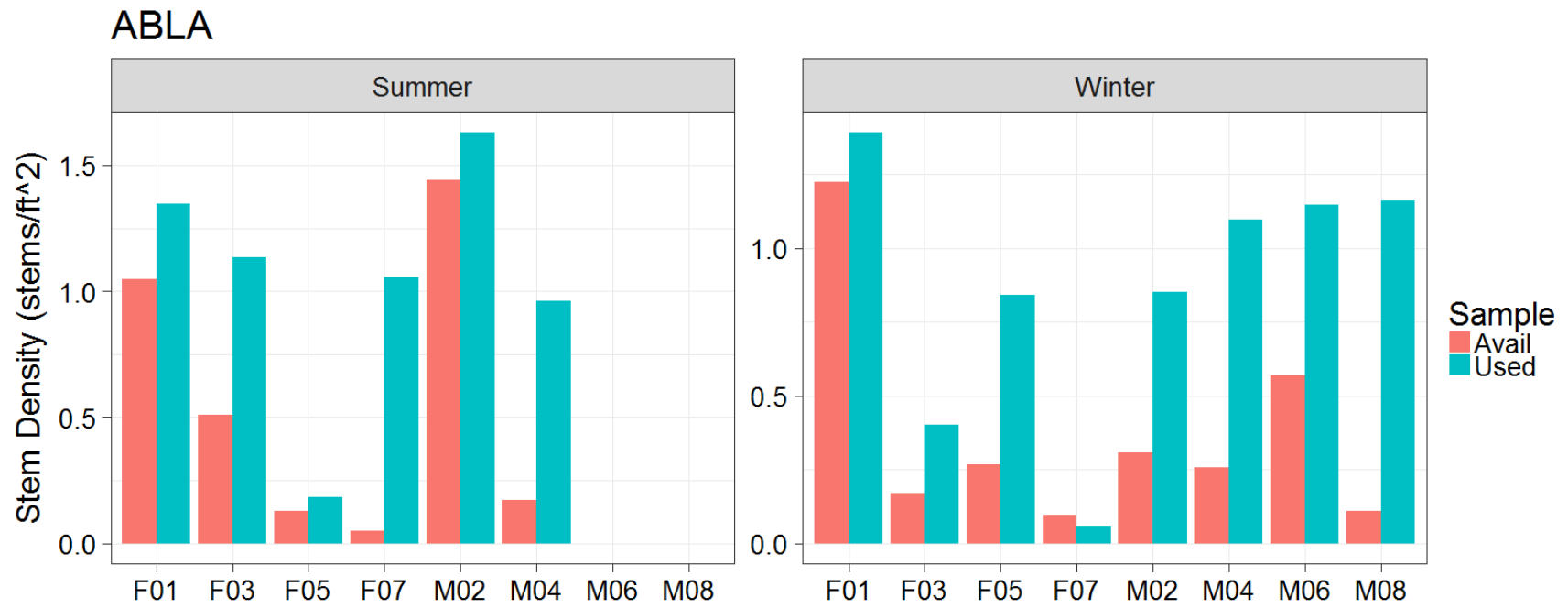


Figure 9. Mean understory stem density (tree/ft²) for live PIPU trees at used and available locations for each lynx by summer and winter.

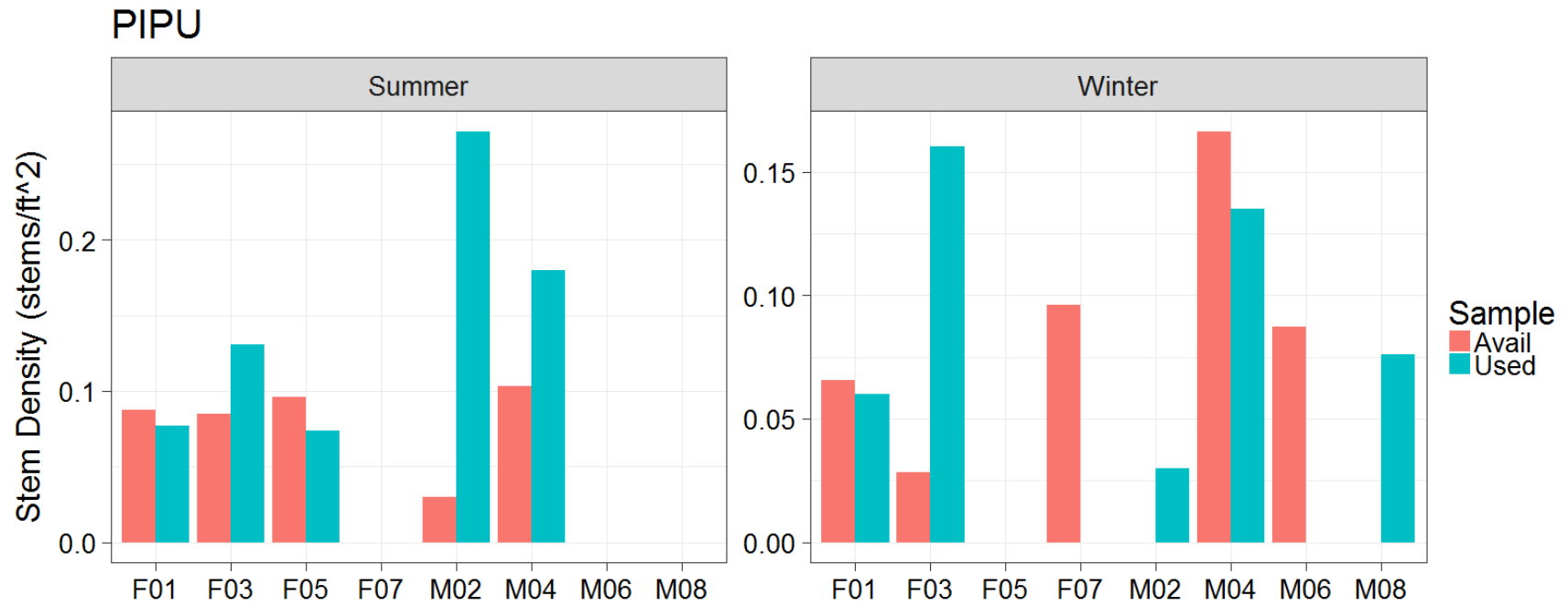


Figure 10. Mean understory stem density (tree/ft²) for live PIEN trees at used and available locations for each lynx by summer and winter.

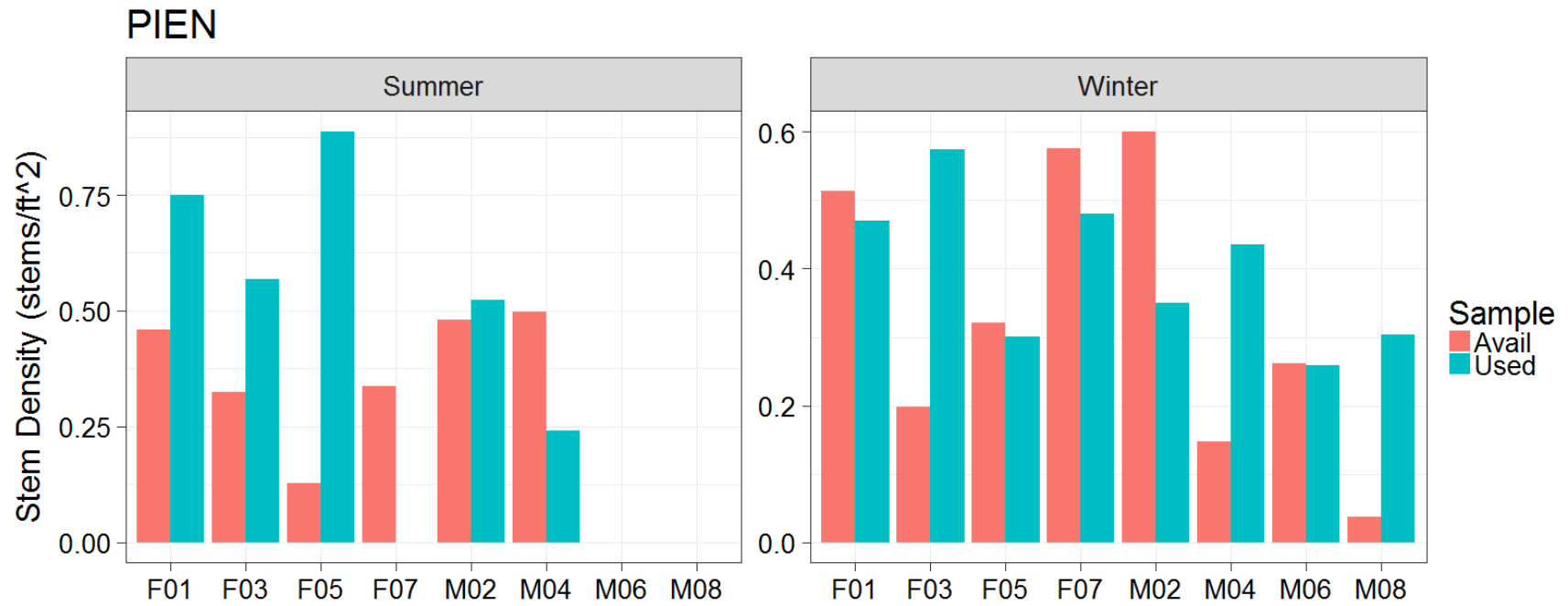
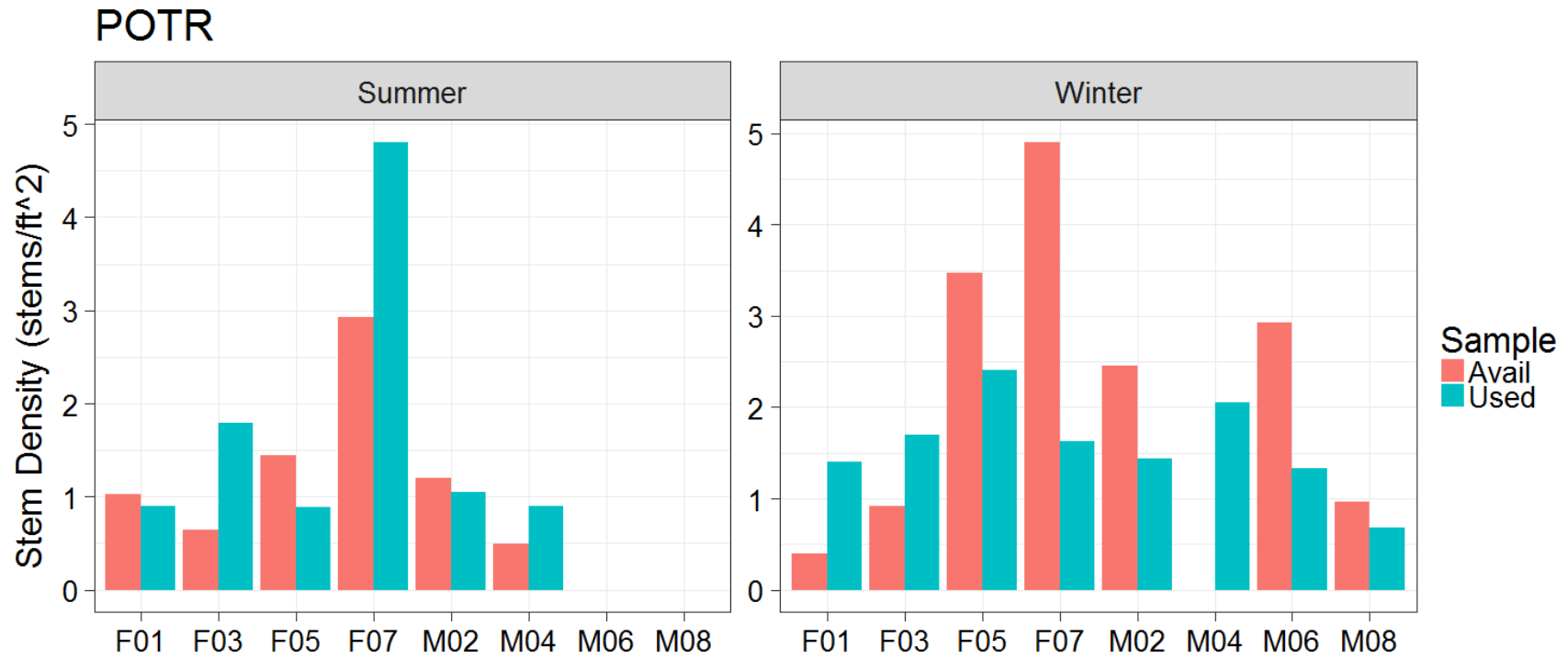


Figure 11. Mean understory stem density (tree/ft²) for live POTR trees at used and available locations for each lynx by summer and winter.



Canopy cover at the top layer

Figure 12. Mean canopy cover at the top layer for live trees at used and available locations for each lynx by summer and winter.

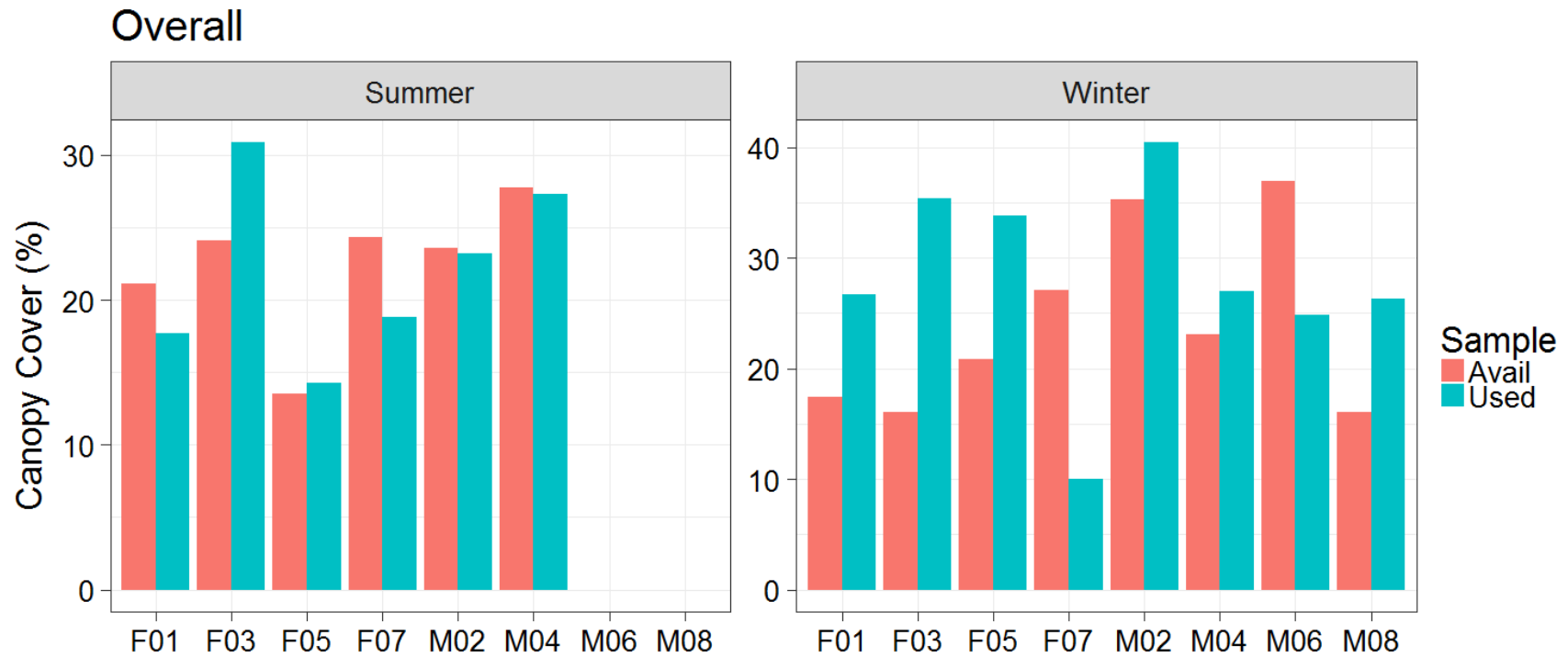


Figure 13. Mean canopy cover at the top layer for both live and dead trees at used and available locations for each lynx by summer and winter.

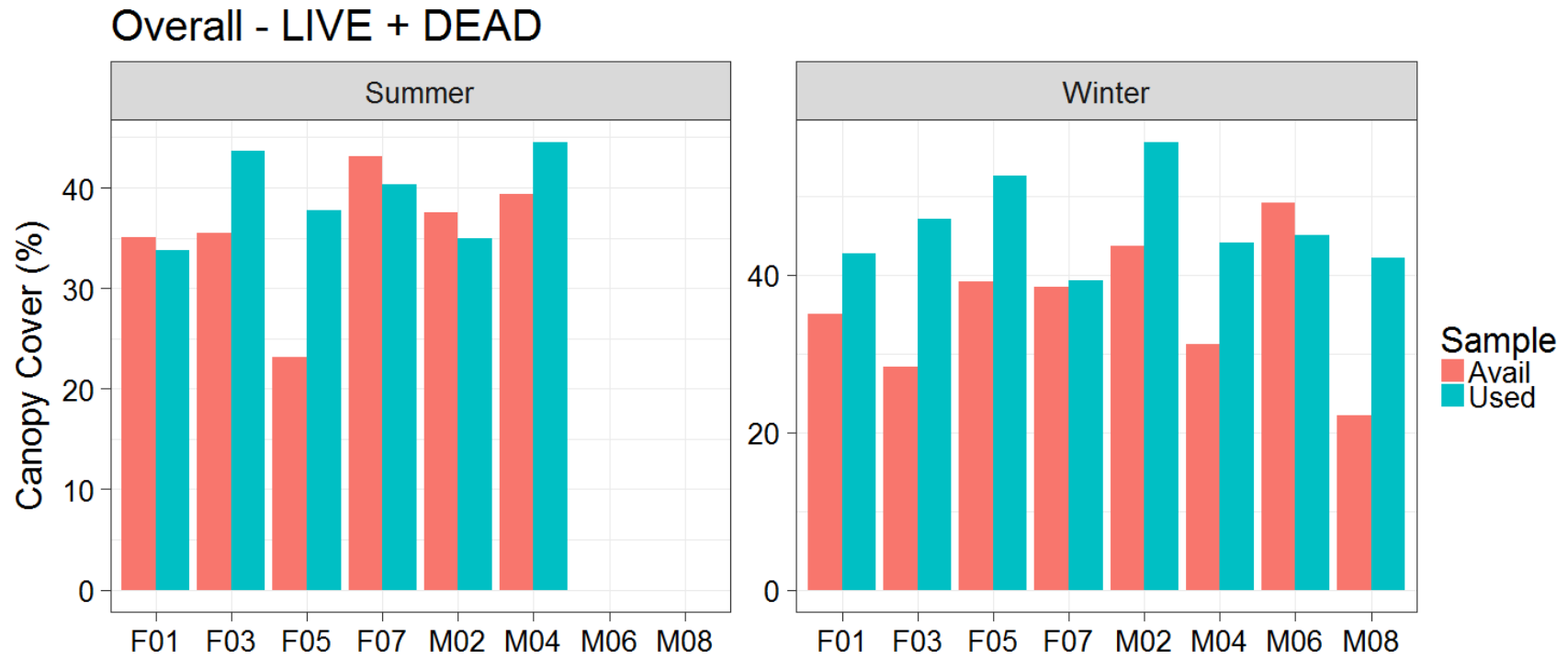


Figure 14. Mean canopy cover at the top layer for live ABLA trees at used and available locations for each lynx by summer and winter.

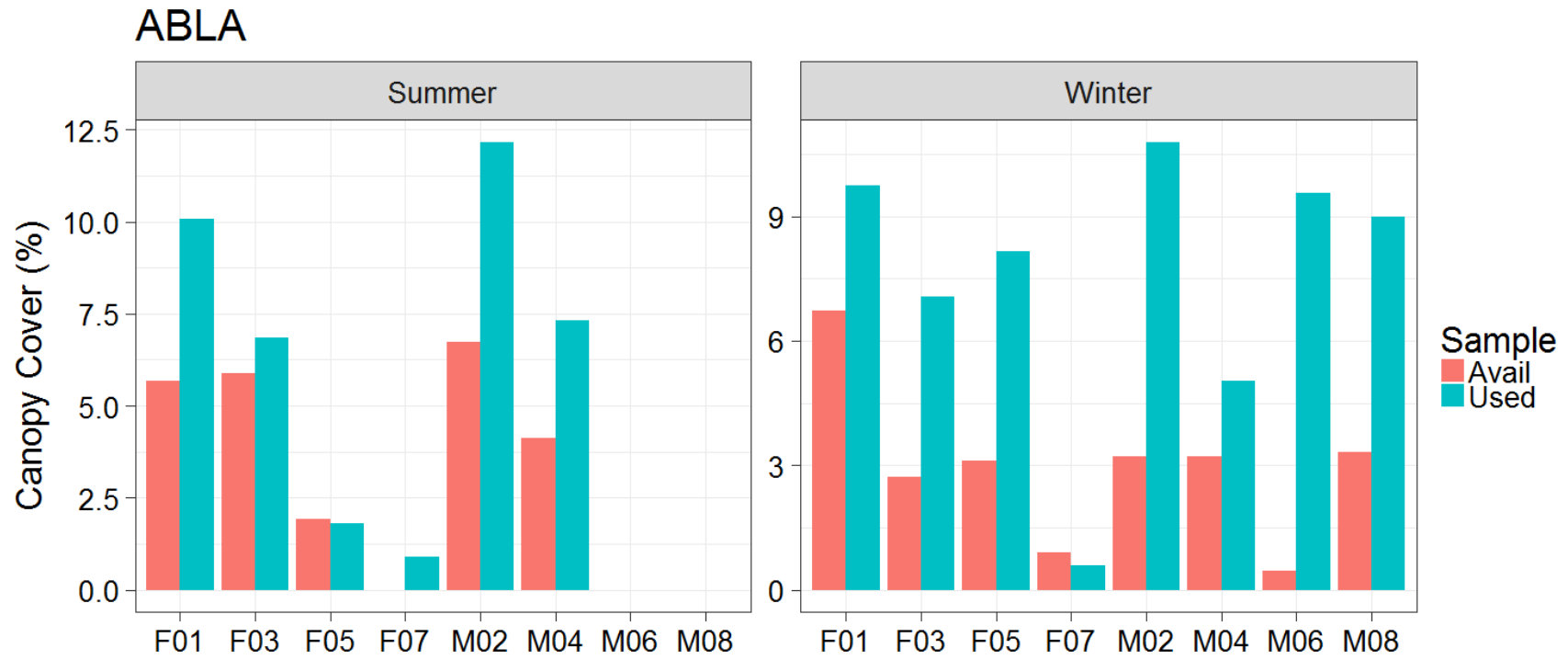


Figure 15. Mean canopy cover at the top layer for live PIPU trees at used and available locations for each lynx by summer and winter.

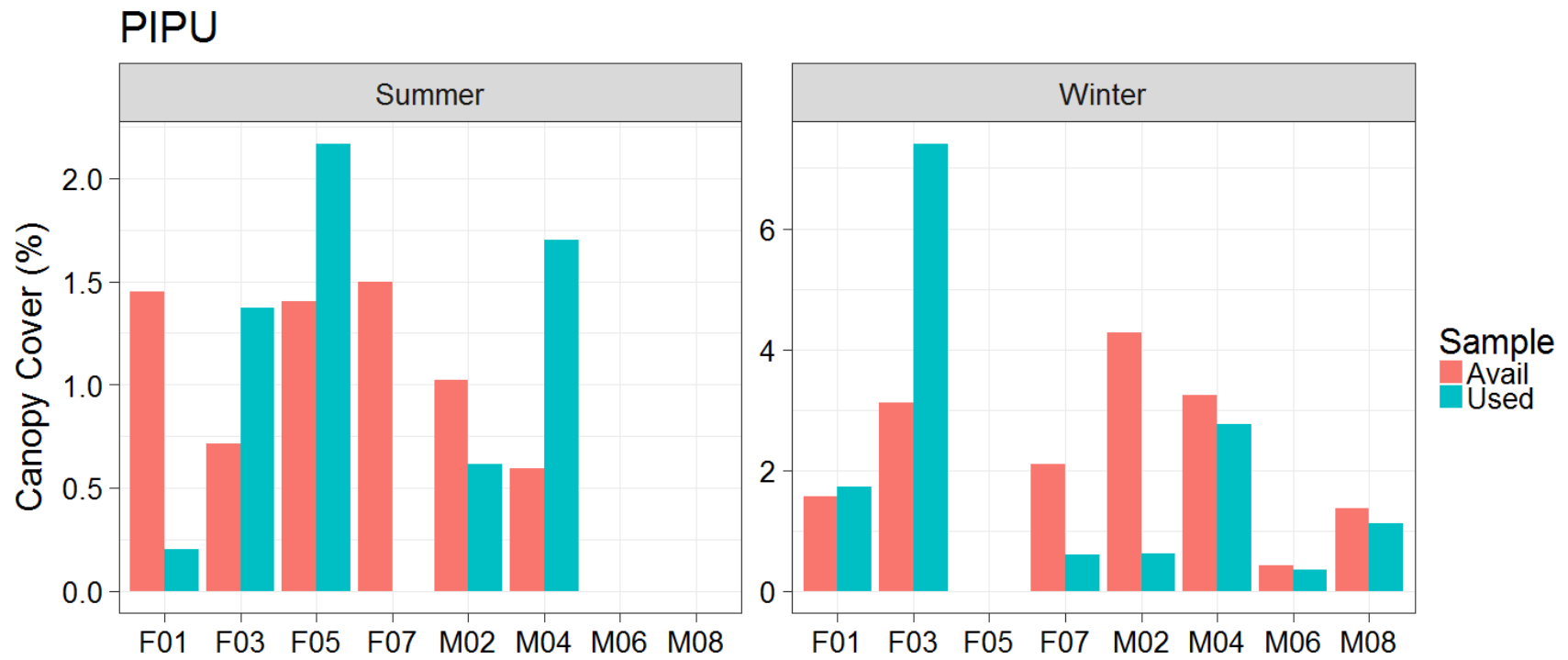


Figure 16. Mean canopy cover at the top layer for live PIEN trees at used and available locations for each lynx by summer and winter.

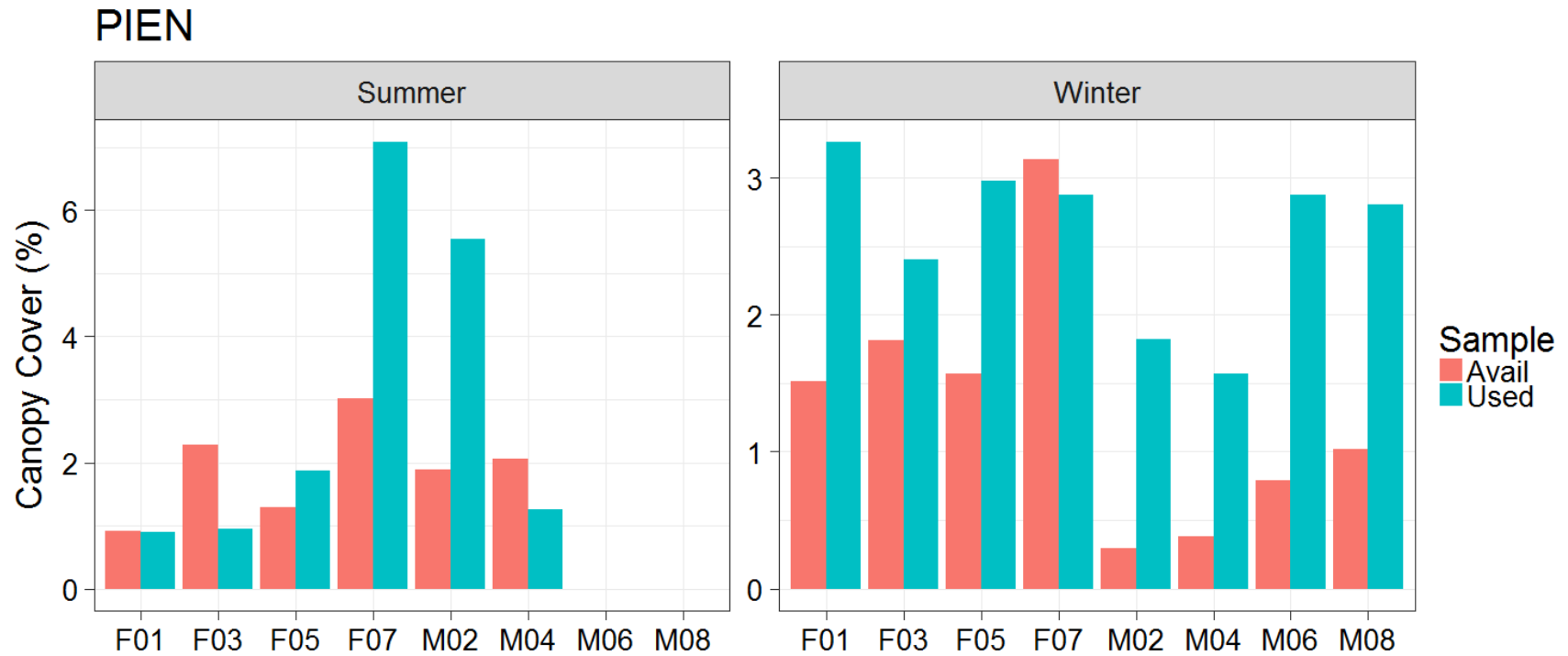


Figure 17. Mean canopy cover at the top layer for live POTR trees at used and available locations for each lynx by summer and winter.

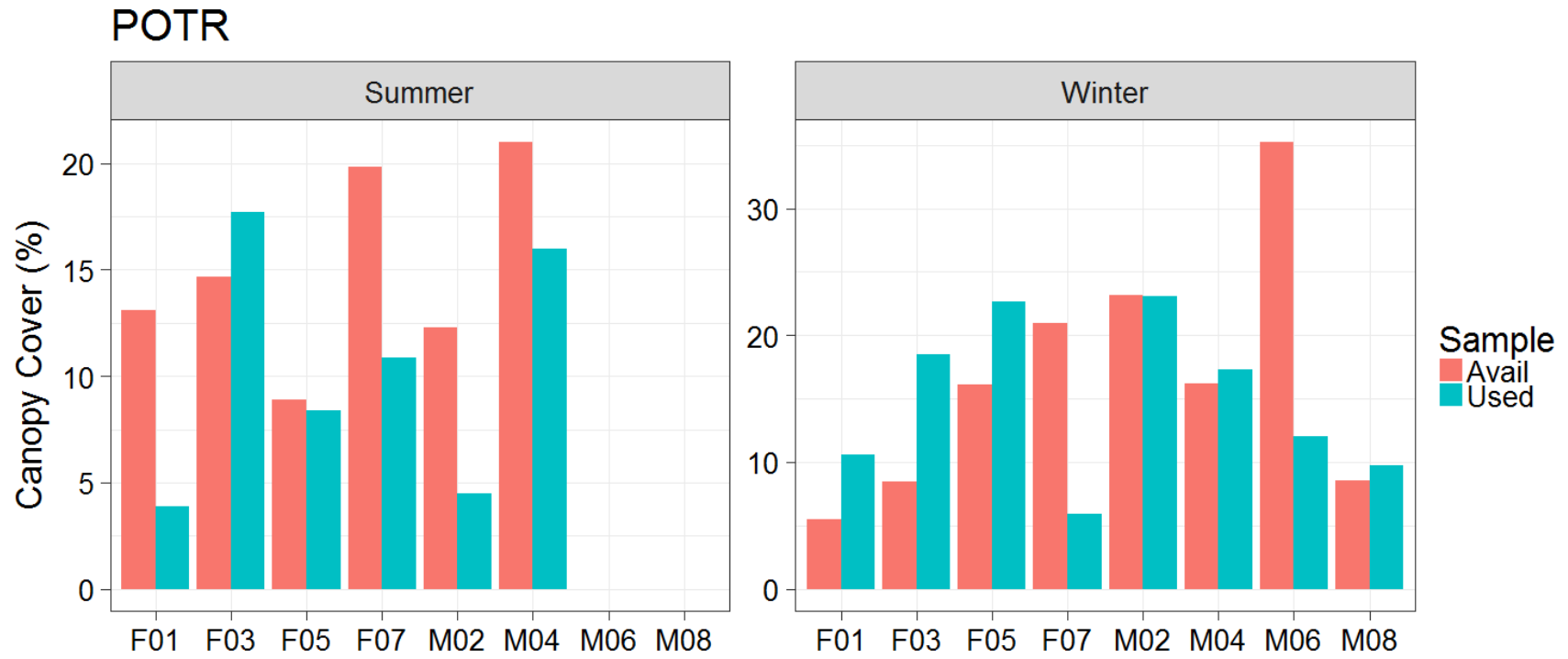
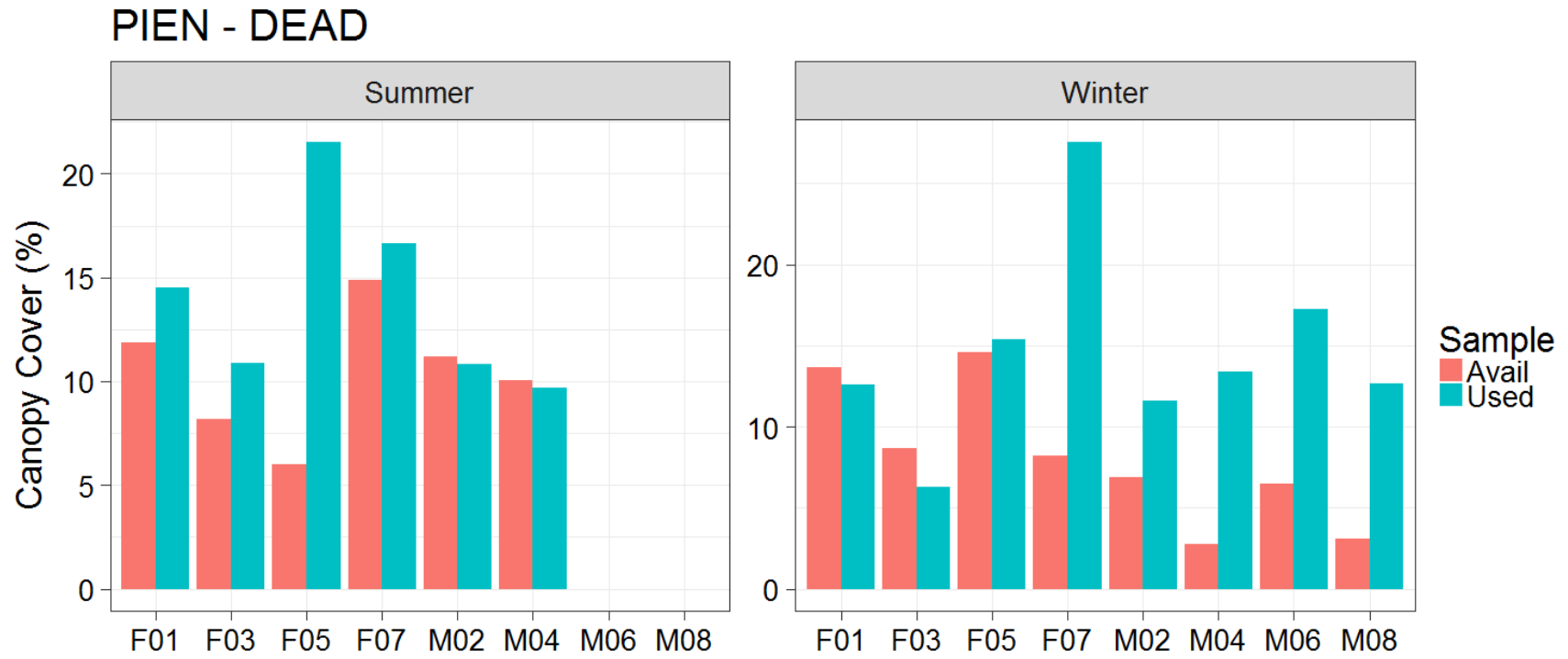


Figure 18. Mean canopy cover at the top layer for dead PIEN trees at used and available locations for each lynx by summer and winter.



Tree Density of Large (≥ 3 inch DBH) Trees

Figure 19. Mean tree density for live trees at used and available locations for each lynx by summer and winter.

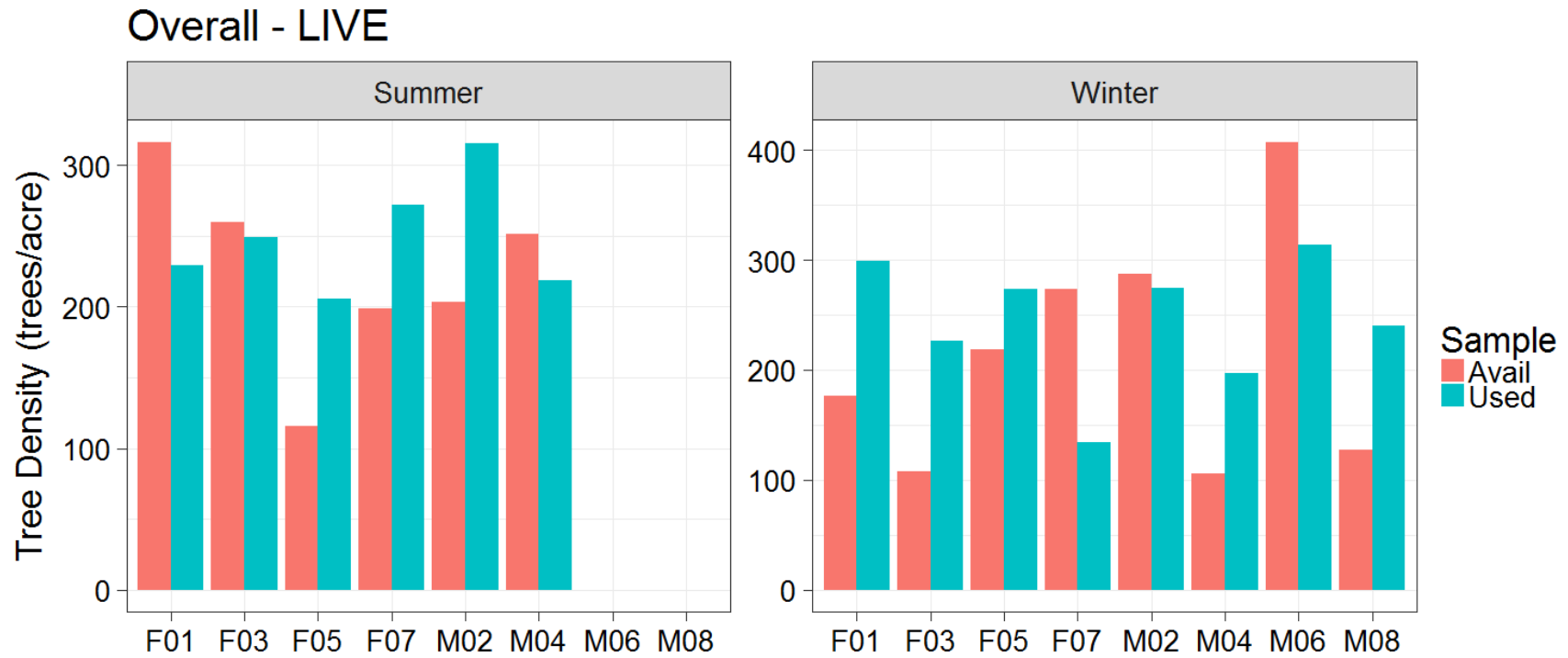


Figure 20. Mean tree density for dead trees at used and available locations for each lynx by summer and winter.

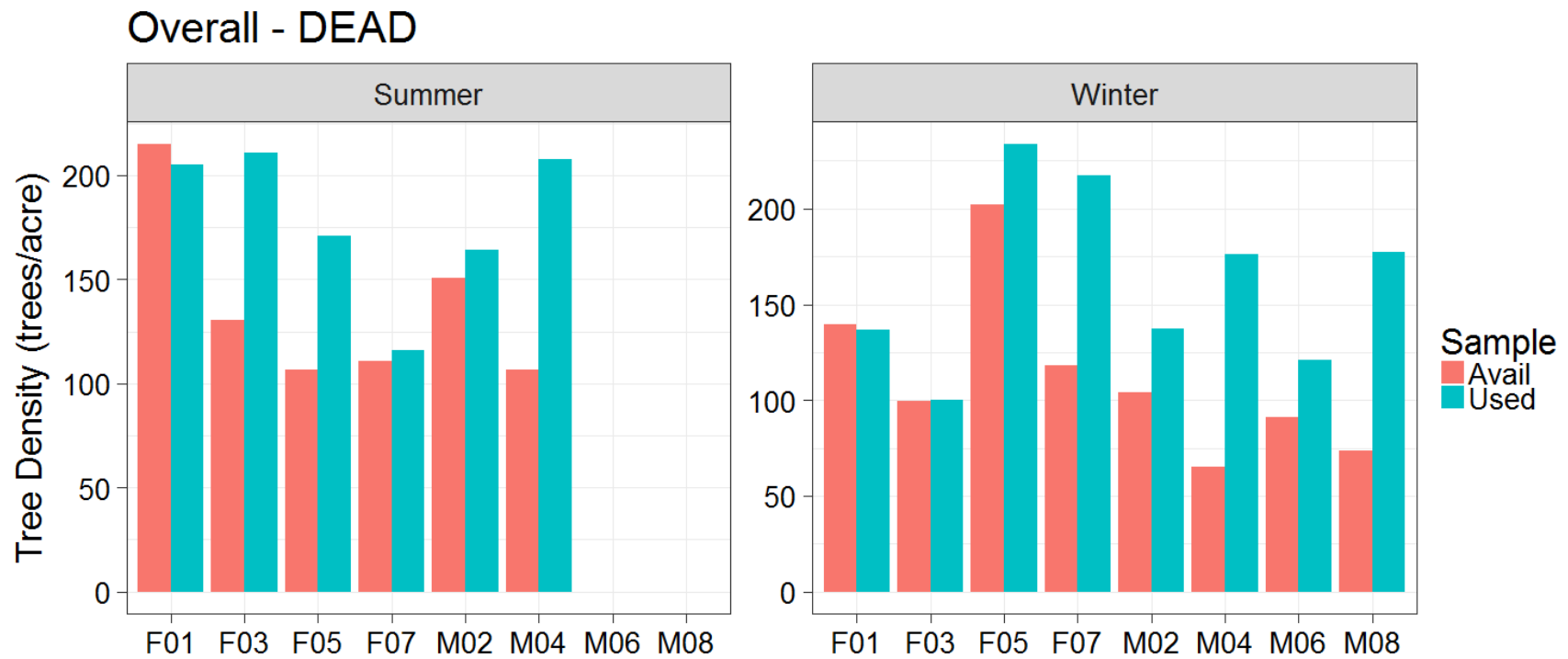


Figure 21. Mean tree density for snags at used and available locations for each lynx by summer and winter.

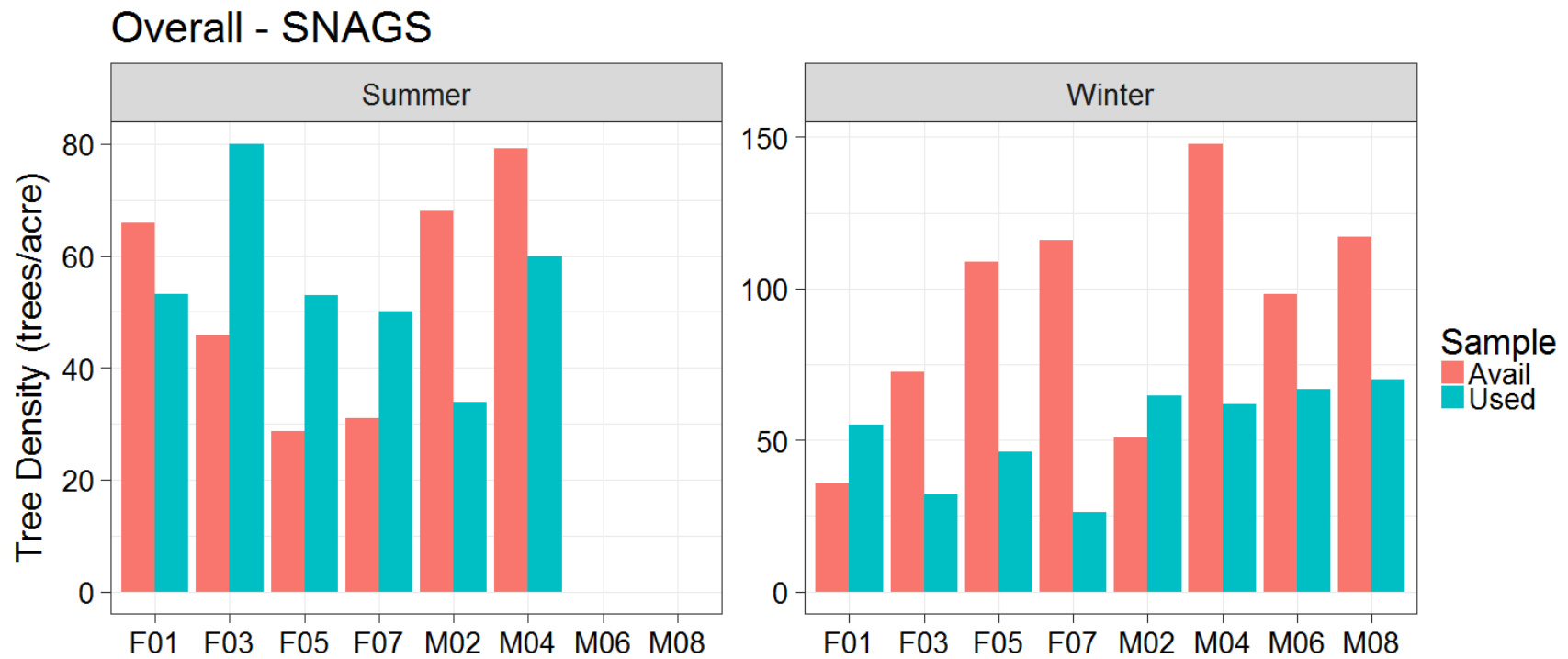
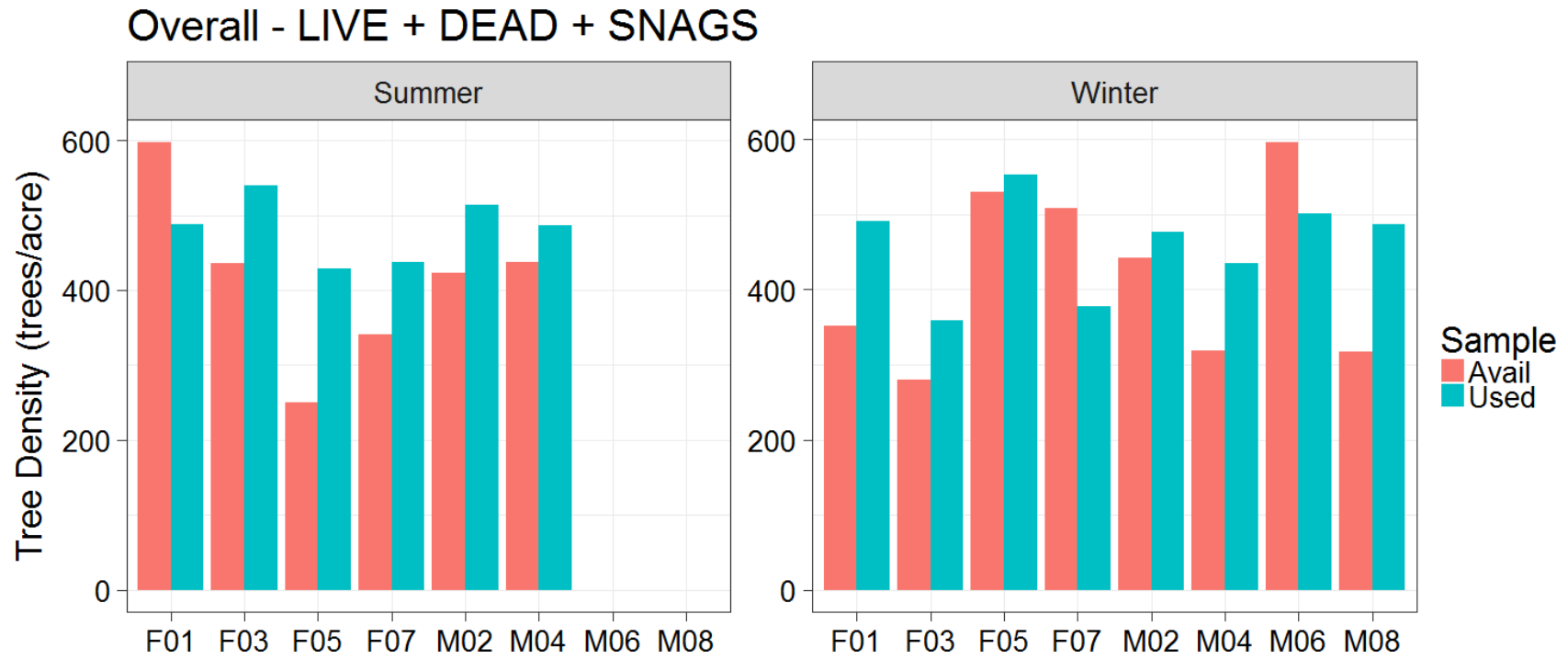


Figure 22. Mean tree density for all trees combined (live + dead + snags) at used and available locations for each lynx by summer and winter.



Live Trees

Figure 23. Mean tree density for live trees 3-5 inches DBH at used and available locations for each lynx by summer and winter.

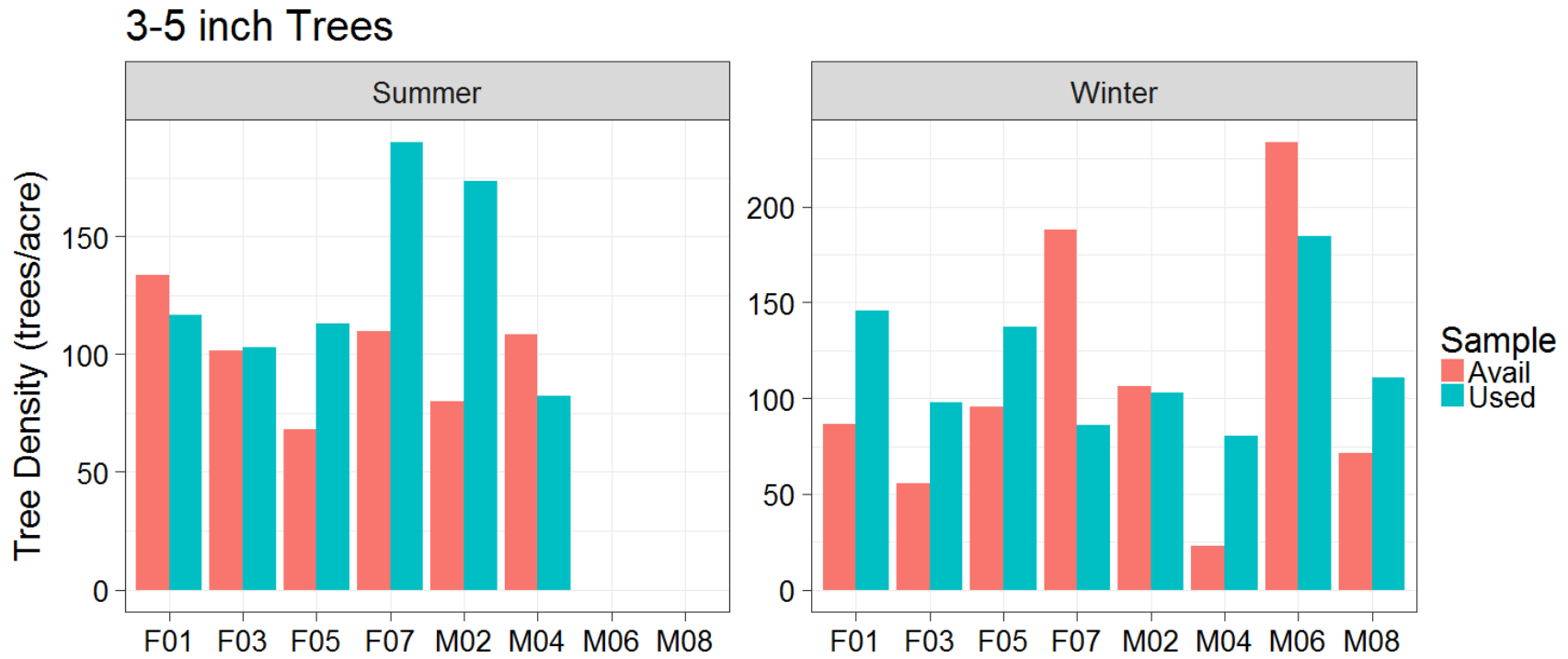


Figure 24. Mean tree density for live trees 5-9 inches DBH at used and available locations for each lynx by summer and winter.

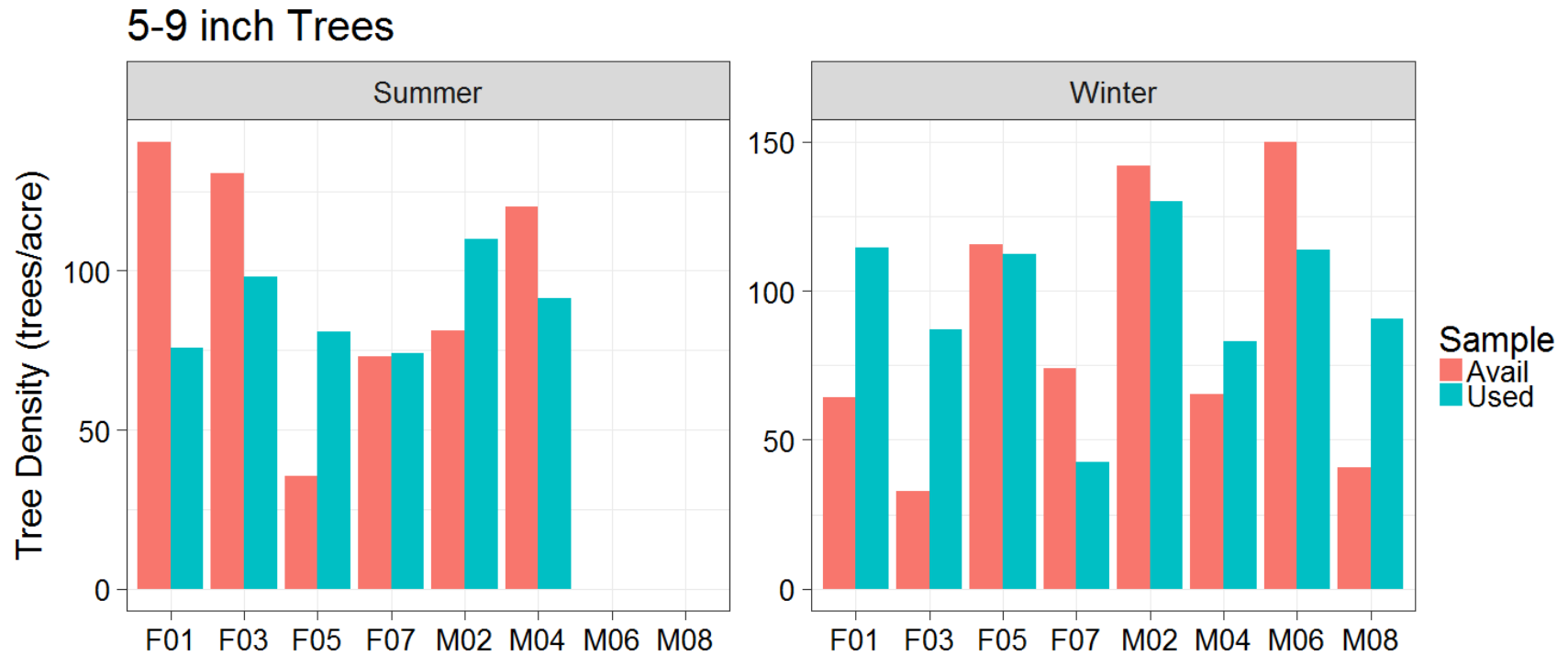


Figure 25. Mean tree density for live trees 9-16 inches DBH at used and available locations for each lynx by summer and winter.

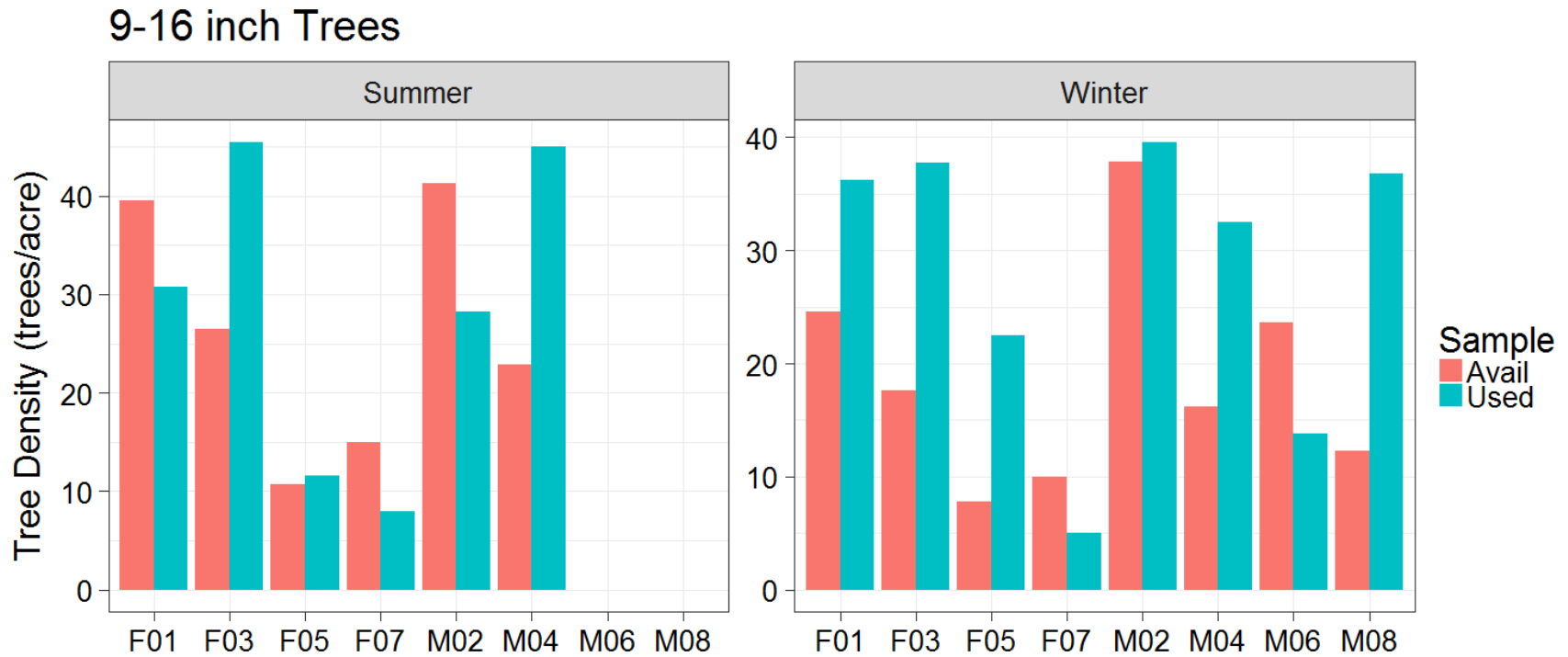
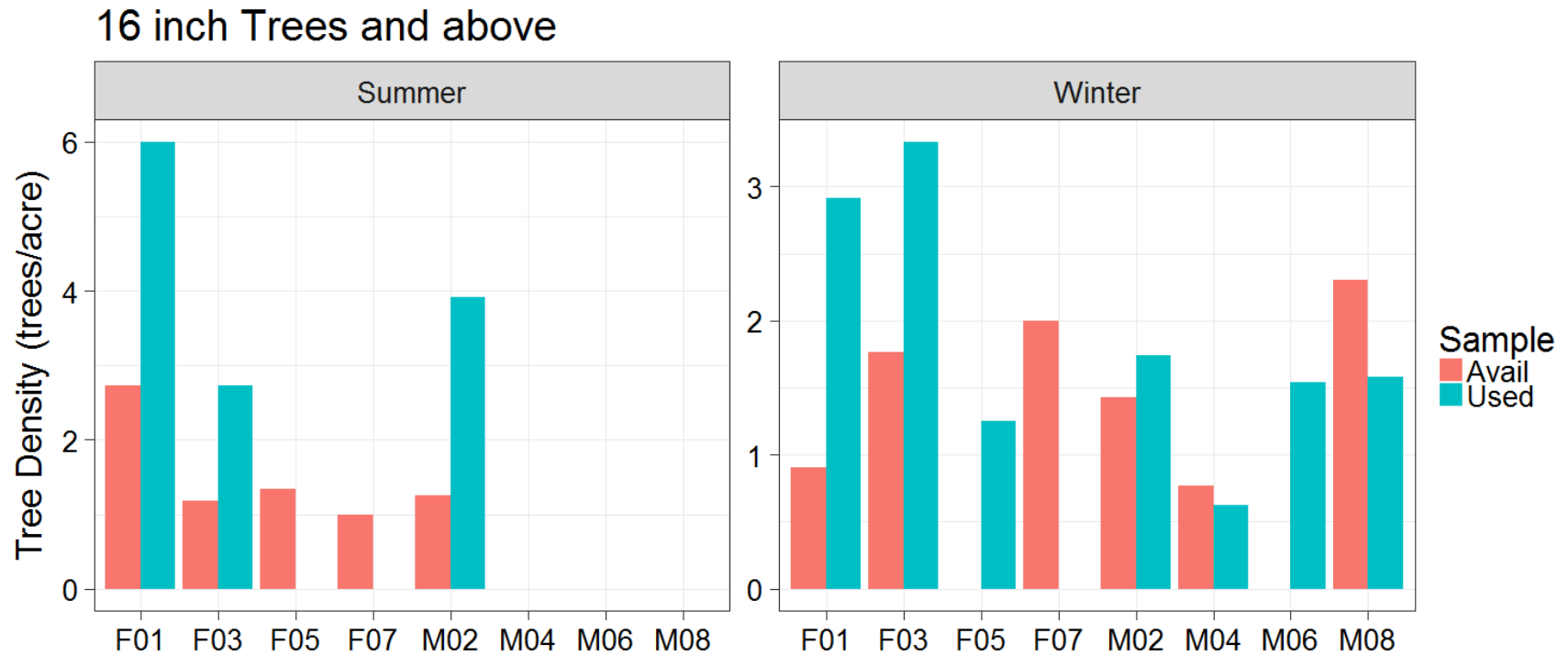


Figure 26. Mean tree density for live trees ≥ 16 inches DBH at used and available locations for each lynx by summer and winter.



Dead Trees

Figure 27. Mean tree density for dead trees 3-5 inches DBH at used and available locations for each lynx by summer and winter.

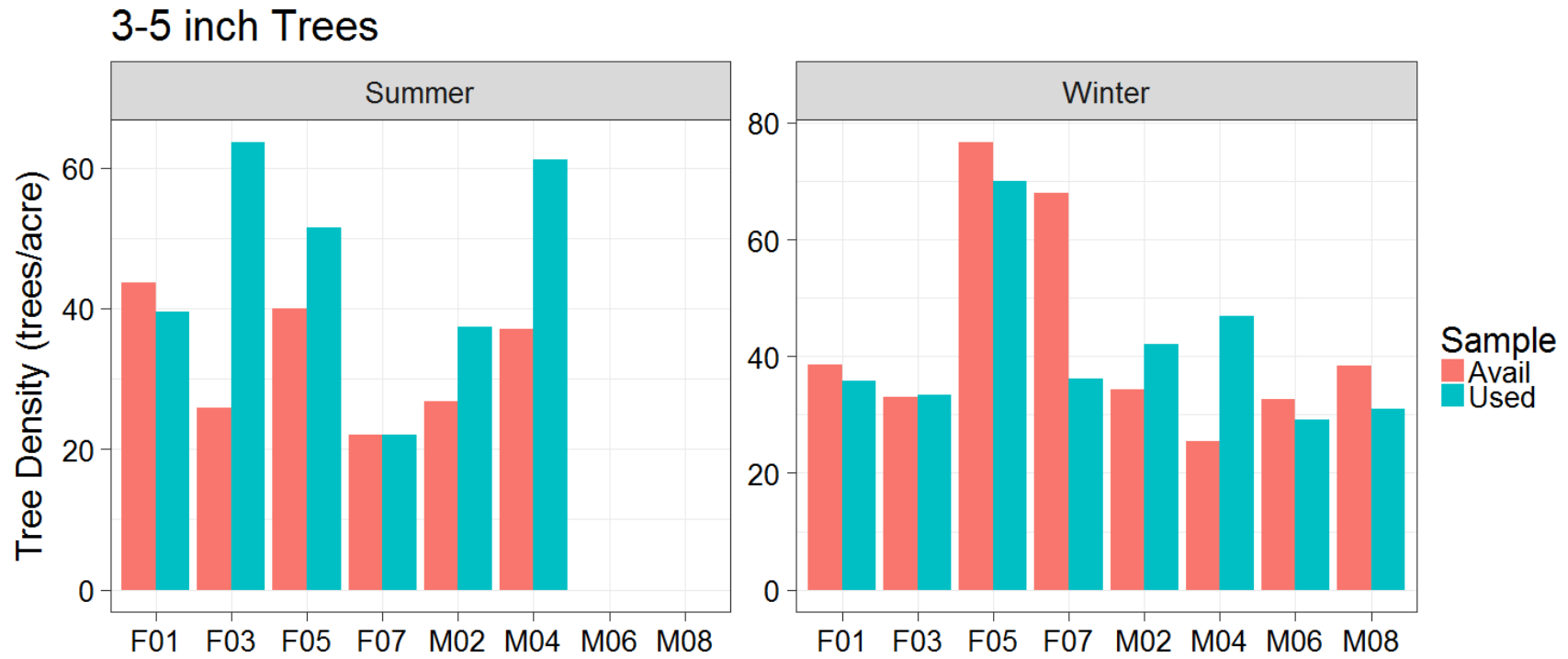


Figure 28. Mean tree density for dead trees 5-9 inches DBH at used and available locations for each lynx by summer and winter.

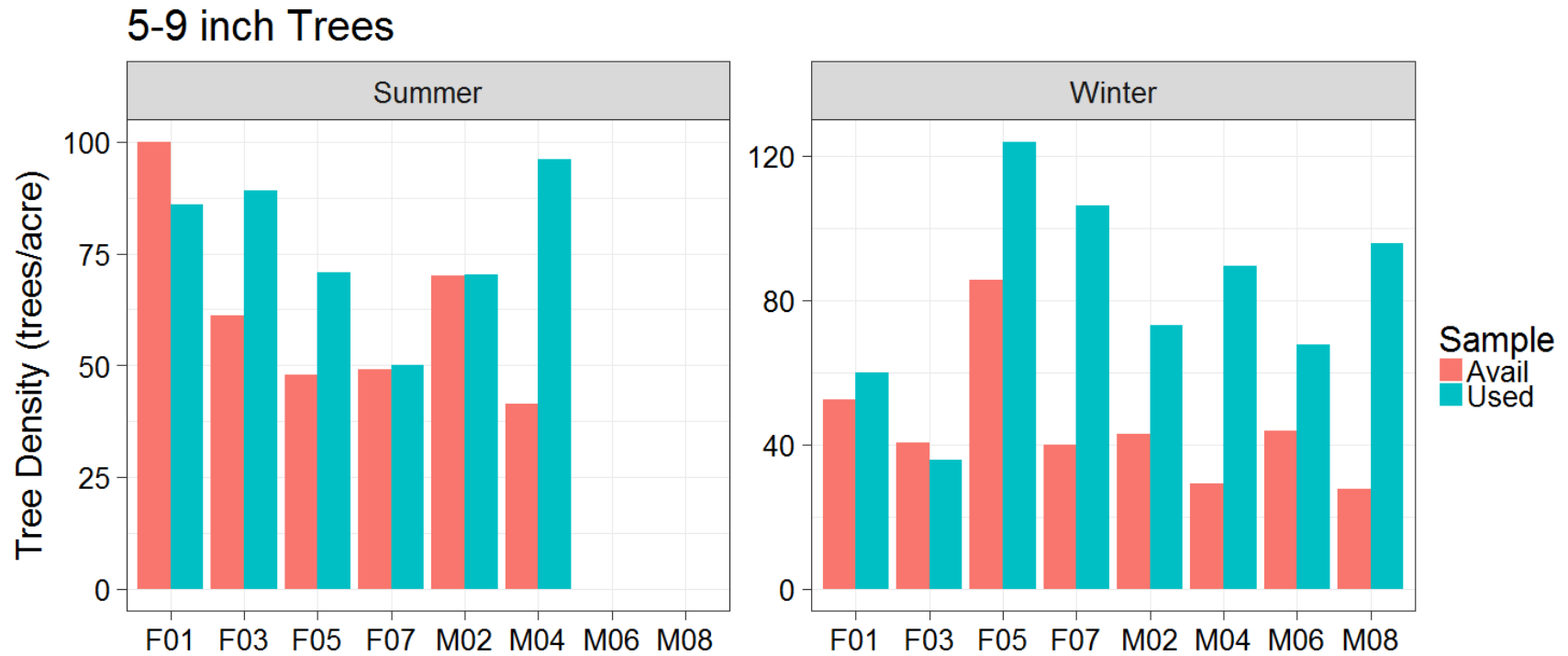


Figure 29. Mean tree density for dead trees 9-16 inches DBH at used and available locations for each lynx by summer and winter.

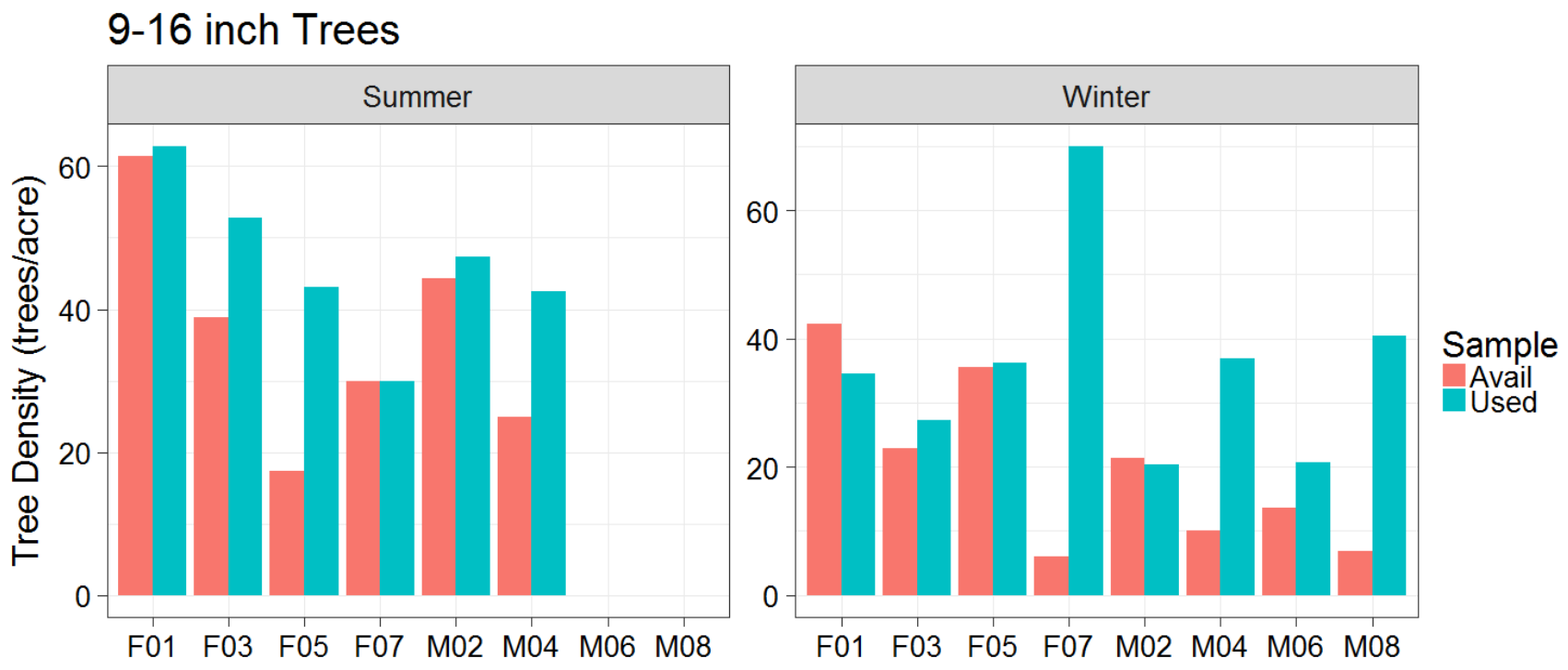
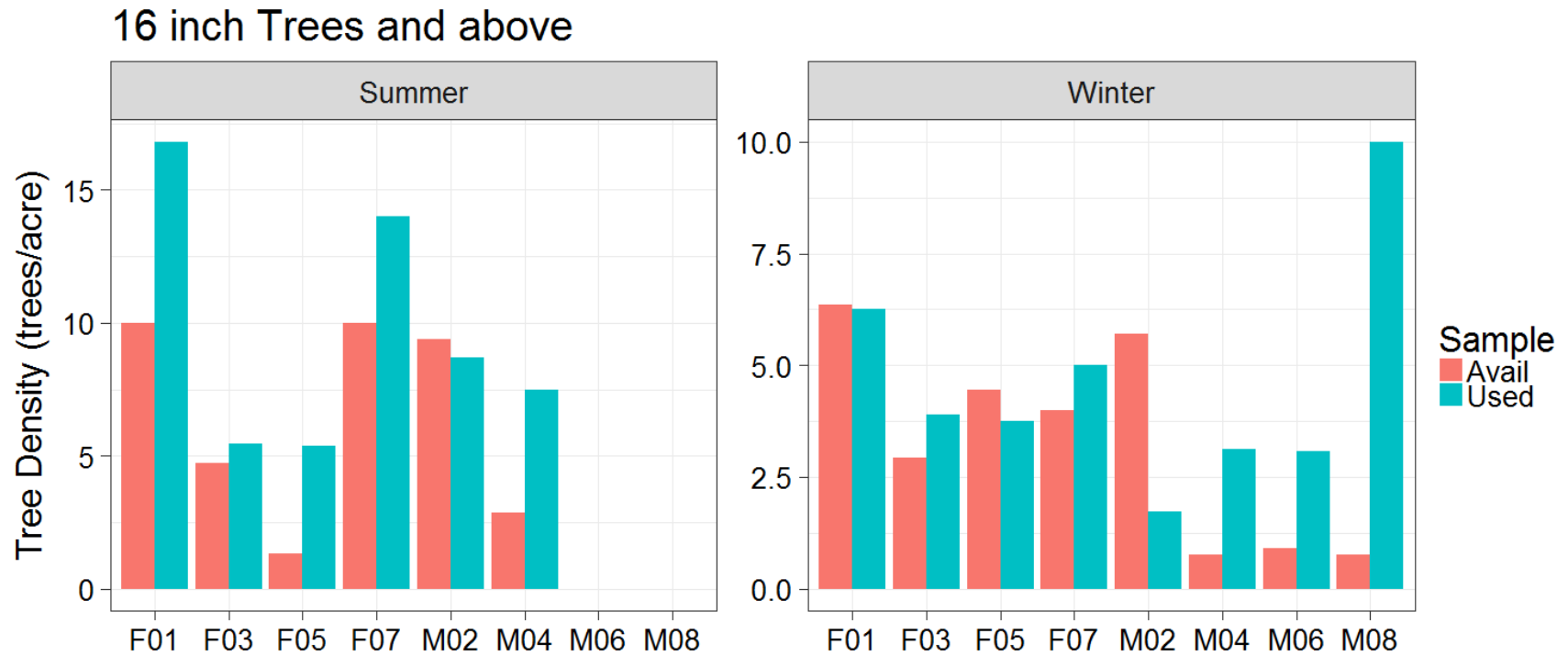


Figure 30. Mean tree density for dead trees ≥ 16 inches DBH at used and available locations for each lynx by summer and winter.



Species Specific Density

Figure 31. Mean tree density for live ABLA at used and available locations for each lynx by summer and winter.

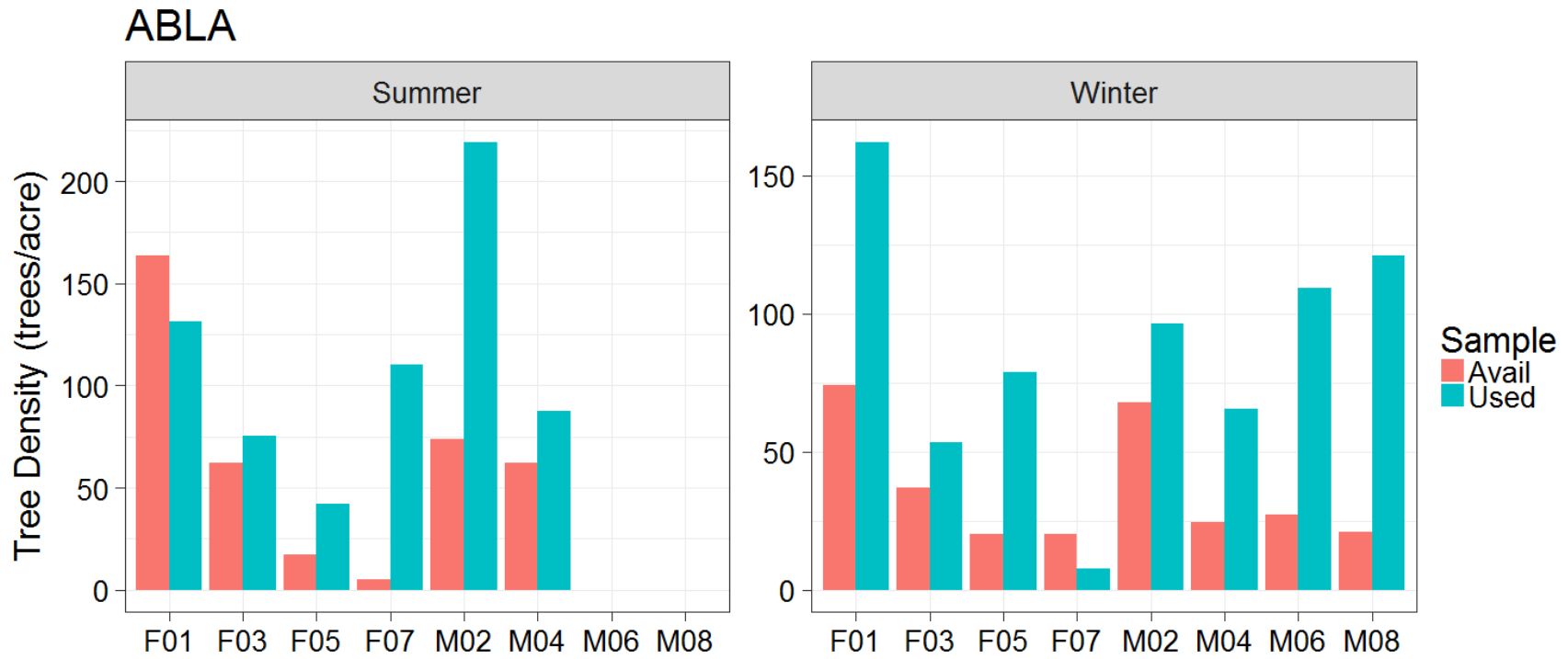


Figure 32. Mean tree density for live PIPU at used and available locations for each lynx by summer and winter.

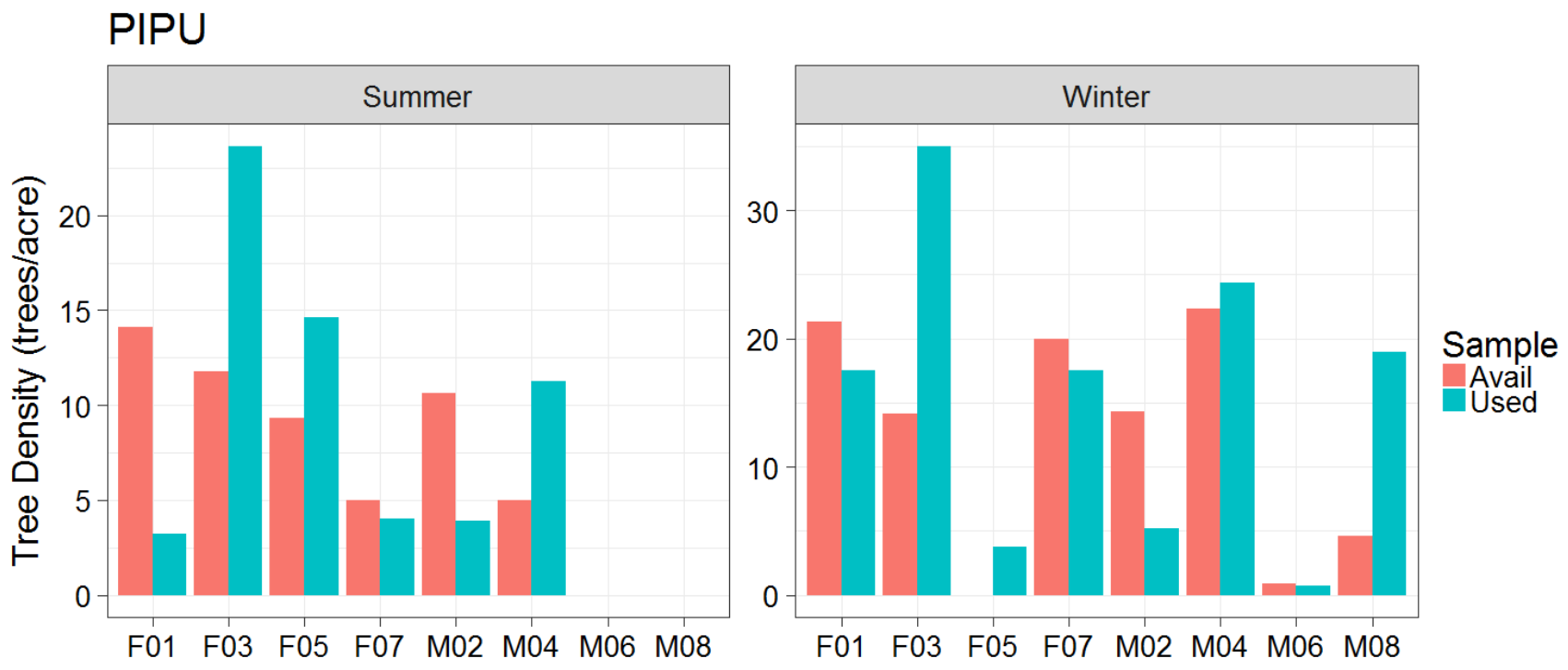


Figure 33. Mean tree density for live PIEN at used and available locations for each lynx by summer and winter.

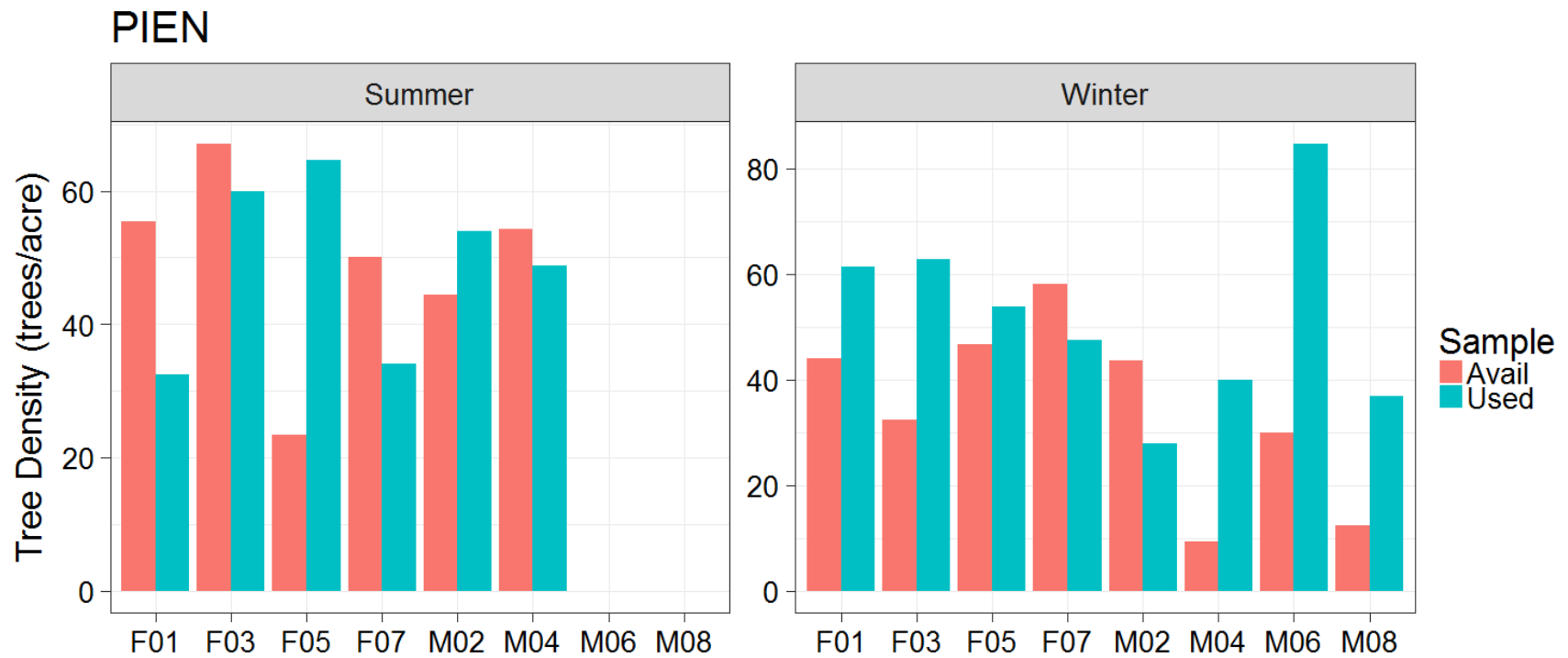


Figure 34. Mean tree density for live POTR at used and available locations for each lynx by summer and winter.

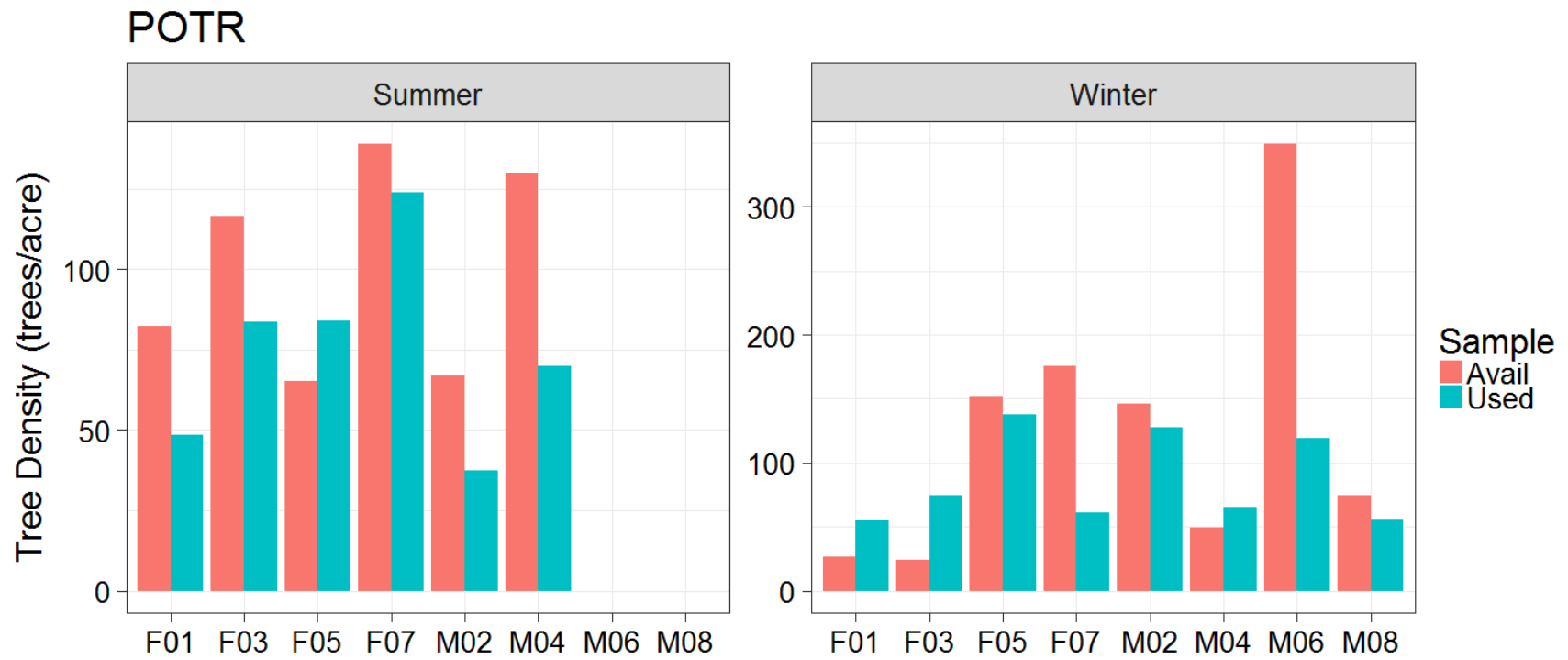
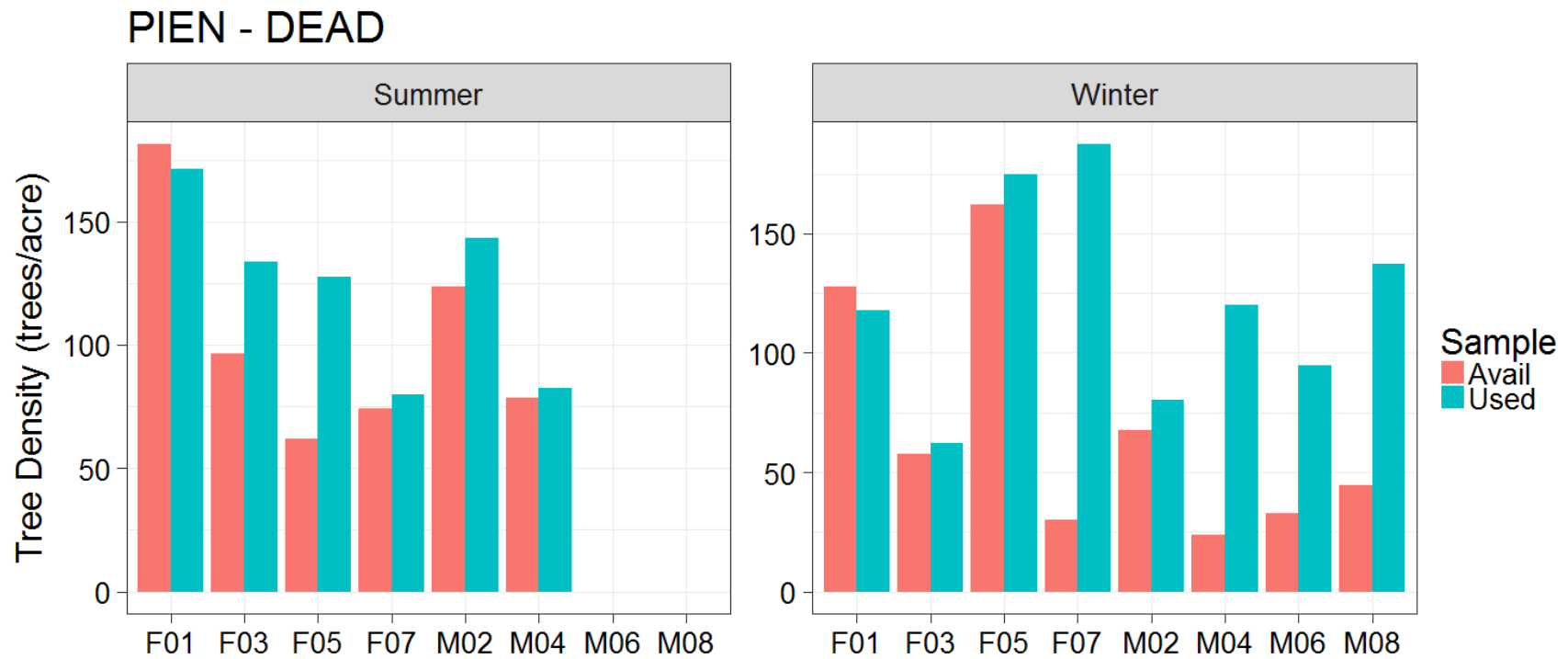


Figure 35. Mean tree density for dead PIEN at used and available locations for each lynx by summer and winter.



FISH AND WILDLIFE MANAGEMENT ON FEDERAL LANDS: DEBUNKING STATE SUPREMACY

M. Nie, C. Barns, J. Haber, J. Joly, K. Pitt & S. Zellmer¹

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EXECUTIVE SUMMARY

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

¹ 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 U.S. 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.

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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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 issues that can be deeply polarizing and confrontational.

To begin, consider some of the following questions that were decided long ago by the courts: Does the U.S. 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 U.S. 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, 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 the 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 the 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 the USFS and 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 the 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,” 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 the 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.

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 having decades of experience, working for the U.S. 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 I 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 here, 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 I and what we view as its shortcomings in Part III. Part I 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 in part because of the role played by AFWA in negotiating agreements with federal land agencies.

Part II provides the legal context of wildlife management on federal lands. The constitutional setting comes first, with a review of the U.S. Constitution’s Property Clause, Treaty Clause, Commerce Clause, and the Tenth Amendment. This section 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 U.S. 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.

The next section of Part II 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 the Bureau of Land Management, the special case of Alaska, and the National Wilderness Preservation System are covered in this section. 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 section 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 section 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 III. 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 because of the rapid pace of development on non-federal 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 this section 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. The section 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 non-game management. We also suggest that advocates of the North American Model of Wildlife Conservation 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 Interior Department’s policy statement on state-federal 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 III. We review the Wilderness Act’s 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 III 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 is available online (in progress).² This resource enables users to find succinct answers to their questions with linkages to the most relevant parts of the Article for additional information.

I. STATE MANAGEMENT CONTEXT & 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 the Association of Fish and Wildlife Agencies (AFWA). The Association represents North America's state fish and wildlife agencies and is a principle actor in the debate over wildlife management on federal lands.³ 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 explained below in this section 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.⁴ 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. Most often referenced by the states in this context is *Geer v. Connecticut*, in which the Supreme Court 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.”⁵ As we discuss in Part II(A), the Supreme Court subsequently overruled *Geer* in *Hughes v. Oklahoma*, but did so in the

² Available at [http://\[address still to be determined: FAQs in Progress\]](http://[address still to be determined: FAQs in Progress]).

³ See Ass'n of Fish and Wildlife Agencies, *Overview*, The Voice of Fish and Wildlife Agencies, <http://www.fishwildlife.org/index.php?section=about> (last visited May 24, 2016).

⁴ See Michael C. Blumm & Aurora Paulsen, *The Public Trust in Wildlife*, 6 UTAH L. REV. 1437, 1462, 1488-1504 (2013).

⁵ *Geer v. Connecticut*, 161 U.S. 519, 529 (1896). Though AFWA considers *Geer* as providing “the single strongest statement of state public trust ownership of fish and wildlife in the Court’s jurisprudence,” Brief for Ass’n of Fish and Wildlife Agencies as Amici Curiae at 10 – 11, *Wisconsin v. Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin*, 135 S.Ct. 1842 (2015), *Geer* traces the idea to *Arnold v. Mundy*, 6 N.J.L. 1 (N.J. Sup. Ct. 1821), and *Martin v. Waddell*, 41 U.S. 367 (1842). *Geer*, 161 U.S. at 529.

context of federal laws preempting state laws (based on claims of state ownership).⁶ States, in other words, cannot discriminate against interstate commerce based on claims of state ownership of wildlife.⁷ 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 wildlife animals underlying the 19th-century legal fiction of state ownership.”⁸

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 in “at least twenty-two other states use trust-like language ... in proclaiming state ownership of wildlife.”⁹ The public trust in wildlife is most often invoked by states when declaring broad power and authority to regulate fish and wildlife resources. Less clear are 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?¹⁰ There is relatively little case law on this matter and states have generally done little to fill in the details.¹¹ 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. But for purposes 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 III (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

⁶ *Hughes v. Oklahoma*, 441 U.S. 322 (1979). The erosion of *Geer* began with *Missouri v. Holland*. See 252 U.S. 416 (1920). Here, the Court upheld the constitutionality of the Migratory Bird Treaty Act and rejected state claims of “exclusive authority” to manage wildlife under the state ownership doctrine. See *id.* As eloquently stated by the Court, “[T]he 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.* at 434.

⁷ *Id.*

⁸ *Hughes*, 441 U.S. 322, 336 (1979).

⁹ “Of the fifty states, only Nevada and Utah have yet to make some acknowledgement of the public trust in wildlife.” Blumm & Paulsen, *supra* note, 1477. Similarly, AFWA emphasizes that “[s]tates, as public trustees, hold wildlife in trust for their citizens.” Brief for the Petitioners, *supra* note, at 11.

¹⁰ See generally Susan Morath Horner, *Embryo, Not Fossil: Breathing Life Into the Public Trust in Wildlife*, 35 LAND & WATER L. REV. 23 (2000); Patrick Redmond, *The Public Trust in Wildlife: Two Steps Forward, Two Steps Back*, 49 NAT. RESOURCES J. 249 (2009); and Gary D. Meyers, *Variations on a Theme: Expanding the Public Trust Doctrine to Include Protection of Wildlife*, 19 ENVTL. L. 723 (1989).

¹¹ See *supra* notes ___ and accompanying text.

protection, tribal provisions, law enforcement, and hunter harassment-interference.¹² Nineteen states also have “right to hunt” constitutional provisions.¹³ These vary in terms of substance and effect.¹⁴ Some simply recognize a hunting heritage in a state¹⁵ and the opportunity to harvest wild fish and game subject to state law and regulation,¹⁶ while others create more explicit rights that are nonetheless subject to state management.¹⁷ All but one of these amendments (Vermont) passed since the mid-1990s and they collectively reflect some fear that state hunting traditions are under threat. 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.¹⁸ The powers granted to state wildlife commissions vary, from setting fish and game seasons and bag limits to charting broader management goals and objectives for the states. Members are typically appointed by the governor and subject to state legislative approval. Most states also have requirements for commission membership, such as a general knowledge of wildlife issues, political and geographic balance, or that they hold a sporting license. 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.¹⁹ This history aside, state wildlife commissions received criticism more recently, 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.²⁰

¹² See Ruth S. Musgrave & Mary Anne, STATE WILDLIFE LAWS HANDBOOK 14 (1993); see also Michigan State University’s Animal Legal & Historical Center for searchable database of hunter harassment and interference laws, available at <https://www.animallaw.info/> (last visited May 24, 2016).

¹³ See National Conference of State Legislatures, State Constitutional Right to Hunt and Fish, (11/9/2016), <http://www.ncsl.org/research/environment-and-natural-resources/state-constitutional-right-to-hunt-and-fish.aspx>.

¹⁴ See generally Stacey L. Gordon, *A Solution in Search of a Problem: The Difficulty With State Constitutional “Right to Hunt” Amendments*, 35 PUB. LAND & RES. L. REV. 3 (2014)

¹⁵ See e.g., Mont.Const. art. IX, § 7 (stating, “The opportunity to harvest wild fish and 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.”).

¹⁶ See, e.g., Wyo.Const. art I, § 39 (stating, “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.”).

¹⁷ See, e.g., Va. Const. art. XI, § 4 (proclaiming “a right to hunt, fish and harvest game, subject to such regulations and restrictions as the General Assembly may prescribe by law”).

¹⁸ See Martin Nie, *State Wildlife Policy and Management: The Scope and Bias of Political Conflict*, 64(2) PUB. ADMIN. REV. 221, 222 (2004).

¹⁹ JOHN F. REIGER, AMERICAN SPORTSMEN AND THE ORIGINS OF CONSERVATION (1st ed. 1975).

²⁰ See Nie, *supra* note, at 223.

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. 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.”²¹ 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.²² This funding mechanism serves to reinforce the complaint of non-hunters that their values and interests are not adequately considered in management decisions. 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.

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. This takes the form of funding for federal lands, state lands, and contributions to private land conservation. 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. The Federal Aid in Wildlife Restoration Act of 1937, more commonly known as the Pittman-Robertson Act, put an end to this practice.²³ The program put in place by “Pittman-Robertson” provides federal assistance to states for wildlife restoration projects and plans (and hunter education). 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.²⁴ 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 said State fish and game department.”²⁵ 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 Federal Aid in Sport Fish Restoration Act, also referred to as the Dingell-Johnson Act, funds sport fish restoration through excise taxes on fishing equipment, motorboat/small engine fuel, and

²¹ J.F. ORGAN ET. AL., THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION: TECHNICAL REVIEW 12-04, 9 (Theodore A. Bookhout, December 2012).

²² *Id.*

²³ 16 U.S.C. §§ 669–669k (1937).

²⁴ See M. Lynn Corn & Jane G. Gravelle, CONG. RESEARCH SERV., GUNS, EXCISE TAXES, AND WILDLIFE RESTORATION, at 2 (2013) (providing a breakdown of PR receipts and distributions).

²⁵ 16 U.S.C. §669.

baits.²⁶ 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.²⁷ 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.”²⁸

The Pittman-Robertson and Dingell-Johnson Acts primarily focus on sport fish and game species. State funding for non-game species has not fared as well. Congress addressed this issue in passing the Fish and Wildlife Conservation Act of 1980.²⁹ Frequently referred to as the “Non-Game Act,” this law recognizes that the traditional focus on “recreationally and commercially important species” and “traditional financing mechanisms are neither adequate nor fully appropriate to meet the conservation needs of nongame fish and wildlife.”³⁰ 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.”³¹ 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. Instead, the law relied on funding from general congressional appropriations, which to date Congress never provided to the program.³²

Several initiatives have been waged in the past, at both national³³ and state³⁴ levels, to deal with the lack of funding for nongame species management and a related campaign is currently underway.³⁵ AFWA is part of a broad coalition seeking a solution to the problem of non-game funding. We return to this issue in Part III, 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

²⁶ 16 U.S.C. §§ 777–777m (1988).

²⁷ 16 U.S.C. § 777(a).

²⁸ 16 U.S.C. § 777a(1).

²⁹ 16 U.S.C. §§ 2901–2911 (1980).

³⁰ 16 U.S.C. § 2901(a)(4).

³¹ 16 U.S.C. § 2901(b)(1).

³² See 75 Fed. Reg. 51,420 (Aug. 20, 2010) (removing regulations that implement the Fish and Wildlife Conservation Act because funds to carry out the Act never became available).

³³ 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).

³⁴ See generally Cindy McKinney et al., *Investing in Wildlife: State Wildlife Funding Campaigns* (April 2005) (unpublished Master’s thesis, University of Michigan), available at <http://www.snre.umich.edu/ecomgt//pubs/documents/finalReport.pdf>.

³⁵ See generally ASS’N OF FISH AND WILDLIFE AGENCIES, *The Blue Ribbon Panel on Sustaining America’s Diverse Fish & Wildlife Resources* (2016), <http://www.fishwildlife.org/index.php?section=blueribbonpanel>.

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.”³⁶ While the Model has no independent legal authority, it is referenced extensively in AFWA legal and educational materials and is also invoked frequently by state wildlife agencies and other institutions.³⁷ 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. We discuss the Model again in Part III(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, (7) Democracy of hunting is standard.³⁸

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. 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

³⁶ ASS’N OF FISH AND WILDLIFE AGENCIES, *Wildlife Management Authority: The State Agencies’ Perspective* 13 (Feb. 2014), at http://www.fishwildlife.org/files/AFWATaskForce_State_Authorities_v3-5-14.pdf [hereinafter AFWA Task Force Report].

³⁷ *See, e.g.*, ARIZ. GAME AND FISH DEP’T, *NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION*, http://www.azgfd.gov/h_f/documents/NAM%20Brochure.pdf (last visited May 26, 2016). The policy of The Wildlife Society is to “promote 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...” Final TWS Position Statement on the North American Model of Wildlife Conservation (approved Mar. 2007, expired in Mar. 2012).

³⁸ Conference Report, Valerius Geist et. al., *Why Hunting has Defined the North American Model of Wildlife Conservation: Transactions of the 66th North American Wildlife and Natural Resources Conference*, 175 (2001) (citing earlier references and antecedents to the Model), http://conservationvisions.com/sites/default/files/why_hunting_has_defined_the_north_american_model_of_wildlife_conservation.pdf.

developed in North America.”³⁹ 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.⁴⁰ This is because most references to the Model, as discussed further below, go beyond description and use it to justify various positions or decisions made by state wildlife agencies. 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.”⁴¹ 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.⁴² Asserting that public trust principles relating to wildlife are most clearly found in state law, AFWA references the Model to advocate “the primacy of state management authority for resident wildlife.”⁴³ 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.”⁴⁴ Access to public resources is commonly asserted in public trust cases (e.g., to oysters, tidelands, streams) and state wildlife agencies and AFWA make similar linkages between states owning wildlife in trust, which necessitates providing

³⁹ 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 of Wildlife: An Int’l J.* 407, 408 (2014).

⁴⁰ See Susan J. 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* 301 (Susan G. Clark & Murray B. Rutherford ed., 2014) (questioning “whether the model is capable of conserving wildlife and ecosystems into the future without major adaptations.”). See also Michael P. Nelson, Ph.D. et al., *An Inadequate Construct? North American Model: What’s Flawed, What’s Missing, What’s Needed*, *THE WILDLIFE PROF.*, Summer 2011, at 58 (arguing, “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.”).

⁴¹ Clark & Milloy, *supra* note, at 312.

⁴² See generally Organ et al., *supra* note, at 11. See also *THE WILDLIFE SOC’Y, THE PUBLIC TRUST DOCTRINE: IMPLICATIONS FOR WILDLIFE MANAGEMENT AND CONSERVATION IN THE UNITED STATES AND CANADA: TECH. REVIEW* 10-01, Sept. 2010, at 9.

⁴³ Ass’n of Fish and Wildlife Agencies, *The States: Trustees of America’s Wildlife* (powerpoint presentation and slides by M. Carol Bambery and Martin Bushman, [year unknown]), at 13 (on file with authors).

⁴⁴ *Federal Interactions with State Management of Fish and Wildlife, Hearing Before the S. Comm. On Environment and Public Works*, 114th Cong. 9 (2016) [hereinafter *Hearing*] (statement of Ron Regan, Exec. Dir. of Ass’n Fisheries and Wildlife Agencies).

public access to fish and wildlife.⁴⁵ We return to the public trust in wildlife issue in Part III(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, "It 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 conservation."⁴⁶ AFWA similarly states that "hunting and angling are the cornerstones of the North American Model with sportsmen and women serving as the foremost funders of conservation."⁴⁷ 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.⁴⁸ 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 non-game species and want the Model applied to the conservation of biodiversity more broadly.⁴⁹ 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.⁵⁰

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

⁴⁵ See THE WILDLIFE SOC'Y, *supra* note 42, at 9 (emphasizing the importance of access to the public trust doctrine, including fishing, hunting, trapping and travel routes).

⁴⁶ Conference Report, *supra* note 38, at 179. See also James R. Heffelfinger et al., *The Role of Hunting in North American Wildlife Conservation*, 70 INT'L. J. ENVTL. STUDIES 399, 399 (2013) (noting that "regulated hunting is the foundation of the North American Model of Wildlife Conservation").

⁴⁷ Ass'n of Fish & Wildlife Agencies, *Investing in America's Conservation Legacy, The Voice of Fish & Wildlife Agencies* (2016),

http://www.fishwildlife.org/index.php?section=north_american_model_of_wildlife_conservation [hereinafter *Investing*].

⁴⁸ See, e.g., AFWA TASK FORCE REPORT, *supra* note, at 30.

⁴⁹ See, e.g., ORGAN ET AL., *supra* note, at 30 (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); David Willms & Anne M. Alexander, *The North American Model of Wildlife Conservation in Wyoming: Understanding It, Preserving It, and Funding Its Future*, 14 WYO. L. REV. 659 (2014) (recommending alternative funding sources for wildlife management).

⁵⁰ 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." Ass'n of Fish & Wildlife Agencies, *Investing*, *supra* note 47 (emphasis added). See also Joanna Prukop & Ronald J. Regan, *The Value of the North American Model of Wildlife Conservation: An International Association of Fish and Wildlife Agencies Position*, 33 Wildlife Soc'y Bulletin 374, 376 (2005) (linking the Model to the importance of state primacy to the issue of access to wildlife resources).

relationship's implications on states' authority to manage wildlife, and by making recommendations to strengthen the relationship between state and federal conservation agencies."⁵¹ 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.⁵²

The report begins by invoking the North American Model of Wildlife Conservation, the wildlife trust doctrine, and the Tenth Amendment of the U.S. Constitution, which it asserts, "relegates to the states the responsibility of managing wildlife."⁵³ To make the Model work, says the report, a productive relationship between federal and state agencies is necessary. 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"⁵⁴ and that there is "considerable and widespread frustration with the interface between federal and state efforts to conserve wildlife."⁵⁵

Survey respondents were asked to identify specific laws, regulations or policies that they believed were successful or challenging. Most frequently identified as a challenge to the states was the 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."⁵⁶ Also standing out in the survey are respondents' citing NEPA as a "hindrance to states' efforts to manage wildlife,"⁵⁷ 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."⁵⁸

Of relevance to Part II(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. 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

⁵¹ *AFWA Task Force Report*, *supra* note, at 2.

⁵² *See Hearing*, *supra* note, at 60–61 (statement of Ron Regan, Exec. Dir. of Ass'n Fisheries and Wildlife Agencies) (elaborating on the origins of the Task Force Report).

⁵³ *AFWA Task Force Report*, *supra* note, at 5.

⁵⁴ *Id.* at 2.

⁵⁵ *Id.*

⁵⁶ *Id.*

⁵⁷ *Id.*

⁵⁸ *Id.* at 11.

agency decisions that are typically contrary to principles of wildlife, fisheries, and habitat management critical for state management.⁵⁹

The Federal Land Policy Management Act (FLPMA) and the National Forest Management Act (NFMA) are discussed in this context, with both laws often viewed as presenting obstacles to the management of “state trust species.”⁶⁰ These laws were not identified as inherently problematic, rather respondents focused on the “subjective and inconsistent application of their precepts.”⁶¹

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. 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.”⁶² 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,⁶³ such as recent congressional testimony.⁶⁴ For now, we simply summarize the core recommendations of the Task Force, and we provide the requisite background in other parts of the paper. We return and respond to AFWA’s recommendations in Part III.

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.”⁶⁵ The proposed training initiative is to be implemented through a Memorandum of Understanding (MOU). A public affairs strategy “to market and defend state wildlife authority interests” is also envisioned as part of this educational effort.⁶⁶ Establishing a mediation team to more constructively resolve conflict between federal and state agencies is also recommended.⁶⁷

⁵⁹ *Id.* at 9.

⁶⁰ *Id.* at 12.

⁶¹ *Id.* at 2.

⁶² ASS’N OF FISH & WILDLIFE AGENCIES, PROTECTING STATE AUTHORITY FOR FISH AND WILDLIFE MANAGEMENT, THE LEGAL VOICE FOR FISH & WILDLIFE AGENCIES: PROTECTING STATE AUTHORITY FOR FISH & WILDLIFE MANAGEMENT 2, [http://www.fishwildlife.org/files/About_AFWA-Legal-Strategy_v6\(1\).pdf](http://www.fishwildlife.org/files/About_AFWA-Legal-Strategy_v6(1).pdf) (last visited May 26, 2016).

⁶³ *See, e.g.*, W. ASS’N OF FISH & WILDLIFE AGENCIES COMMISSIONERS’ ST. AUTHORITIES SUBCOMMITTEE, WHITE PAPER: WILDLIFE MANAGEMENT SUBSIDIARITY 4 (Wyo. 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”).

⁶⁴ *See Hearing, supra* note, at 17 (statement of Ron Regan, Exec. Dir. of Ass’n Fisheries and Wildlife Agencies).

⁶⁵ *Id.* at 17.

⁶⁶ *Id.* at 29.

⁶⁷ *See id.* at 28.

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. According to the Task Force, “As conservation becomes more focused on landscape scale efforts, it is important that federal agencies integrate their conservation programs with the state agency programs and not get out ahead of the states and the public we serve.”⁶⁸ 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.”⁶⁹

This concern leads to the Task Force recommending more substantive legislative changes. The first is to modify the Sikes Act⁷⁰ 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.⁷¹ 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.”⁷² The military section of the 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.”⁷³ There is no such language in the law pertaining to “mutual agreement” in the sections pertaining to the Departments of the Interior and Agriculture.⁷⁴ The Task Force would like this changed to include the following

⁶⁸ *Id.* at 21.

⁶⁹ *Id.*

⁷⁰ Sikes Act, Pub. L. No. 86-797, 16 U.S.C. 670a-670o (1960) (prior to 1974 amendment).

⁷¹ Sikes Act, Pub. L. No. 93-452, ch. 88, sec. 201-202 (1974) (codified as amended at 16 U.S.C. §§ 670g-670h).

⁷² 16 U.S.C. § 670g(a).

⁷³ 16 U.S.C. § 670a(2).

⁷⁴ Instead, the Sikes Act makes clear that the “[c]onservation 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.” 16 U.S.C. § 670h(c)(1)(C) (emphasis added). 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* 16 U.S.C. § 670h(b). *See* Michael J. Bean, *The Developing Law of Wildlife Conservation on the National Forest and National Resource Lands*, 60 J. Contemporary L. 58 (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”). *Id.*, at 65.

language: “The conservation plans and resulting programs shall reflect the mutual agreement of the parties concerning conservation, protection, and management of fish and wildlife resources.”⁷⁵

As we explain later, federal land laws often include a “savings” clause addressing the relationship between federal and state powers.⁷⁶ 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 [to] vigorously defend savings clauses to establish legal precedent.”⁷⁷

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.⁷⁸ 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.”⁷⁹ To fix this problem the Task Force recommends replacing existing savings provisions with the following language:

Nothing in this 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.⁸⁰

This proposal is a fundamental reinterpretation of existing wildlife law and we explain why it should be rejected in Part III. We discuss savings clauses again in the context of federal preemption (Part II (A)(4)) and in each section reviewing federal land laws (Part II (B)).

⁷⁵ *AFWA Task Force Report*, *supra* note, at 23.

⁷⁶ 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.” Robert L. Fischman & Angela M. King, *Savings Clauses and Trends in Natural Resources Federalism*, 32 ENVTL. L. & POL’Y. REV. 129, 145 (2007).

⁷⁷ *AFWA Task Force Report*, *supra* note, at 17.

⁷⁸ *See supra* notes.

⁷⁹ Brief for Int’l Ass’n of Fish & Wildlife Agencies as Amici Curiae at 8, *Wyoming v. United States*, 279 F.3d 1214 (10th Cir. 2002) (on file with authors).

⁸⁰ *AFWA Task Force Report*, *supra* note, at 27.

II. 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, the Treaty Clause, the Commerce Clause, the Supremacy Clause, and the Tenth Amendment. This section 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. 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. This Part 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.”⁸¹ Although the U.S. 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.”⁸² 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.”⁸³ While the Supreme Court and several other federal courts have alluded to a federal trust responsibility for public lands and resources, the

⁸¹ U.S. CONST. art. IV, § 3, cl. 2.

⁸² *Kansas v. Colorado*, 206 U.S. 46, 89 (1907). See *Gratriot v. U.S. United States*, 40 U.S. 336 (1841) (holding that, despite a state’s objection, Congress had broad Property Clause authority to dispose of mineral leases however it saw fit).

⁸³ 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 Complaint of Steuart Transp. Co., In re Steuart Transp. Co.*, 495 F. Supp. 38, 40 (E.D. Va. 1980) (“Under the public trust doctrine, the State of Virginia and 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 the ownership of the resources but from a duty owing to the people.”) (emphasis added).

contours of such a responsibility are ill-defined.⁸⁴ The contours of the Property Clause power, however, are relatively clear.⁸⁵

U.S. v. Grimaud was one of the first tests of the Property Clause power to protect federal public lands.⁸⁶ The Forest Reserve Act of 1897 authorized the Secretary of Agriculture to "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

⁸⁴ See *Light v. U.S.*, 220 U.S. 523, 536 (1911) (identifying a duty "to protect the public domain from trespass and unlawful appropriation"); *W. Va. Div. of Izaak Walton League of Am., Inc. v. Butz*, 522 F.2d 945, 948, 950–55 (4th Cir. 1975) (noting the historic role of the Forest Service as "custodian and protector" of forest reserves); *High Country Citizens' Alliance v. Norton*, 448 F. Supp. 2d 1235, 1241 (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 Interior*, 424 F. Supp. 172, 174-75 (N.D. Cal. 1976); *Sierra Club v. Dep't. of Interior*, 398 F. Supp. 284, 294 (N.D. Cal. 1975); *Sierra Club v. Dep't. of Interior*, 376 F. Supp. 90, 95–96 (N.D. Cal. 1974).

⁸⁵ 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. U.S. Const. art. I, § 8, cl. 17. 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." *Id.* In addition to giving Congress exclusive authority over the seat of federal government (Washington, DC), the Enclave Clause provides authority to purchase state land for a variety of federal purposes. See Robert L. Glicksman and George Cameron Coggins, *Powers Over Federal "Enclaves"—Creation*, 1 Pub. Nat. Res. L. § 3:7 (2nd ed. 2016) (noting that "Needful Buildings" include most federal purposes, including dams, national parks, and forests). Congress's power over federal enclaves is highly nuanced. Spencer Driscoll, *Utah's Enabling Act and Congress's Enclave Clause Authority: Federalism Implications of a Renewed State Sovereignty Movement*, 2012 B.Y.U. L. Rev. 999, 1000 (2012). 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 v. New Mexico*, 426 U.S. 529, 542 (1976). Otherwise, the federal and state governments are free to make whatever jurisdictional arrangements they choose regarding wildlife, transportation, and other civil and criminal laws. *Fort Leavenworth R.R. Co. v. Lowe*, 114 U.S. 525 (1885). See *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."); *United States v. Parker*, 36 F. Supp.3d 550, 575-76 (W.D.N.C. 2014) (holding that, where both the U.S. 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. *U.S. v. Armstrong*, 186 F.3d 1055, 1061 (8th Cir. 1999).

⁸⁶ *United States v. Grimaud*, 220 U.S. 506 (1911). For an in-depth history of the Property Clause, see Peter A. Appel, *The Power of Congress "Without Limitation": The Property Clause and Federal Regulation of Private Property*, 86 Minn. L. Rev. 1, 16–36 (2001).

insure the objects of such reservations; namely, to regulate their occupancy and use, and to preserve the forests thereon from destruction.”⁸⁷ With this authority, the Secretary issued rules requiring ranchers to secure permits to graze livestock in a forest reserve.

The defendants were charged with grazing sheep in a forest reserve without a permit. They argued that the Act was unconstitutional insofar as it delegated power to make regulations to the Secretary. 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.”⁸⁸ 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. 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.⁸⁹

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. In *Hunt v. United States*, 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 resources, even if the federal action was contrary to state law.⁹⁰ The Court subsequently construed *Hunt* quite broadly in *Kleppe v. New Mexico*, stating that, while *Hunt* found that “damage to federal land is a sufficient basis for regulation. . . , it contains no suggestion that it is a necessary one.”⁹¹

Kleppe upheld the Wild Free-roaming Horses and Burros Act,⁹² which prohibited the capture and destruction of unclaimed horses and burros on public lands.⁹³ When the BLM invoked the Act to prevent New Mexico from capturing and selling burros, the state asserted that the BLM lacked authority because the burros were neither moving in interstate commerce nor damaging public land. The issue was whether, under the Property Clause, the BLM’s jurisdiction over burros was a “needful” regulation “respecting” public lands.⁹⁴

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

⁸⁷ Forest Reserve Act of 1897, 16 U.S.C. 1246 (1901).

⁸⁸ *Grimaud*, 220 U.S. at 516 (citing *Wayman v. Southard*, 10 Wheat. 42, 6 L.Ed. 262). *Accord* *Light v. U.S.*, 220 U.S. 523, 536 (1911) (enjoining grazing on a national forest without a permit and stating, “The United States can prohibit absolutely or fix the terms on which its property may be used”).

⁸⁹ *See* *United States v. Estate of Hage*, 810 F.3d 712, 718 (9th Cir. 2016) (citing, inter alia, *Light*, 220 U.S. at 536).

⁹⁰ *Hunt v. United States*, 278 U.S. 96 (1928).

⁹¹ *Kleppe v. New Mexico*, 426 U.S. 529, 537 (1976) (citations omitted).

⁹² Wild Free-Roaming Horses and Burros Act of 1971, 16 U.S.C. §§ 1331–1340.

⁹³ *See generally* Robert L. Fischman and Jeremiah I. Williamson, *The Story of Kleppe v. New Mexico: The Sagebrush Rebellion as Un-Cooperative Federalism*, 83 Univ. Colorado L. Rev. 123 (providing the legal history and political implications of this decision)

⁹⁴ *Kleppe*, 426 U.S. at 536.

public lands from damage.⁹⁵ The Supreme Court disagreed, stating that the Property Clause power “necessarily” includes protection of wildlife “integral” to the public lands.

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.” 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.”⁹⁶

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.”⁹⁷ 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.’”⁹⁸ The Court clarified the balance of power between the federal and state governments:

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.*⁹⁹

In *Wyoming v. United States*,¹⁰⁰ Wyoming challenged the refusal of the U.S. Fish and Wildlife Service (FWS) to permit the state to vaccinate elk on the National Elk Range (NER). 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.”¹⁰¹ The court held that federal law would preempt state management in the event of an actual conflict or where state management stands as an obstacle to the accomplishment of federal objectives, and remanded for further findings.¹⁰²

⁹⁵ See *id.* at 534 (citing *New Mexico v. Morton*, 406 F.Supp. 1237 (D.N.M. 1975)).

⁹⁶ *Id.* at 535–536 (citations omitted).

⁹⁷ *Id.* at 535.

⁹⁸ *Id.* at 545 (citing *Geer v. Connecticut*, 161 U.S. 519, 528 (1896); *Missouri v. Holland*, 252 U.S. 416, 434 (1920)) (other citations omitted).

⁹⁹ *Id.* (emphasis added).

¹⁰⁰ *Wyoming v. U.S.*, 279 F.3d 1214 (10th Cir. 2002).

¹⁰¹ *Id.* at 1230.

¹⁰² See *id.* at 1234. According to the court, Congress “rejected complete preemption of state wildlife regulation” in the Wildlife Refuge Administration Act, but rather “intended ordinary principles of conflict preemption to apply in cases such as this.” *Id.* (citing 16 U.S.C. § 668dd). A California district court 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 v. Davis*, 144 F. Supp. 2d 1160, 1180-1181 (N.D. Cal. 2000), *aff’d*

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.¹⁰³ 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.¹⁰⁴ The U.S. 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 title is to lean upon a slender reed.”¹⁰⁵ 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,”¹⁰⁶ but as noted in *Kleppe v. New Mexico*, *Wyoming v. U.S.*, and numerous other cases, state law may not contravene federal law.¹⁰⁷

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. U.S.*, 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.¹⁰⁸ When the United States sought to remove the fence under the 1885 Unlawful Enclosures Act, Camfield argued that the United States had no power to control private land use.¹⁰⁹ 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

in part, rev'd in part, 307 F.3d 835 (9th Cir.), *amended on denial of reh'g*, 312 F.3d 416 (9th Cir. 2002). The Ninth Circuit did not reach the Property Clause issue, instead holding that the proposition was preempted by the Wildlife Refuge Administration Act. 307 F.3d at 854. *Accord*, *Defenders of Wildlife v. Salazar*, 651 F.3d 112 (D.C. Cir 2011): “We take 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” (and pointing out Wyoming’s brief “agreeing that Wyoming does not have a veto”).

¹⁰³ *See, e.g.*, *Miller v. Schoene*, 276 U.S. 272 (1928) (upholding Virginia's decree to cut down infected cedars that were fatal to nearby apple orchards); *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).

¹⁰⁴ *See, e.g.*, *Geer v. Connecticut*, 161 U.S. 519, 528 (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 v. Oklahoma*, 441 U.S. 322, 326 (1979)).

¹⁰⁵ *Hughes v. Oklahoma*, 441 U.S. 322, 332 (1979) (citing *Missouri v. Holland*, 252 U.S. 416, 434 (1920)).

¹⁰⁶ *Id.* at 335.

¹⁰⁷ *Wyoming v. U.S.*, 279 F.3d 1214, 1227 (10th Cir. 2002); *Kleppe v. New Mexico*, 426 U.S. 529, 545 (1976). *Accord Hughes*, 441 U.S. at 332.

¹⁰⁸ *Camfield v. U.S.*, 167 U.S. 518 (1897).

¹⁰⁹ *See id.* at 522 (citing 43 U.S.C. §§ 1061–1063 (1885)).

to which it may go in the exercise of such power is measured by the exigencies of the particular case.”¹¹⁰

The courts have consistently upheld broad federal power “to control extraterritorial private activities that might adversely affect federal property.”¹¹¹ For instance, federal restrictions on businesses situated outside of a national park have been upheld when those business enterprises affected neighboring parklands.¹¹² 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.¹¹³

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

¹¹⁰ *Id.* at 525–26. *See also* *United States v. Midwest Oil Co.*, 236 U.S. 459 (1915) (upholding president’s decision to withdraw land to preserve oil reserves); *Light v. U.S.*, 220 U.S. 523, 536 (1911) (“The United States can prohibit absolutely or fix the terms on which its property may be used.”); *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”). *Accord* *Organized Fisherman 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 v. New Mexico*, 426 U.S. 529, 540–541 (1976)); *Organized Fisherman v. Hodel*, 775 F.2d 1544, 1549 (11th Cir. 1985) (finding that Florida law provided no vested property right to fish in a national park).

¹¹¹ *Appel*, *supra* note, at 77–78.

¹¹² *See, e.g.*, *United States v. Armstrong*, 186 F.3d 1055, 1061–62 (8th Cir. 1999), *cert. denied*, 529 U.S. 1033 (2000); *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.”).

¹¹³ *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. U.S.*, 89 F.3d 1269 (6th Cir. 1996), *rev’d en banc* (an equally divided court held that the federal government could regulate private activities that occurred on the surface of a lake even if the surface was private property); *United States v. Lindsey*, 595 F.2d 5, 6 (9th Cir. 1979), *rev’d per curiam*, (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”); *Organized Fisherman*, 775 F.2d at 1549 (11th Cir. 1985) (upholding federal restrictions on fishing on waters within Everglades National Park, some of which were presumably under state jurisdiction); *Grand Lake Estates Homeowners Ass’n v. Veneman*, 340 F. Supp. 2d 1162 (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).

nonfederal land as well, the Supreme Court was not required to address the regulation of state or private activities on nonfederal land.¹¹⁴

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.¹¹⁵

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 concur.”¹¹⁶ 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. With respect to the management of wildlife on federal lands, the most notable of these include the Migratory Bird Treaty of 1916¹¹⁷ and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹¹⁸ Other international provisions include the Agreement on the Conservation of Polar Bears,¹¹⁹ the Pacific Salmon Treaty,¹²⁰ the Northwest Atlantic Fisheries Treaty,¹²¹ the Migratory Bird

¹¹⁴ *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.”).

¹¹⁵ See generally Joseph L. Sax and Robert B. Keiter, *Glacier National Park and Its Neighbors: A Study of Federal Interagency Relations*, 14 *Ecology L.Q.* 207, 226, 261 (1987) (describing how the Park Service’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”).

¹¹⁶ U.S. CONST. art. II, § 2.

¹¹⁷ Convention Between the United States and Great Britain for the Protection of Migratory Birds, U.S.-Gr. Brit, Aug. 16, 1916 (codified as amended at 16 U.S.C. §§ 703–712); Convention on International Trade in Endangered Species of Wild Fauna and Flora, Jul. 1, 1975; IUCN Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Mar. 3, 1973, Mar. 3, 1973, 27 U.S.T. 1087.

¹¹⁸ Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243. CITES is implemented in the U.S. through the ESA, which, like CITES, controls imports and exports of protected species. 16 U.S.C. §§ 1531(a)(4)(F); 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) (“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.”). 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* Section II.A.3.

¹¹⁹ Agreement on the Conservation of Polar Bears, Nov. 15, 1973, T.I.A.S. No. 8409, 27 U.S.T. 3918.

¹²⁰ Treaty Between the United States of America and the Canada Concerning Pacific Salmon (Pacific Salmon Treaty Act of 1985), Can.-U.S., Mar. 15, 1985, T.I.A.S. 11091.

¹²¹ Northwest Atlantic Fisheries Treaty, Jul. 3, 1950, 64 Stat. 1067, 1 U.S.T. 477 (codified at 16 U.S.C. 981-991). This Convention binds 18 parties to the “investigation, protection and

and Game Mammal Treaty with Mexico,¹²² and the International Convention for the Regulation of Whaling.¹²³ These treaties are implemented through the Marine Mammal Protection Act,¹²⁴ the Magnuson-Stevens Fishery Conservation and Management Act,¹²⁵ the Whaling Convention Act,¹²⁶ and other pieces of domestic legislation.¹²⁷ This part of the article focuses on the Migratory Bird Treaty implementing legislation.

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.”¹²⁸ The Migratory Bird Treaty Act of 1918 (MBTA) ratified the treaty and imposed stringent prohibitions on the take, capture, hunting, and killing of protected birds.¹²⁹ According to George Cameron Coggins, “[t]he origins of modern federal wildlife law may be traced back to the MBTA.”¹³⁰

Almost immediately after ratification and enactment, states challenged the constitutionality of the treaty and the MBTA.¹³¹ Today, the Supreme Court’s opinion in *Missouri v. Holland* remains a significant benchmark for federal Treaty Clause authority.¹³² 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

conservation of the fisheries of the northwest Atlantic Ocean, in order to make possible the maintenance of a maximum sustained catch from those fisheries.” *See id.*

¹²² Migratory Bird and Game Mammal Treaty with Mexico, Mex.-U.S., Feb. 7, 1936, 23 U.S.T. 260 (as amended in 1972).

¹²³ International Convention for the Regulation of Whaling (ICRW), Dec. 2, 1946, TIAS No. 1849; 62 Stat. 1716 (1946). 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., *Reclaiming Global Environmental Leadership: Why the United States Should Ratify Ten Pending Environmental Treaties*, Center for Progressive Reform White Paper No. 1201 (2012), available at SSRN: <https://ssrn.com/abstract=2079630>.

¹²⁴ 16 U.S.C. §§ 1361-1423h.

¹²⁵ 16 U.S.C. § 1801.

¹²⁶ 16 U.S.C. §§ 916-916l.

¹²⁷ *See generally* Angelo, *supra* note , 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, 1314 (2000).

¹²⁸ Convention Between the United States and Great Britain for the Protection of Migratory Birds, U.S.-Gr. Brit, Aug. 16, 1916 (codified as amended at 16 U.S.C. §§ 703–712).

¹²⁹ 16 U.S.C §§ 703–712.

¹³⁰ George Cameron Coggins, *Federal Wildlife Law Achieves Adolescence: Developments in the 1970s*, 1978 DUKE L.J. 753, 764 (1978). For additional details, see Meredith Blaydes Lilley & Jeremy Firestone, *Wind Power, Wildlife, and the Migratory Bird Treaty Act: A Way Forward*, 38 Env'tl. L. 1167, 1179 (2008).

¹³¹ *See, e.g.*, *Missouri v. Holland*, 252 U.S. 416 (1920). 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 also* *United States v. Shauver*, 214 F. 154 (E.D. Ark. 1914), *appeal dismissed*, 248 U.S. 594, 595 (1919) (mem.).

¹³² *See Missouri*, 252 U.S. at 416.

killing migratory birds except as authorized by regulations issued by the Secretary of Agriculture.¹³³ 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, 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. . . .¹³⁴

In *Missouri v. Holland*¹³⁵, the Supreme Court held that the Treaty Clause¹³⁶ provided a viable avenue for federal regulation of wildlife, despite the state's claim of a predominant interest in the wildlife in question. Under *Missouri v. Holland*,¹³⁷ 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? If the first is answered in the affirmative, and the second in the negative, the treaty is valid.¹³⁸

With respect to the Migratory Bird Treaty, the answer to the first question was a resounding “yes,” according to the Supreme Court:

¹³³ The MBTA's prohibitions apply broadly to state actors and others. *Id.*; 16 U.S.C §§ 703(a). However, courts have reached conflicting results on the MBTA's application to federal actors. *See Humane Soc'y v. Glickman*, 217 F.3d 882, 885-87 (D.C. Cir. 2000) (applying the MBTA to federal actors because its take prohibition does not make the identity of the perpetrator relevant, and because the Act enforces a treaty binding upon the United States and therefore binding on the federal agencies); *Ctr. for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161, 174-75 (D.D.C. 2002) (applying the MBTA to the Department of Defense), *vacated as moot*, 2003 WL 179848 (D.C.Cir. 2003); *Audubon Soc'y of Portland v. U.S. Fish & Wildlife Serv.*, No. 04-670-KI, 2005 WL 1713086, at 4 (D. Or. 2005) (applying the MBTA to federal agencies but finding that they were not liable for habitat destruction). *But see Sierra Club v. Martin*, 110 F.3d 1551 (11th Cir. 1997) (holding that the MBTA's take prohibition did not bind the Forest Service because federal agencies must conserve birds through other statutes).

¹³⁴ 16 U.S.C. § 703(a).

¹³⁵ 252 U.S. at 416.

¹³⁶ U.S. CONST. art. II, § 2, cl. 2.

¹³⁷ 252 U.S. at 416.

¹³⁸ *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”).

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. . . .¹³⁹

As to the second question, the Court explicitly rejected the states' argument that the Treaty contravened the Tenth Amendment, which reserves power to the states if not delegated to the United States by the Constitution.¹⁴⁰ 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."¹⁴¹ 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 powers, must give way.¹⁴² It explained, "Valid treaties of course 'are as binding within the territorial limits of the States as they are elsewhere throughout the dominion of the United States.'"¹⁴³ In the end, the Court held that the Treaty was lawful, and thus the MBTA was lawful as well, pursuant to the Treaty Clause,¹⁴⁴ the Supremacy Clause,¹⁴⁵ and the Necessary and Proper Clause.¹⁴⁶

3. The Tenth Amendment and the Commerce Clause

The Tenth Amendment often forms the basis of state claims of exclusive jurisdiction over wildlife.¹⁴⁷ 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."¹⁴⁸ The Tenth Amendment and the Commerce Clause¹⁴⁹ seem to be inextricably entwined in federal wildlife management discussions, so it is necessary to discuss the interplay of both provisions together in the same section. This part will address

¹³⁹ *Missouri*, 252 U.S. at 435.

¹⁴⁰ *Id.* at 433.

¹⁴¹ *Id.* at 434.

¹⁴² *Id.*

¹⁴³ *Id.* (citing *Baldwin v. Franks*, 120 U. S. 678, 683 (1887)).

¹⁴⁴ U.S. CONST. art. II, § 2, cl. 2.

¹⁴⁵ 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...").

¹⁴⁶ See U.S. Const. Art. 1, § 8 (Congress has power "to make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or any Department or Officer thereof"); Oona A. Hathaway, et al., *supra* note 139, at 279 ("The scope of Congress's powers under the Necessary and Proper Clause are especially broad in the area of foreign relations").

¹⁴⁷ U.S. CONST. amend. X.

¹⁴⁸ *Id.*

¹⁴⁹ U.S. CONST. art. I, § 8, cl. 3.

the limited role of the Tenth Amendment in wildlife management, and the Tenth Amendment's relationship to the Commerce Clause.

a. The Evolution of the Anti-Commandeering Doctrine

The Tenth Amendment was ratified on December 15, 1791,¹⁵⁰ 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."¹⁵¹ Ultimately, the word "expressly" did not appear in the Tenth Amendment as ratified.

Early in American history, the U.S. Supreme Court seemed to assume the Tenth Amendment was a strong and limiting power of the Constitution.¹⁵² However, by the early 20th century the Court's view of the Tenth Amendment shifted significantly. In *United States v. Darby*,¹⁵³ the Court stated:

The [10th] amendment 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.¹⁵⁴

Since *Darby*, it has become exceedingly uncommon for the Supreme Court to invalidate federal laws under the Tenth Amendment.¹⁵⁵ The Anti-Commandeering Doctrine arising from *New York v. United States*¹⁵⁶ is the exception. There, the Court invalidated a portion of the Low-Level Radioactive Waste Policy Amendments Act of 1985 ("RWPA").¹⁵⁷ 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. The

¹⁵⁰ National Archives, *The Bill of Rights: A Transcription* (2016), <https://www.archives.gov/founding-docs/bill-of-rights-transcript> .

¹⁵¹ ARTICLES OF CONFEDERATION OF 1777, art. II in Comments by James Madison, June 8, 1789, "House of Representatives, Amendments to the Constitution," University of Chicago (emphasis added).

¹⁵² See *Hammer v. Dagenhart*, 247 U.S. 251, 275, 276 (1918) (invalidating federal child labor laws, and remarking upon the "inherent" power of the states to regulate "purely internal affairs"); *Carter v. Carter Coal Co*, 298 U.S. 238, 294–295 (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").

¹⁵³ *United States v. Darby*, 312 U.S. 100, 124 (1941).

¹⁵⁴ *Id.* at 124.

¹⁵⁵ U.S. CONST. amend. X.

¹⁵⁶ *New York v. U.S.*, 505 U.S. 144 (1992).

¹⁵⁷ 42 U.S.C. § 202c(a)(1)(A) (1985) (codified as amended in 42 U.S.C. § 2021c(a)(1)(A)).

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.¹⁵⁸

In *Printz v. United States*,¹⁵⁹ the Court, again utilizing the Anti-Commandeering Doctrine, found that provisions of the Brady Bill¹⁶⁰ 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. Similarly, in *National Federation of Independent Business et al. v. Sebelius*,¹⁶¹ the Court held that the Affordable Care Act (also known as Obamacare)¹⁶² coerced the states to expand Medicaid. 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.¹⁶³

In the modern era, the Tenth Amendment's primary role in regulating the balance of powers between the federal and state governments is expressed through the Anti-Commandeering Doctrine.¹⁶⁴ 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.¹⁶⁵

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.¹⁶⁶ One of the first decisions on the scope of the

¹⁵⁸ 505 U.S. at 176–177.

¹⁵⁹ *Printz v. U.S.*, 521 U.S. 898 (1997) (citing *New York*, 505 U.S. 144).

¹⁶⁰ 18 U.S.C. § 922(t).

¹⁶¹ *National Federation of Independent Business et al. v. Sebelius*, 132 S.Ct. 2566 (2012).

¹⁶² 124 Stat. 119 (2010). The Medicaid expansion was codified at 42 U.S.C. § 1396a(a)(10)(A)(i)(VIII).

¹⁶³ *Sebelius*, 132 S.Ct. at 2566.

¹⁶⁴ *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.") (emphasis in original).

¹⁶⁵ *Reno v. Condon*, 528 U.S. 141, 151 (2000). *See 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); *Nuclear Energy Inst., Inc. v. Env'tl. Prot. Agency*, 373 F.3d 1251 (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).

¹⁶⁶ 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

Tenth Amendment regarding federal wildlife control was *Missouri v. Holland*,¹⁶⁷ which upheld the Migratory Bird Treaty Act (MBTA).¹⁶⁸ 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.¹⁶⁹

It was not until *Palila v. Hawaii Department of Land and Natural Resources* that the courts again took up the issue of the Tenth Amendment's implications for federal wildlife management.¹⁷⁰ There, the Hawaii Department of Land and Natural Resources maintained herds of feral sheep and goats for sport hunting purposes on state owned lands. These herds were causing significant habitat modification and destruction within the critical habitat of the Palila bird (*Psittirostra bailleui*), a listed species under the Endangered Species Act (ESA).¹⁷¹ Conservation groups sought declaratory and injunctive relief requiring Hawaii to adopt a plan to eradicate the feral herds from the Palila's critical habit.¹⁷² Because the Palila was 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.¹⁷³ The court 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.¹⁷⁴ 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."¹⁷⁵

In *Gibbs v. Babbitt*,¹⁷⁶ individuals and several North Carolina counties challenged a U.S. Fish and Wildlife Service (FWS) regulation prohibiting the taking of wolves on private property as an infringement on traditional state power over wildlife.¹⁷⁷ The Fourth Circuit Court of Appeals 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.'"¹⁷⁸ It reasoned that, while "states have important interests in regulating wildlife and natural

common." 161 U.S. 519, 529 (1896), *overruled* by *Hughes v. Oklahoma*, 441 U.S. 322, 336 (1979).

¹⁶⁷ *Missouri v. Holland*, 252 U.S. 416, 456 (1920).

¹⁶⁸ 16 U.S.C. 703 *et seq.* (2016).

¹⁶⁹ *See Missouri v. Holland*, 252 U.S. at 416.

¹⁷⁰ *Palila v. Hawaii Department of Land & Natural Resources*, 471 F.Supp. 985, 992 (D. Hawaii 1979), *aff'd on other grounds*, 639 F.2d 495 (9th Cir. 1981).

¹⁷¹ 16 U.S.C. § 1531 *et seq.*

¹⁷² 16 U.S.C. § 1540(g).

¹⁷³ *Palila*, 471 F.Supp. at 992.

¹⁷⁴ *See id.* at 995.

¹⁷⁵ *Id.* at 994–995. For a detailed discussion of the Commerce Clause and the ESA, see *supra* notes and accompanying text.

¹⁷⁶ *Gibbs v. Babbitt*, 214 F.3d 485, 499 (4th Cir. 2000).

¹⁷⁷ 50 C.F.R § 17.84(c).

¹⁷⁸ *Id.* at 499 (citing *Lopez*, 514 U.S. at 580, 583 (Kennedy, J., concurring)). The court added, "[T]he federal government possesses a historic interest in such regulation—an interest that has repeatedly been recognized by the federal courts." *Id.* at 501.

resources within their borders,” state power over wildlife has long been circumscribed by federal regulatory power.¹⁷⁹ 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.¹⁸⁰ 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.”¹⁸¹

The Tenth Circuit Court of Appeals had the opportunity to consider similar Tenth Amendment arguments in *Wyoming v. United States*,¹⁸² where the State of Wyoming tried to compel the FWS to allow it to vaccinate elk against brucellosis at the Jackson Hole National Elk Range (NER). In response to Wyoming’s 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. 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.”¹⁸³

Subsequently, in *Wyoming v. U.S. Dept. of Interior*,¹⁸⁴ the state of Wyoming argued that federal regulation of wolves violated the Anti-Commandeering Doctrine. Wyoming objected to having only two choices: to change state law to eliminate its predator classification for wolves and commit to maintaining at least fifteen packs of wolves, or to endure the restrictions imposed by the continued protection of wolves under the ESA. The court held that Wyoming had failed to show a violation of the Tenth Amendment through commandeering or otherwise.¹⁸⁵ 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 preempted from regulating the gray wolf.”¹⁸⁶

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

¹⁷⁹ *Id.* (citing *Minnesota v. Mille Lacs Band of Chippewa Indians*, 526 U.S. 172, 204 (1999)). *See id.* at 501 (stating that “it is clear from our laws and precedent that federal regulation of endangered wildlife does not trench impermissibly upon state powers”).

¹⁸⁰ *Id.* at 499.

¹⁸¹ *Id.* at 492. The portion of the court’s opinion rejecting the Commerce Clause challenge is discussed below at *supra* notes ___ and accompanying text.

¹⁸² *Wyoming v. U.S.*, 279 F.3d 1214 (10th Cir. 2002).

¹⁸³ *Id.* at 1227.

¹⁸⁴ *Wyoming v. U.S. Dep’t of Interior*, 360 F. Supp. 2d 1214, 1240 (D. Wyo. 2005), *aff’d*, 442 F.3d 1262 (10th Cir. 2006).

¹⁸⁵ *Id.*

¹⁸⁶ *Id.* at 1240. *Cf.* *New Mexico 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) (citing 43 C.F.R. § 24.4(i)(5)).

over federally protected wildlife have universally failed, from *Missouri v. Holland* to present.

c. The Commerce Clause and Federal Wildlife Management

As noted above, the federal courts did not immediately support federal wildlife control based on the Commerce Clause.¹⁸⁷ In an early case, *Geer v. Connecticut*,¹⁸⁸ the Supreme Court held that game killed within the state concerned internal state commerce rather than interstate commerce. In subsequent years, several district court opinions followed suit.¹⁸⁹

With the New Deal, however, the federal government's use of the Commerce Clause power began to expand.¹⁹⁰ By the 1970s, it was clear that *Geer* had lost favor. In *Douglas v. Seacoast Products, Inc.*, the United States 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.¹⁹¹ 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."¹⁹² It concluded that the movement of fishing boats within and between states and to processing plants "certainly" affects interstate commerce.¹⁹³

Subsequently, when 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, "the 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

¹⁸⁷ *Supra* notes ___ and accompanying text (citing U.S. CONST., art. I, § 8, cl 3).

¹⁸⁸ *Geer v. Connecticut*, 161 U.S. 519 (1896).

¹⁸⁹ *See, e.g.*, *United States v. Shauver*, 214 F. 154, 159 (D.Ark. 1914) (following *Geer* and setting aside an indictment for violation of a federal migratory bird protection act); *United States v. McCullagh*, 221 F. 288, 292 (D.Kansas 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."). Note, however, that the courts upheld Congress' use of the Commerce Clause to regulate interstate trafficking of state-protected wildlife under the Lacey Act, 16 U.S.C. § 3371, *et seq.* *See e.g.*, *Rupert v. U.S.*, 181 F. 87 (8th Cir. 1910) (upholding the Lacey Act as a valid exercise of the commerce power).

¹⁹⁰ *See, e.g.*, *Wickard v. Filburn*, 317 U.S. 111, 118 (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 (2005) (holding that growing marijuana for personal use affects interstate commerce).

¹⁹¹ *Douglas v. Seacoast Products, Inc.*, 431 U.S. 265 (1977).

¹⁹² *Id.* at 281.

¹⁹³ *Id.*

wildlife, to their own people whenever such hoarding and confinement impedes interstate commerce.”¹⁹⁴

With this backdrop, it was not surprising when the Supreme Court expressly overruled *Geer* in 1979 in *Hughes v. Oklahoma*.¹⁹⁵ In that case Hughes challenged his conviction for unlawfully transporting minnows that had been procured within Oklahoma waters for sale outside the state.¹⁹⁶ On appeal, the Court held that the state law, which forbade the out-of-state sale of commercially significant numbers of minnows, was repugnant to the commerce clause.

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.’¹⁹⁷

Although the Supreme Court began to establish limits on Congress’ 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*,¹⁹⁸ the federal gun-free school zone law 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.” Similarly, in *U.S. v. Morrison*,¹⁹⁹ a provision of the Violence Against Women Act was struck down because it attempted to regulate activities that did not substantially affect interstate commerce.²⁰⁰

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

¹⁹⁴ *Baldwin v. Fish & Game Commission of Montana*, 436 U.S. 371, 385 (1978).

¹⁹⁵ *Hughes v. Oklahoma*, 441 U.S. 322 (1979).

¹⁹⁶ *See id.* at 331 (1979).

¹⁹⁷ *Id.* (internal citations omitted).

¹⁹⁸ *United States v. Lopez*, 514 U.S. 549, 561 (1995).

¹⁹⁹ *United States v. Morrison*, 529 U.S. 598 (2000) (invalidating 42 U.S.C. § 13981).

²⁰⁰ *Id.* at 608. 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.

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.²⁰¹

Similarly, the D.C. Circuit Court of Appeals 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. 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."²⁰²

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 10th 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.²⁰³ 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."²⁰⁴ Preemption can also be implied. The Supreme Court, in *California Coastal Comm'n v. Granite Rock Co.*, 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.²⁰⁵

²⁰¹ *Gibbs v. Babbitt*, 214 F.3d 483, 492 (4th Cir. 2000), *cert. denied*, 531 U.S. 1145 (2001).

²⁰² *Rancho Viejo v. Norton*, 323 F.3d 1062 (D.C. Cir. 2003), *cert denied*, 540 U.S. 1218 (2004), *rehearing denied*, 541 U.S. 1006 (2004) (citing *National Ass'n. of Home Builders of United States v. Babbitt*, 130 F.3d 1041 (D.C. Cir. 1997), *cert. denied*, 524 U.S.937 (1998)).

²⁰³ See U.S. CONST. art. VI, § 2, 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 v. New Mexico*, 426 U.S. 529, 543 (1976) (stating that "federal legislation necessarily overrides conflicting state laws under the Supremacy Clause"); *Wyoming v. U.S.*, 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...").

²⁰⁴ 16 U.S.C. § 1379(a).

²⁰⁵ *California Coastal Comm'n v. Granite Rock Co.*, 480 U.S. 572, 581 (1987) (internal citations omitted). The Court found that a state mining permit requirement was not preempted because the

Therefore, preemption can occur where Congress expressly preempts state law, where Congress occupies a field of law, or where state law interferes with the implementation of federal law.²⁰⁶ Federal regulations have the same preemptive effect.²⁰⁷

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.”²⁰⁸ Because federal land management and wildlife laws often contain savings clauses preserving some level of state authority, field preemption rarely applies in these areas. Conflict preemption, on the other hand, arises whenever “compliance with both federal and state regulations is a physical impossibility.”²⁰⁹ 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.”²¹⁰ 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.²¹¹ For example, in *National Audubon Society v. Davis*, California law banned the use of all leg hold traps, even by federal officials in the course of their duties.²¹² The court 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.²¹³ Therefore, the state’s action prevented the federal law from receiving full effect and was preempted.²¹⁴

Congress may negate or otherwise temper preemption by including a “savings clause” in its legislation. Many federal public health, environmental, and natural resources statutes

federal land use and state environmental regulations in question could be interpreted to avoid conflict.

²⁰⁶ *Id.*; *National Audubon Soc’y v. Davis*, 307 F.3d 835, 851 (9th Cir. 2002).

²⁰⁷ *Granite Rock Co.*, 480 U.S. at 581. *See Hillsborough Cty., Fla. 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.”).

²⁰⁸ *Gade v. National Solid Wastes Management Ass’n*, 505 U.S. 88, at 98 (quoting *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)) (holding that state occupational health and safety regulations were preempted by OSHA, which occupied that field of law).

²⁰⁹ *Florida Lime & Avocado Growers 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).

²¹⁰ *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941).

²¹¹ *See Lurman & Rabinowitch, supra note*, at 161.

²¹² *National Audubon Society v. Davis*, 307 F.3d 835 (9th Cir. 2002)

²¹³ *Id.* at 852. The court also found that the state’s action was preempted by the Wildlife Refuge Administration Act because it conflicted with FWS’s management authority within national refuges. *Id.* at 854.

²¹⁴ *Id. See North Dakota v. U.S.*, 460 U.S. 300, 318 (1983) (stating that state statutes that are “plainly hostile to the interests of the United States” will not be applied); *Gibbons v. Ogden*, 22 U.S. 1, 211 (1824) (stating that “the act of Congress . . . is supreme; and the law of the State, though enacted in the exercise of powers not controverted, must yield to it.”).

include savings clauses intended to leave room for state law to provide increased protection consistent with congressional purposes and objectives. 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.²¹⁵ These statutory disclaimers are often quite vague, having been included as compromise measures to ensure passage of a piece of legislation. As Professor 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.²¹⁶

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.”²¹⁷ Other sections of this article analyze the language, agency implementation, and judicial review of savings clauses related to wildlife management on federal lands.

In conclusion, states undoubtedly have well-established historical authority over the wildlife within their borders. However, as this section demonstrates, that authority 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 section reviews the laws and regulations of most relevance to wildlife management on federal lands. The section begins by explaining how the Endangered Species Act (ESA) fundamentally alters the management of all federal land systems. Next, it 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 the U.S. Forest Service (USFS) and Bureau of Land Management

²¹⁵ See Robert L. Fischman & Angela M. King, *Savings Clauses and Trends in Natural Resources Federalism*, 32 WM. & MARY ENVTL. L. & POL’Y REV. 129, 129 (2007). 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. See *id.* at 130. See also Robert L. Fischman, *Cooperative Federalism and Natural Resources Law*, 14 N.Y.U. ENVTL. L.J. 179 (2006).

²¹⁶ *Id.* at 168.

²¹⁷ *Id.*

(BLM). A concise overview of the special case of Alaska is then provided. The Part closes by reviewing wildlife management and the National Wilderness Preservation System. In Part III, 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 III(F) explains that they are not generally used to their full potential.

1. The Endangered Species Act

Congress passed the Endangered Species Act (ESA)²¹⁸ 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.”²¹⁹ 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,”²²⁰ and states that “all federal departments and agencies shall seek to conserve endangered ... and threatened species.”²²¹ “Conserve” and “conservation” are defined by the statute as using “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.²²²

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.²²³ 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). 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.²²⁴

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,²²⁵ (2) the obligation for federal agencies to conserve species and to avoid jeopardizing the continued existence

²¹⁸ 16 U.S.C. §§ 1531–1543.

²¹⁹ 16 U.S.C. § 1531(b).

²²⁰ 16 U.S.C. §1532(3). The goal of the statute is not to "list" species but to recover their populations so that they can be "delisted".

²²¹ 16 U.S.C. § 1531(c).

²²² 16 U.S.C. § 1532(3).

²²³ 16 U.S.C. § 1531(a)(3).

²²⁴ ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 233–234 (1st ed. 2009).

²²⁵ 16 U.S.C. § 1533.

of the listed species or destroying critical habitat,²²⁶ and (3) the take prohibition.²²⁷ 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.²²⁸ Each of the relevant sections is addressed below.

a. Listing determinations (§4)

Only those species listed as threatened or endangered are protected by the ESA.²²⁹ 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 the Fish and Wildlife Service (FWS) or, for anadromous and ocean species, the National Marine Fisheries Service (NMFS)).²³⁰ In either case, the species must meet the definition of either “threatened” or “endangered” in order to secure the protections provided under the statute. An “endangered” species is one that is “in danger of extinction throughout all or a significant portion of its range”²³¹ and “threatened” species are “likely to become an endangered species within the foreseeable future.”²³²

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.”²³³ 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.²³⁴ However, once species are listed they are entitled to the full protections of the statute regardless of the economic consequences.²³⁵

Section 4 includes a number of factors to be considered in the listing decision. One inquiry is to assess “the inadequacy of existing regulatory mechanisms.”²³⁶ 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.”²³⁷ Accordingly state efforts to conserve a species may be deemed to offset other

²²⁶ 16 U.S.C. § 1536(a)(1)– (2).

²²⁷ 16 U.S.C. § 1538.

²²⁸ 16 U.S.C. §§ 1535 (cooperation with states); *see also* § 1533(b)(1)(A) (listing criteria); § 1539(a)(2)(B) (incidental take permits).

²²⁹ 16 U.S.C. § 1533(d).

²³⁰ 16 U.S.C. § 1533(b)(3)(A); *see* ERIC T. FREYFOGLE & DALE D. GOBLE, *supra* note, at 236–247.

²³¹ 16 U.S.C. § 1532(6).

²³² 16 U.S.C. § 1532(20).

²³³ 16 U.S.C. § 1533(b)(1)(A).

²³⁴ ERIC T. FREYFOGLE & DALE D. GOBLE, *supra* note, at 249. These “candidate species” receive no protection under the Act, but the candidate status may provide an opportunity and an incentive for state and private action to prevent listing.

²³⁵ *Tennessee Valley Authority v. Hill*, 437 U.S. 153 (1978).

²³⁶ 16 U.S.C. § 1533(a)(1)(D)

²³⁷ 16 U.S.C. § 1533(b)(1)(A).

threats, such as habitat destruction, and effectively bring the species below the threshold necessary to warrant a federal listing.²³⁸ 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.²³⁹ However, courts have found that speculative future plans and voluntary conservation efforts will not suffice to avoid listing.²⁴⁰

b. Federal obligations (§7)

i. Affirmative duty to conserve (§7(a)(1))

The ESA states that the Departments of the Interior and Commerce must utilize all of their programs to promote the statute's goals.²⁴¹ The ESA also mandates that *all* federal agencies

²³⁸ FWS Policy for Evaluation of Conservation Efforts When Making Listing Decisions (PECE), 68 Fed.Reg. 15,100 (Mar. 28, 2003). See 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 (2002) (cataloguing instances where state and local conservation efforts were invoked to avoid listing).

²³⁹ 68 Fed. Reg. at 15,114. See *Permian Basin Petroleum Ass'n v. Department of the Interior*, 127 F.Supp.3d 700 (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).

²⁴⁰ See *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 measures that may be beneficial to a species' conservation; instead, the efforts must actually be in place and have achieved some measure of success to count); *Defenders 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 unstated [and] [n]owhere [did] the Secretary account for the effects of failure to implement the CA immediately in those areas where delay was expected"); *Oregon Natural Resource Council v. Daley*, 6 F. Supp. 2d 1139, 1154 (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"); *Southwest Center 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* *Defenders of Wildlife v. Zinke*, No. 14-5300 (D.C. Cir. Mar. 3, 2017) (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."); and *Defenders of Wildlife v. Jewell*, 70 F. Supp. 3d 183, 197–98 (D.D.C. 2014) (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").

²⁴¹ 16 U.S.C. § 1536(7)(a)(1). For convenience, we reference the FWS throughout this memo, but similar duties are imposed upon NMFS, which is an agency within the Department of Commerce.

utilize their authority in the furtherance of the purposes of the ESA.²⁴² 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.” In *Defenders of Wildlife v. Andrus*,²⁴³ the advocacy group argued that regulations for bird hunting at twilight failed to protect listed species against misidentification by hunters.²⁴⁴ The court, 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.”²⁴⁵

The court came to a similar decision in *Carson-Truckee Water Conservancy District v. Watt*.²⁴⁶ The cities of Reno and Sparks, Nevada challenged DOI’s refusal to release greater quantities of water from the Stampede Reservoir. DOI 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 Lahotan cutthroat trout). 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.²⁴⁷

By contrast, several courts have refused to mandate the implementation of specific conservation measures, instead finding that the federal agencies have a great deal of discretion in the steps that they take to satisfy 7(a)(1).²⁴⁸ For example, in *Defenders of Wildlife v. U.S. Fish & Wildlife*, the court rejected arguments that the 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.²⁴⁹ Similarly, in *Defenders of Wildlife v. Babbitt*, the court held that the federal agencies had not violated 7(a)(1), even though they had not implemented all possible measures for conservation of the endangered Sonoran pronghorn suggested by third parties, absent a showing that the agencies had failed entirely to carry out conservation programs.²⁵⁰

²⁴² 16 U.S.C. § 1536(7)(a)(1) (emphasis added).

²⁴³ *Defenders of Wildlife v. Andrus*, 428 F. Supp. 167 (D.D.C. 1977).

²⁴⁴ *See id.* at 169.

²⁴⁵ *Id.* at 170.

²⁴⁶ 549 F. Supp. 704 (D. Nev. 1982) *aff’d*, 741 F.2d 257 (9th Cir. 1984), *cert. denied*, 470 U.S. 1083 (1985).

²⁴⁷ 549 F. Supp. 708–709. *See also* *Sierra Club v. Glickman*, 156 F.3d 606, 618 (5th Cir.1998) (finding that § 7(a)(1) required USDA to develop its own conservation program for listed species dependent on the Edwards aquifer).

²⁴⁸ *See, e.g.,* *Leatherback Sea Turtle v. Nat’l Marine Fisheries Service*, 1999 WL 33594329 (D. Hawaii 1999) (finding that NMFS satisfied its Section 7(a)(1) duty by issuing conservation recommendations and biological opinions); *Coalition for Sustainable Res., Inc. v. U.S. Forest Ser.*, 48 F. Supp. 2d 1303, 1315-1316 (D. Wyo. 1999) (rejecting plaintiff’s argument that the Forest Service 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).

²⁴⁹ *Def. of Wildlife v. U.S. Fish & Wildlife*, 797 F. Supp. 2d 949 (D. Ariz. 2011).

²⁵⁰ *Def. of Wildlife v. Babbitt*, 130 F.Supp.2d 121 (D.D.C. 2001). *See* *Pyramid Lake Paiute Tribe of Indians v. U.S. Dept. of Navy*, 898 F.2d 1410 (9th Cir. 1990) (holding that Section 7(a)(1) did

To summarize, the 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 (§7(a)(2))

Federal agencies must also ensure that their actions do not “jeopardize the continued existence” of listed species. In *Tennessee Valley Authority v. Hill*,²⁵¹ 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,²⁵² which could include state interests in wildlife.

In order to ensure that federal actions do not jeopardize listed species, federal agencies undertaking actions that could harm species must formally consult with the FWS.²⁵³ 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 federal agency.²⁵⁴ 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.²⁵⁵ In turn, through its biological opinion (BO), the 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.²⁵⁶

The 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 species in the wild.”²⁵⁷ According to the Ninth Circuit in *National Wildlife Federation v. National Marine Fisheries Service*,²⁵⁸ 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.²⁵⁹ Furthermore, the court stated that jeopardy determinations must consider the action’s effect on species recovery, not simply species survival.²⁶⁰ Therefore, even actions that pose only slight dangers may

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).

²⁵¹ 437 U.S. 153 (1978).

²⁵² *See id.* at 184 (holding that the ESA requires the federal government to “halt and reverse the trend toward species extinction, whatever the cost”).

²⁵³ 16 U.S.C. § 1536(a)(2).

²⁵⁴ *Sierra Club v. Bureau of Land Mgmt.*, 786 F.3d 1219, 1224-1225 (9th Cir. 2015) (citing 50 C.F.R. § 402.02).

²⁵⁵ 16 U.S.C. § 1536(c).

²⁵⁶ 16 U.S.C. § 1536(b)(3).

²⁵⁷ 50 C.F.R. § 402.02.

²⁵⁸ 524 F.3d 917 (9th Cir. 2008)

²⁵⁹ *Id.* at 930.

²⁶⁰ *Id.* at 931.

be considered to “jeopardize” the species if the effect of that action is to pose a high degree of risk to the species.

iii. Prohibition against adversely modifying critical habitat (§7(a)(2))

At the time a species is listed as endangered or threatened, the FWS must also designate its critical habitat.²⁶¹ 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.”²⁶² 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.”²⁶³ 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.²⁶⁴ FWS regulations specify that “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.”²⁶⁵ In *Center for Native Ecosystems v. Cables*, the court held that critical habitat is adversely modified by any actions “that adversely affect a species’ recovery and the ultimate goal of delisting.”²⁶⁶ This interpretation makes the critical habitat protection a significant prohibition.

c. Take prohibition (§9)

The ESA prohibits the “take” of listed species.²⁶⁷ “Take” is defined by Congress as “to harass, harm, pursue, hunt, shot, wound, kill, trap, capture, or collect.”²⁶⁸ This broad protection has been further enlarged by the Supreme Court’s determination that “harm” in this definition includes habitat modification or degradation,²⁶⁹ though a showing that animals have actually been killed or injured may be required to prove that harm has occurred.²⁷⁰ A prohibited take can be either intentional (*e.g.*, hunting and trapping) or unintentional (poisoning and other contamination, for example).²⁷¹ Unlike the requirements of section 7, section 9 applies to all persons, not just federal agencies.²⁷²

²⁶¹ 16 U.S.C. § 1533(a)(3), (b)(6)(c).

²⁶² 16 U.S.C. § 1532(5)(A)(i).

²⁶³ 16 U.S.C. § 1533(b)(2).

²⁶⁴ 16 U.S.C. § 1536(a)(2).

²⁶⁵ 50 C.F.R. § 402.02.

²⁶⁶ 509 F.3d 1310 (10th Cir. 2007).

²⁶⁷ 16 U.S.C. § 1538 (a)(1)(B)–(C).

²⁶⁸ 16 U.S.C. § 1532(19).

²⁶⁹ *Babbitt v. Sweet Home Chapter of Cmty. for a Great Oregon*, 515 U.S. 687 (1995) (citing 50 C.F.R. § 17.3).

²⁷⁰ *See id.* at 696; FREYFOGLE and GOBLE, *supra* note , at 266.

²⁷¹ FREYFOGLE and GOBLE, *supra* note, at 236.

²⁷² 16 U.S.C. § 1538(a)(1).

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.²⁷³ The FWS can make the prohibitions of section 9 applicable, either in whole or in part, to threatened species. However, the FWS's discretion in this area is not without limits. In *Sierra Club v. Clark*,²⁷⁴ the court struck down FWS regulations that permitted the hunting of threatened wolves because the ESA only empowers the FWS to issue regulations for the "conservation" of species, and regulated taking is only permissible under "extraordinary" circumstances that were not present in that case.²⁷⁵

i. Incidental Take Statements and Incidental Take Permits (§7(a)(2) and §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.²⁷⁶ While an ITS provides protection against federal prosecution it also constitutes a binding agreement with the FWS that may include limitations and other prohibitions for the shielded activity. In addition, Section 10(a) permits "take" by non-federal actors under prescribed conditions in exchange for a habitat conservation plan (HCP). To issue an incidental take permit (ITP) under Section 10(a), FWS must find that:

1. the taking will be incidental;
2. the applicant will minimize and mitigate impacts to the maximum extent practicable;
3. the applicant will ensure adequate funding for the plan;
4. the taking will not appreciably reduce the likelihood of the survival and recovery of the species; and
5. the other measures that the Services deemed appropriate for the HCP will be met.²⁷⁷

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

²⁷³ 16 U.S.C. § 1533(d).

²⁷⁴ 755 F.2d 608 (8th Cir. 1985)

²⁷⁵ *See id.* at 613 (citing ESA §1538(a)(1) that the "extraordinary case" where population pressure that cannot be managed in any other way is the only permissible circumstance in which regulated taking of threatened species may lawfully be allowed).

²⁷⁶ 16 U.S.C. §§ 1536(b)(4), (o)(2). *See also* Ramsey v. Kantor, 96 F.3d 434 (9th Cir. 1996) (holding that states did not violate the ESA when they issued fishing regulations allowing taking of listed salmon without obtaining a §10 permit where NMFS issued a §7 incidental take statement that clearly anticipated that states would promulgate fishing regulations in accordance with its terms).

²⁷⁷ 16 U.S.C. § 1539(a)(2)(B).

protected species and habitat conservation.”²⁷⁸ For example, a court upheld an ITP that authorized Utah, Cedar City, and the Paiute Tribe to trap prairie dogs that were damaging private and tribal land and relocate them to a parcel of land covered by a conservation easement and surrounded by BLM lands.²⁷⁹

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 (§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, the FWS should cooperate “to the maximum extent practicable with the States.”²⁸⁰ 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.²⁸¹ 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.²⁸² 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.²⁸³ These programs are enacted statutorily and are referred to as “state endangered species acts.”

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.”²⁸⁴ However, states may not take measures to protect or enhance non-endangered resident wildlife if such measures would take or otherwise endanger listed species.²⁸⁵

²⁷⁸ 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 (2002) (internal citation omitted).

²⁷⁹ WildEarth Guardians v. U.S. Fish & Wildlife Serv., 622 F. Supp. 2d 1155, 1159 (D. Utah 2009).

²⁸⁰ 16 U.S.C. § 1535(a).

²⁸¹ See Alaska Oil & Gas Ass'n v. Salazar, 916 F. Supp.2d 974, 997 (D. Alaska 2013) (finding that FWS complied with § 1535(a) in designating polar bear critical habitat).

²⁸² 16 U.S.C. § 1535(b).

²⁸³ 16 U.S.C. § 1535(c)(1). For details, see George Cameron Coggins and Robert L. Glicksman, The Role of States, 3 Pub. Nat. Resources L. § 29:19 (2nd ed.) (2016).

²⁸⁴ 16 U.S.C. § 1535(f).

²⁸⁵ National Audubon Soc'y v. Davis, 307 F.3d 835, 853 (9th Cir. 2002) (invalidating California’s prohibition on leghold traps), amended & reh'g denied, 312 F.3d 416 (9th Cir. 2002). Cf. Animal Prot. Inst. v. Holsten, 541 F. Supp. 2d 1073 (D. Minn. 2008) (finding that the saving 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); U.S. v. Glenn-Colusa Irr. Dist., 788 F.Supp.

FWS and NFMS also adopted an interagency policy to guide their work with the states in ESA implementation.²⁸⁶ The policy begins by recognizing that “[s]tates possess broad trustee and police powers over fish, wildlife and plants and their habitats within their borders [and] unless preempted by Federal authority, States possess primary authority and responsibility for protection and management of fish, wildlife and plants and their habitats.”²⁸⁷ 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.

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.²⁸⁸ The ESA clearly preempts inconsistent or less restrictive state laws.²⁸⁹ 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.²⁹⁰

2. The National Park System

a. 1916 Organic Act

The Park Service Organic Act makes conservation of park resources, including wildlife, a primary management goal:

[To] promote and regulate the use of the Federal areas known as national parks, monuments, and reservations . . . by such means and measures as conform to the fundamental purpose . . . *to conserve the scenery and the natural and historic objects and the wild life therein* and to provide for the enjoyment of the same in

1126 (E.D. Cal. 1992) (holding that, to the extent that a state's law on “taking” is less protective than the ESA, it is preempted).

²⁸⁶ 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. 34,275 (July 1, 1994).

²⁸⁷ *Id.*, at 34,725.

²⁸⁸ 16 U.S.C. § 1535(f). See Robert L. Fischman, *Predictions and Prescriptions for the Endangered Species Act*, 34 *Envtl. L.* 451, 462 (2004).

²⁸⁹ “[A]ny State law or regulation respecting the taking of an endangered species or threatened species may be more restrictive than the exemption or permits provided for in this chapter or in any regulation which implements this chapter but not less restrictive than the prohibitions so defined.” 16 U.S.C. § 1535(f). See, e.g., *National Audubon Society, Inc. v. Davis*, 307 F.3d 835 (9th Cir. 2002), opinion amended on denial of rehearing, 312 F.3d 416 (2002); *Swan View Coalition v. Turner*, 824 F. Supp. 923, 939 (D. Mont. 1992); *United States v. Glenn-Colusa Irrigation Dist.*, 788 F. Supp. 1126, 1133 (E.D. Cal. 1992).

²⁹⁰ Susan George and William J. Snape III, *State Endangered Species Acts*, in DONALD C. BAUR AND WM. ROBERT IRVIN (Eds.), *ENDANGERED SPECIES ACT: LAW, POLICY, AND PERSPECTIVES* Ch. 16 (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”), at 346.

such manner and by such means as will leave them *unimpaired* for the enjoyment of future generations.²⁹¹

Courts have construed this provision as a directive that, between the competing goals of conservation of park resources and facilitating public enjoyment of park resources, conservation generally takes precedence.²⁹² 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."²⁹³ Absent an explicit contrary mandate in the relevant individual park establishment act, in the event of a conflict, the National Park Service (NPS) must prioritize conservation over public enjoyment.²⁹⁴

b. National Park Service Management Policy

NPS's own management policies recognize that conservation of park resources is "predominant." 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

²⁹¹ 16 U.S.C. § 1 (emphasis added).

²⁹² *See, e.g.*, *Greater Yellowstone Coalition v. Kempthorne*, 577 F.Supp. 2d 183, 192-193 (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*, 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); *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). *See also* *Bicycle Trails of Marin v. Babbitt*, 82 F.3d 1445, 1453 (9th Cir.1996) (The "overarching concern" of the Organic Act is "resource protection."); *Defenders of Wildlife v. Salazar*, 877 F. Supp. 2d 1271, 1301 (M.D. Fla. 2012) (remanding decision to increase 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 (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.").

²⁹³ 16 U.S.C. § 1.

²⁹⁴ Eric Biber & Elisabeth Long Esposito, *The National Park Service Organic Act and Climate Change*, 56 Nat. Res. J. 193, 223-224 (2016). For an assessment of an establishment act that shuffles these priorities, see *National Parks Conservation Ass'n v. U.S. Dept. of Interior*, 46 F.Supp.3d 1254, 1278 (M.D. Fla. 2014) (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).

resources and values and providing for enjoyment of them, conservation is to be predominant. This is how courts have consistently interpreted the Organic Act.²⁹⁵

Issues related to wildlife management come squarely within the purview of the conservation mandate. “Impairment” includes disruption of 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.’”²⁹⁶

NPS’s Management Policies direct NPS to “maintain as parts of the natural ecosystems of parks all plants and animals native to park ecosystems.”²⁹⁷ 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.”²⁹⁸ 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.”²⁹⁹ In addition, the 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.”³⁰⁰ Although the Policies are not judicially enforceable, courts have not hesitated to find that deviations from the Policies are arbitrary and capricious.³⁰¹

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.³⁰² As a general rule,

²⁹⁵ NPS Management Policies § 1.4.3 (2006), available at <https://www.nps.gov/policy/mp2006.pdf>.

²⁹⁶ *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).

²⁹⁷ NPS Management Policies, *supra* note, at § 4.4.1.

²⁹⁸ *Id.* 4.4.1.3.

²⁹⁹ *Id.* 4.4.1.

³⁰⁰ *Id.* 4.4.1.1.

³⁰¹ *See Bluewater Network*, 721 F. Supp. 2d at 20 (“While these Policies are not judicially enforceable, *Wilderness Soc’y v. Norton*, 434 F.3d 584, 596–97 (D.C.Cir. 2006), they are “relevant insofar as NPS puts forth the policies as justification for the decision under review,” *Greater Yellowstone Coal. v. Kempthorne*, 577 F.Supp. 2d 183, 206 (D.D.C.. Cir. 2008)).

³⁰² *See, e.g., Davis v. Latschar*, 202 F.3d 359 (D.C. Cir. 2000) (upholding NPS plan to cull of deer); *Grunewald v. Jarvis*, 930 F.Supp. 2d 73, 84-86 (D.. 2013) (similar); *N.M State Game Comm’n v. Udall*, 410 F.2d 1197, 1201 (10th Cir. 1989) (similar); *Friends of Animals v. Caldwell*, No. 2:09-CV-5349, 2010 WL 4259753 (E.D. Pa. Oct. 27, 2010) (similar). *See also Wildearth Guardians v. Nat’l Park Serv.*, 703 F.3d 1178, 1190 (10th Cir. 2013) (upholding NPS plan to cull elk); *Greater Yellowstone Coal. v. Babbitt*, 952 F.Supp. 1435 (D. Mont. 1996) (upholding NPS plan to authorize capture or killing of bison by state officials); *Intertribal Bison Coop. v. Babbitt*, 26 F.Supp. 2d 1135 (D. Mont. 1998) (upholding NPS plan to manage

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 Organic Act.³⁰³ Specific establishment legislation for individual parks authorizes limited subsistence or recreational hunting, trapping, or fishing within approximately thirty-one NPS units.³⁰⁴ Those areas permitting hunting, trapping, or fishing typically do so in conformance with applicable federal and state laws.³⁰⁵ NPS regulations prohibit commercial fishing in the parks.³⁰⁶ However, in *Alaska Wildlife Alliance v. Jensen*, the Ninth Circuit held that NPS has the discretion to permit commercial fishing in non-wilderness areas of certain Alaska parks.³⁰⁷

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. The U.S. Fish and Wildlife Service (FWS) manages the Refuge System under the auspices of the National Wildlife Refuge System Administration Act,³⁰⁸ which was amended in 1997 by the National Wildlife Refuge System Improvement Act.³⁰⁹ The agency also provides detailed

Yellowstone bison); *Wilkins v. Sec'y of Interior*, 995 F.2d 850 (8th Cir. 1993) (upholding NPS plan to remove wild horses).

³⁰³ George Cameron Coggins and Robert L. Glicksman, *Hunting, Fishing, and Trapping on Federal Lands: National Park System*, 3 Pub. Nat. Resources L. § 32:14 (2nd ed.) (2016). *See* *United States v. Jarrell*, 143 F. Supp. 2d 605 (W.D. Va. 2001) (upholding conviction for hunting in Shenandoah National Park); *Organized Fisherman of Fla. v. Andrus*, 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).

³⁰⁴ Jessica Almy, *Note, 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 v. Potter*, 628 F. Supp. 903, 907, 911 (D.D.C. 1986) (finding express authorization for hunting in the enabling acts of 31 NPS units and implied authorization in the Padre Island Seashore enabling act).

³⁰⁵ 36 C.F.R. § 2.2(b)(4); 43 C.F.R. § 24.4(f). *See* *Organized Fishermen of Fla. v. Hodel*, 775 F.2d 1544 (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 (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 (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).

³⁰⁶ 36 C.F.R. §§ 2.3(d)(4), 5.3. *See* *S.F. Herring Ass'n v. U.S. Dept. of Interior*, 2014 WL 172232 (N.D. Cal. 2014) (finding that NPS had authority to issue citations to commercial fishermen in San Francisco Bay near the Golden Gate Recreational Area).

³⁰⁷ *Alaska Wildlife Alliance v. Jensen*, 108 F.3d 1065, 1067, 1074 (9th Cir. 1997).

³⁰⁸ Pub. L. No. 89-669, 80 Stat. 927 (1966) (codified at 16 U.S.C. §§ 668dd-668ee).

³⁰⁹ Pub. L. No. 105-57, 111 Stat. 1252-1260 (1997).

explanations of its statutory obligations in its regulations³¹⁰ and the U.S. Fish and Wildlife Service Manual.³¹¹

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 area was established.”³¹² 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).³¹³ 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.³¹⁴ 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.”³¹⁵ 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.”³¹⁶

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.”³¹⁷ In meeting the mission of the system, the statute lays out explicit obligations for the agency. 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; ... (E) ensure effective coordination, interaction, and cooperation with owners of land

³¹⁰ See 50 C.F.R. §27.51, parts 31-32.

³¹¹ U.S. Fish & Wildlife Serv. U.S. DOI, USFWS Manual: Land Use and Mgmt. Series, Series 600, available at <http://www.fws.gov/policy/manuals>.

³¹² 16 U.S.C. § 668dd(d)(1).

³¹³ 16 U.S.C. § 668ee(a)(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).

³¹⁴ 16 U.S.C. § 668dd(a)(4)(D).

³¹⁵ 16 U.S.C. § 668ee(a)(1). See, *Delaware Audubon Soc. v. Salazar*, 829 F.Supp. 2d 273, 288 (D. Del. 2011) (finding that a dune restoration decision was within sound professional judgment when it was “supported by scientific literature”).

³¹⁶ 50 C.F.R. § 25.12.

³¹⁷ 16 U.S.C. § 668dd(a)(2).

adjoining refuges and the fish and wildlife agency of the States in which the units of the System are located...³¹⁸

Two significant court cases interpret many of the provisions of the Act. In *Wyoming v. U.S.*,³¹⁹ the state argued that the FWS interfered with the state's sovereign right to manage wildlife by prohibiting the state from vaccinating elk against brucellosis on refuge lands.³²⁰ The court 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.³²¹ In *National Audubon Society v. Davis*,³²² 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. The court found that the ban conflicted with the FWS' statutory authority to manage refuges and so the state law was preempted.³²³ These two cases are discussed in detail below.³²⁴

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..."³²⁵ 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."³²⁶ 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]."³²⁷ The *Audubon* court concurred in this reasoning referencing the goals of the Improvement Act and the FWS' authority over refuge lands in its finding that state law was preempted.³²⁸

³¹⁸ 16 U.S.C. § 668dd(a)(4).

³¹⁹ 279 F.3d 1214 (10th Cir. 2002).

³²⁰ *Id.* at 1222.

³²¹ *Id.* at 1234.

³²² 307 F.3d 835 (9th Cir. 2002).

³²³ *Id.* at 854.

³²⁴ See *infra* notes ____ and accompanying text.

³²⁵ 16 U.S.C. § 668ee(4).

³²⁶ 279 F.3d at 1233 (citing H.R. Rep. No. 105-106 at 8).

³²⁷ *Id.* at 1234. In another case, *Defenders of Wildlife v. Salazar*, 651 F.3d 112 (D.C. Cir. 2011), the D.C. Circuit defines "conservation" in this context by referencing the specific facts of the case. In that case the FWS is accused of violating the conservation mandate of the Improvement Act by failing to end the agency's elk feeding program in the National Elk Refuge. In that case the court found that "there is 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 (651 F.3d at 117).

³²⁸ 307 F.3d at 854.

ii. Ensure that the biological integrity, diversity, and environmental health of the System are maintained

The statute itself does not define these terms, however the FWS defines them in its manual.³²⁹ 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.”³³⁰ Therefore, the agency favors “management that restores or mimics natural ecosystem processes or functions.”³³¹ 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,³³² and that ensuring biological integrity, diversity, and environmental health is necessary for the agency to fulfill the system mission of conservation.³³³

The requirement to maintain “biological integrity, diversity and environmental health” requires refuges 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.”³³⁴ As Fishman 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.”³³⁵

iii. Ensure effective coordination, interaction, and cooperation

Congress clearly intended for the FWS to cooperate meaningfully with other land managers, particularly states. Elsewhere in the statute Congress included 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 the fish and wildlife conservation plans of the State in which the refuge is located.”³³⁶ As the *Wyoming* court states, the Improvement Act calls for “at a minimum, state involvement and participation in the management of the [National Wildlife Refuge System] as that system affects surrounding state ecosystems.”³³⁷ However, in understanding the statute we must give effect to all of the language provided and while Congress strongly encourages cooperation,

³²⁹ U.S. Fish and Wildlife Serv. Manual: Land Use and Mgmt. Series: Biological Integrity, Diversity, and Env’t Health, 601 FW 3.6(A)-(E), *available at* www.fws.gov/policy/601fw3.html.

³³⁰ 601 FW 3.10.

³³¹ 601 FW 3.7(E).

³³² 601 FW 3.7(A).

³³³ 601 FW 3.7(B).

³³⁴ ERIC T. FREYFOGLE and DALE D. GOBLE, *WILDLIFE LAW* 212 (2009) (referencing 66 Fed. Reg. 3810 (Jan. 16, 2001)).

³³⁵ ROBERT L. FISCHMAN, *The NATIONAL WILDLIFE REFUGES: COORDINATING A CONSERVATION SYSTEM THROUGH LAW* 126 (2003). *See also* *Defenders of Wildlife v. Salazar*, 651 F.3d 112, 116 (D.C. Cir. 2011) (emphasizing the agency’s “biological integrity” mandate).

³³⁶ 16 U.S.C. § 668dd(e)(1)(A)(iii).

³³⁷ 279 F.3d at 1231.

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. As the *Wyoming* court stated, “Congress undoubtedly intended a preeminent role for the FWS in the care and management of the [National Wildlife Refuge System].”³³⁸

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,³³⁹ but the prohibition does not extend beyond refuge boundaries: “[n]othing 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.”³⁴⁰ 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 within the System shall be, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans.³⁴¹

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.”³⁴² 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.³⁴³ 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.”³⁴⁴ So while consistency is encouraged it is not mandated at the expense of the other requirements of the statute.

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.”³⁴⁵ Interpreting the statute as prohibiting the 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.”³⁴⁶ The

³³⁸ *Id.* at 1234.

³³⁹ 16 U.S.C. § 668dd(c). *See* *United States v. Kilpatrick*, 347 F.Supp. 2d 693 (D. Neb. 2004) (upholding conviction for trespassing on and shooting deer in a closed portion of a wildlife refuge).

³⁴⁰ 16 U.S.C. § 668dd(l).

³⁴¹ 16 U.S.C. § 668dd(m).

³⁴² 279 F.3d at 1231.

³⁴³ *Id.* at 1231-1232.

³⁴⁴ *Id.* at 1232.

³⁴⁵ *Id.* at 1234 (citing § 668dd(a)(2)).

³⁴⁶ *Id.* at 1233.

Wyoming court stated that “[w]e find highly unlikely the proposition 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.”³⁴⁷ 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.”³⁴⁸ To the extent that state law conflicts with or undermines statutory requirements or federal objectives, it is preempted.³⁴⁹ The Department of the Interior has adopted this cooperative federalism interpretation of the savings clause as well.³⁵⁰

v. Compatibility Determinations

The compatibility determination forms the central criteria 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 the [FWS] will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”³⁵¹ In implementing this provisions the FWS must consider direct, indirect, and cumulative impacts of the proposed use.³⁵² However, actions categorized as “refuge management activity” do not require compatibility determinations,³⁵³ though refuge management activities must be actions in furtherance of the system mission or refuge purposes and so are inherently compatible.³⁵⁴ State wildlife management activities may be considered “refuge management activities” if they are taken “pursuant to an agreement between the State and the FWS where the Refuge Manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission.”³⁵⁵ Because compatibility determinations must be made using “sound professional judgment”³⁵⁶ the *Wyoming* court

³⁴⁷ *Id.* at 1234-1235 (*internal citations omitted*). See also *Geier v. American Honda Motor Co.*, 599 U.S. 861, 868 (2000) (“The Supreme Court has repeatedly declined to give broad effect to savings clauses where doing so would upset the careful regulatory scheme established by federal law.”).

³⁴⁸ 307 F.3d at 854.

³⁴⁹ *Id.* See *School Bd. of Avoyelles Parish v. U.S. Dept. of the 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 Louisiana statute, allowing owner of estate that has no access to public road to claim right of passage over neighboring property, would permit school board to enter, use, or otherwise occupy refuge lands in violation of FWS regulations).

³⁵⁰ 43 C.F.R. § 24.4(e) (*emphasis added*).

³⁵¹ 16 U.S.C. § 668ee(a)(1).

³⁵² 50 C.F.R. § 25.12; Final Compatibility Policy Pursuant to the Nati’l Wildlife Refuge Sys. Improvement Act of 1997, 65 Fed. Reg. 62,489 (Oct. 18, 2000).

³⁵³ U.S. Fish and Wildlife Serv. Manual: Land Use and Mgmt. Series: General Overview of Wilderness Stewardship Policy, 610 FW 2.10(A) (2008); 65 Fed. Reg. 62,484, 62,488.

³⁵⁴ 65 Fed. Reg. 62,484, 62,488; 50 C.F.R. § 25.12; *and see* Joly, *supra* note __.

³⁵⁵ 65 Fed. Reg. 62,484, 62,488.

³⁵⁶ 16 U.S.C. § 668ee(3).

found that a reviewing court has “law to apply” and the determinations are reviewable at court.³⁵⁷

In conclusion, Congress delegated to the 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 “compatible” for state laws to be applied on refuge lands.³⁵⁸ 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’.”³⁵⁹ Both the compatibility requirement and the mandate to promote biological integrity, diversity, and environmental health impose legally enforceable restrictions and obligations on the FWS that cannot be cast aside at the request of states.

4. The National Forest System

a. The 1897 Organic Act

The Forest Service’s 1897 “Organic Act” authorizes the establishment of national forests. 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.”³⁶⁰ The law also authorizes the USFS to regulate “the occupancy and use” of the national forests and “to preserve the forests thereon from destruction.”³⁶¹

The Organic Act is silent on fish and wildlife management on National Forests. In an early wildlife decision, however, the Supreme Court found the USFS to have broad powers in protecting the national forests (in this case the Kaibab) from damage inflicted by deer in northern Arizona. The power of the U.S., 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.”³⁶²

³⁵⁷ 279 F.3d at 1237.

³⁵⁸ FREYFOGLE and GOBLE, *supra* note, at 215.

³⁵⁹ 279 F.3d 1234.

³⁶⁰ 16 U.S.C. § 475.

³⁶¹ *Id.* See 16 U.S.C. § 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.”). See *Forest Service Employees for Environmental Ethics v. U.S. Forest Service*, 689 F.Supp.2d 891, 905 (D.D.C. 2010) (finding that USFS unlawfully delegated its Organic Act authority in allowing National Wild Turkey Federation to issue special use permits on forest lands).

³⁶² *Hunt v. United States*, 278 U.S. 96, 100 (1928).

b. The Multiple Use Sustained Yield Act (1960)

In 1960, Congress passed the Multiple Use Sustained Yield Act (MUSYA).³⁶³ For the first time, it was statutorily recognized that the USFS had some responsibility to consider fish and wildlife values on the National Forests. 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.”³⁶⁴ This language does not require the 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 resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.³⁶⁵

As the courts generally view it, the multiple use mandate “breathes discretion at every pore”³⁶⁶ and grants the USFS wide latitude in determining the proper mix of uses for National Forest lands.³⁶⁷ In *Perkins v. Bergland*, the plaintiffs argued that the MUSYA contained standards that cabined the USFS’s discretion over the proper number of grazing permits to protect the public land from damage. 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

³⁶³ 16 U.S.C. §528.

³⁶⁴ *Id.*

³⁶⁵ 16 U.S.C. § 531(a).

³⁶⁶ *Perkins v. Bergland*, 608 F.2d. 803 (9th Cir. 1979).

³⁶⁷ *Wyoming v. U.S. Dept. of Agriculture*, 661 F.3d 1209, 1268-1269 (10th Cir. 2011), *cert. denied*, 133 S.Ct. 417 (2012).

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.³⁶⁸

Since *Perkins v. Bergland*, the courts have consistently found that USFS has broad discretion under the multiple use framework.³⁶⁹ This includes *Wyoming v. U.S. Dept. of Agriculture*,³⁷⁰ where the Tenth Circuit upheld the 2001 Roadless Rule³⁷¹ over challenges that the Rule failed to satisfy the statutory multiple-use mandate because it precluded timber harvesting in certain areas. The court reaffirmed the 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."³⁷²

A relatively short and simple savings clause is also provided in the 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."³⁷³ However, as noted above, in *California Coastal Comm'n v. Granite Rock Co.*,³⁷⁴ the U.S. 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. By the same token, contradictory state regulation of wildlife on the National Forests would be preempted despite the savings clause.³⁷⁵

c. The National Forest Management Act (NFMA) (1976)

Born out of the timber clear-cutting controversies of the 1960s and 1970s, the NFMA was passed in order to better balance timber management, resource use and environmental protection. Unlike the highly discretionary Organic Act and MUSYA, the NFMA provides substantive and procedural planning requirements, goals, and constraints on the agency,

³⁶⁸ 608 F.2d. at 806.

³⁶⁹ See e.g., *Griffin v. Yuetter*, 944 F.2d 908, 908 (9th Cir.1991) (unreported); *Big Hole Ranchers Assc. Inc. v. U.S. Forest Service*, 686 F.Supp. 256, 264 (D. Mon. 1988); *Wind River Multiple-Use Advocates v. Espy*, 835 F.Supp. 1362, 1372 (D. Wyo. 1993), *affirmed*, 85 F.3d 641 (10th Cir.1996); *Sierra Club v. Marita*, 845 F.Supp. 1317, 1328 (E.D. Wis. 1994); *Clinch Coal. v. Damon*, 316 F.Supp.2d 364, 378 (W.D. Va 2004); *Natural Res. Defense Council, Inc. v. U.S. Forest Serv.*, 634 F.Supp. 2d 1045, 1058 (E.D. Cal. 2007); *Cal. Forestry Assoc. v. Bosworth*, 2008 WL 4370074 (E.D. Cal., 2008); *Pacific Rivers Council v. U.S. Forest Serv.*, 2008 WL 4291209 (E.D. Cal. 2008); *People of Cal. ex rel. Lockyer v. U.S. Dept. of Agric.*, 2008 WL 3863479 (E.D. Cal.. 2008).

³⁷⁰ 661 F.3d 1209, 1268-1269 (10th Cir. 2011), *cert. denied*, 133 S.Ct. 417 (2012). *Accord American Whitewater v. Tidwell*, 959 F.Supp. 2d 839, 863 (D.S.C. 2013), *affirmed*, 770 F.3d 1108 (4th Cir. 2014); *Ark Initiative v. Tidwell*, 816 F.3d 119, 128 (D.C. Cir. 2016).

³⁷¹ Special Areas; Roadless Area Conservation Final Rule, 66 Fed. Reg. 3244 (2001).

³⁷² 661 F.3d at 1268-1269.

³⁷³ 16 U.S.C. § 528.

³⁷⁴ 480 U.S. 572, 585 (1987).

³⁷⁵ See *Hunt v. U.S.*, 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); *Wyoming*, 61 F.Supp. 2d at 1220, 1232 (construing the NWRIA's savings clause).

including obligations for managing fish and wildlife. The NFMA requires the writing of land and resource management plans (LRMPs or “forest plans”) by every national forest and grassland in the NFS.

NFMA created a three-tiered regulatory approach to planning.³⁷⁶ At the highest level, national-level NFMA regulations govern the development and revision of second-tier forest plans. 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.³⁷⁷ Forest plans also include long-term goals and desired conditions of the land and resources.³⁷⁸ Site-specific projects make up the third tier of planning. Any such proposed use of a national forest is subject to the requirement in NFMA that “[r]esource plans and permits, and other instruments for use and occupancy of National Forest System lands shall be consistent with” the applicable forest plan.³⁷⁹ 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.³⁸⁰ It requires that forest plans “provide for a 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.”³⁸¹ According to Wilkinson and Anderson’s authoritative history of NFMA’s development, the diversity provision was meant to require “Forest Service 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.”³⁸² Regulations implementing NFMA address requirements for diversity in greater detail. 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 the USFS’s authority and obligations for wildlife diversity.

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

³⁷⁶ For a more elaborate explanation of this tiered approach, see *Citizens for Better Forestry v. U.S. Dep’t of Agric.*, 341 F.3d 961 (9th Cir. 2003).

³⁷⁷ Scott W. Hardt, *Federal Land-Use Planning and Its Impact on Resource Management Decisions*, 46B RMMLF-INST 4, 4-7 (1997).

³⁷⁸ See Michael J. Gippert & Vincent L. DeWitte, *The Nature of Land and Resource Management Planning Under the National Forest Management Act*, 3 ENVTL. LAW. 149, 153–55 (1996) (discussing the various planning processes under NFMA). See also *Ohio Forestry Assn. Inc. v. Sierra Club*, 523 U.S. 726 (1998) (describing the nature of forest plans).

³⁷⁹ 16 U.S.C. 1604(i).

³⁸⁰ See generally Courtney A. Schultz et al., *Wildlife Conservation Planning Under the United States Forest Service’s 2012 Planning Rule*, 77 J. Wildlife Mgmt. 428-44 (2013).

³⁸¹ 16 U.S.C. 1604(g)(3)(B).

³⁸² CHARLES F. WILKINSON & H. MICHAEL ANDERSON, *LAND AND RESOURCE PLANNING IN THE NATIONAL FORESTS* 296 (1987).

viable populations of existing native and desired non-native species in the plan area.”³⁸³ 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 number and distribution of individuals to insure its continued existence is well distributed in the planning area.”³⁸⁴

Existing forest plans will be revised (many during the next decade) and amended under new NFMA implementing procedures codified in the 2012 Planning Rule.³⁸⁵ 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.³⁸⁶ For other at-risk species, referred to as species of conservation concern (“SCC”), forest plan components must provide the “ecological conditions to maintain a viable population of each species of conservation concern in the plan area.”³⁸⁷ There is an exception for SCC management: where population viability is beyond the authority of the USFS or capability of the land, the USFS must coordinate to the extent practicable with others having management authority over lands relevant to a larger population.³⁸⁸

The 2012 Planning Rule defines “ecological conditions” to include “habitat and other influences on species and the environment.”³⁸⁹ Other influences include “human uses.”³⁹⁰ 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.”³⁹¹ 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 ESA, during the listing process, and may be a basis for not listing a species.³⁹² Regulations of the U.S.

³⁸³ 36 C.F.R. §219.19 (1982). *See e.g. Seattle Audubon Society v. Moseley* (80 F. 3d 1401, 9th Cir. 1996), *Friends of the Wild Swan v. U. S. Fish and Wildlife Service* (945 F. Supp. 1388, D. Oregon 1996).

³⁸⁴ *Id.*

³⁸⁵ 36 C.F.R. Part 219 – Planning (2016).

³⁸⁶ 36 C.F.R. §219.9(b)(1) (2016).

³⁸⁷ *Id.* Agency planning policy requires that species identified by states as being at risk be considered as potential SCC. Forest Service Handbook 1909.12 §1252d(3).

³⁸⁸ 36 C.F.R. §219.9(b)(2) (2016).

³⁸⁹ 36 C.F.R. §219.19 (2016).

³⁹⁰ *Id.*

³⁹¹ *Id.*

³⁹² *See Greater Yellowstone Coalition, Inc. v. Servheen*, 665 F. 3d 1015, 9th Circuit (2011) (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 (“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.” (65 Fed. Reg.

Department of Agriculture require the USFS (and other USDA agencies) to “avoid actions which may cause a species to become threatened or endangered.”³⁹³ Under current plans and policies, species identified as “sensitive” were so designated in part to avoid their listing under ESA, and agency actions may not create “significant trends towards federal listing.”³⁹⁴ Current forest plans must ensure that viable populations of sensitive species are maintained.³⁹⁵ The relationship of newly identified SCC and 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. This means that they cannot jeopardize the continued existence of listed species³⁹⁶ or destroy or adversely modify any critical habitat that has been designated,³⁹⁷ or result in prohibited incidental take.³⁹⁸ 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 ESA.³⁹⁹

When it prepares forest plans under NFMA, the USFS may include plan components that govern activities affecting wildlife. These plan components may include both desired ecological conditions and restrictions on activities that are likely to adversely affect these conditions. Such restrictions could be applicable to state actions occurring on a national

16074 (Mar. 24, 2000). The decision to not list the greater sage grouse was based largely on plans for federal lands that conserved the species (80 Fed. Reg. 59858 (Oct. 2, 2015)).

³⁹³ USDA Departmental Regulation, 9500-04

(https://www.ocio.usda.gov/sites/default/files/docs/2012/DR9500-004_0.pdf).

³⁹⁴ FSM 2670.22(1), FSM 2670.32(4)

³⁹⁵ FSM 2672.41

³⁹⁶ See e.g. *Resources Limited, Inc. v. Robertson*, 35 F. 3d 1300, 9th Circuit 1993 (FWS conditioned its “no jeopardy” conclusion on the Forest Service’s continued adherence to grizzly bear guidelines).

³⁹⁷ See *Cottonwood Envtl. Law Center v. US Forest Serv.*, 789 F. 3d 1075 - 9th Circuit 2015 (reinitiation of consultation on forest plans required after designation of critical habitat for Canada lynx).

³⁹⁸ Pending litigation involving the Superior National Forest Plan claims that the Forest Service is responsible for take of Canada lynx resulting from hunting and trapping on the national forest. *Center for Biological Diversity v. Tidwell*, D. D.C., Case 1:16-cv-01049-TSC, June 6, 2016, Complaint for Declaratory and Injunctive Relief, at 15.

³⁹⁹ 16 U.S.C. §1536 (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. 77 Fed. Reg. 21215 (Apr. 9, 2012). The U.S. Fish and Wildlife Service Handbook for consultation states that a programmatic review based on §7(a)(1) is appropriate for Federal agency planning and program management documents. FWS Consultation Handbook, available at https://www.fws.gov/ENDANGERED/esa-library/pdf/esa_section7_handbook.pdf (p. 5-1) (last visited Aug. 8, 2016).

forest.⁴⁰⁰ However, the 2012 Planning Rule states that plans do not themselves regulate uses by the public, such as hunting and fishing.⁴⁰¹

ii. Wildlife and Special Use Authorization

Several wildlife conflicts playing out on the National Forests involve the question of whether or not the USFS should authorize a wildlife-focused action by a non-federal 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 the Forest Service's role in these state actions, and the applicability of federal law to them.

The USFS implements forest plans by authorizing specific uses that promote achievement of the desired outcomes, such as plant and animal diversity and viable populations. It may also authorize activities that would not necessarily promote these outcomes. This is often the case with requests for special use authorizations by applicants for permits, which could include state and local governments. A forest plan may include mandatory requirements (standards or guidelines) applicable to the issuance of such permits.

The objectives of the USFS special uses program are to authorize and manage special uses of National Forest System lands in a manner that protects natural resources and public health and safety, consistent with forest plans.⁴⁰² Permits may be granted only if the proposed use cannot reasonably be accommodated on non-National Forest System lands.⁴⁰³

Almost all uses of NFS lands, improvements, and resources are designated "special uses."⁴⁰⁴ Wildlife management activities on national forests by non-Federal parties would be considered special uses. Before conducting a special use, individuals or entities must obtain a special use authorization from the authorized officer, unless that requirement is

⁴⁰⁰ While courts have not yet found a direct conflict between a state action and NFMA's diversity requirement, such conflict could arise where a state game species is considered at-risk by the Forest Service. This is the case for bighorn sheep, where the State of Wyoming passed a law authorizing removal of bighorn sheep if the USFS were to reduce domestic sheep grazing. Enrolled Act No. 83, Senate, Sixty-third legislature of the State of Wyoming, 2015 General Session (<http://legisweb.state.wy.us/2015/Engross/SF0133.pdf>). See *Idaho Wool Growers Ass'n v. Vilsack*, 7 F.Supp. 3d 1085 (D. Idaho 2014) (affirmed by 9th Circuit on 3/2/16) (forest plan decision reduced domestic sheep grazing in order to prevent disease transmission to bighorn sheep).

⁴⁰¹ 36 C.F.R. §219.2(b)(2) (2016). Forest plan direction to limit public uses must be implemented by a closure order, pursuant to 36 CFR §261.50, and may include special closures to protect wildlife pursuant to 36 CFR §261.53(a).

⁴⁰² FSM 2702

⁴⁰³ FSM 2703.2

⁴⁰⁴ Some uses are not considered "special uses" because they are regulated by separate authorities, as described in 36 CFR §250 (2016). The various authorities for different kinds of special uses are listed in FSM 2701.1.

waived by regulation.⁴⁰⁵ There is no waiver provision that necessarily allows state actions taken on national forest system lands without a permit. A special use authorization is normally not required for hunting or fishing. However, the USFS may manage public recreation of any kind by issuing a closure order.⁴⁰⁶

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.⁴⁰⁷ The 2012 Planning Rule requires review of the planning and land use policies of state and local governments, and consideration of the objectives of these policies and opportunities to reduce conflicts.⁴⁰⁸ However, it explicitly does not permit the responsible USFS official to “conform the management to meet non-USFS objectives or policies.”⁴⁰⁹

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.”⁴¹⁰ The role of such cooperating agencies is to assist in the environmental review process. 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.”⁴¹¹ 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 law.”⁴¹² There is no general NEPA requirement to coordinate decision-making processes or for USFS decisions to be consistent with state plans.

⁴⁰⁵ 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 National Forest System 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. 36 CFR §251.50 (c)-(e).

⁴⁰⁶ 36 CFR §261.50 (2016). Among other reasons, closure orders are authorized for the “protection of threatened, endangered, rare, unique, or vanishing species of plants, animals, birds or fish, or special biological communities” 36 CFR §261.70(a)(4) (2017).

⁴⁰⁷ See 16 U.S.C. § 1604(a) (stating 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) (2016) (using the phrase “equivalent and related planning efforts”).

⁴⁰⁸ 36 C.F.R. §219.4(b)(2)(2016).

⁴⁰⁹ 36 C.F.R. §219.4(b)(3) (2016). For example, the Bridger-Teton National Forest refused to commit to “adopting” a Wyoming plan for bighorn sheep, describing it only as “a valuable framework.” Letter from USDA Forest Service, Intermountain Region to the Honorable Matt Mead, Governor of Wyoming. February 20, 2015 (copy on file)

⁴¹⁰ 36 C.F.R. §219.4(a)(1)(iv)(2016).

⁴¹¹ 40 C.F.R. §1506.2 (2016).

⁴¹² See 40 C.F.R. §1506.2(d) (2016) (“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.”).

In conclusion, although it is clear that the USFS must coordinate the development of LRMPs with tribal, state and local governments, this coordination requirement does not give such non-federal entities equal footing in managing NFS lands, nor does it require the USFS to act and manage NFS lands consistent with these non-federal plans.

d. USFS Cooperation in Wildlife Management.

Federal regulations applicable to the USFS require “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, furbearers, and other wildlife on national forest lands.⁴¹³

Forest Service directives provide additional coordination guidance.⁴¹⁴ In particular, they require development of a written memorandum of understanding (“MOU”) with each state involving policies or procedural matters.⁴¹⁵

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 the USFS or that are inconsistent with direction in forest plans.⁴¹⁶ Memorandums with state fish and wildlife agencies must recognize the role of the 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.⁴¹⁷

⁴¹³ 36 C.F.R. 241.2 (2016).

⁴¹⁴ FSM 2610 “Cooperative Relations”, available at <https://www.fs.fed.us/dirindexhome/fsm/2600/2610.txt>.

⁴¹⁵ FSM 2611.1 (2016).

⁴¹⁶ FSM 2643.1 (2016). *See e.g., Center for Biological Diversity v. United States Forest Service, D. Arizona 2013* (rejecting a standing causation argument, holding that the USFS has authority to regulate the use of lead bullets to protect California condors) (reiterating this holding on remand, but dismissing the case on other grounds, *D. Arizona* filed 3/15/17), *Louisiana Sportsmen Alliance v. Vilsack*, 984 F.Supp.2d 600 (W.D. Louisiana 2013) (Forest plan may prohibit hunting deer with dogs to reduce conflicting uses), *Meister v. USDA*, 623 F.3d 363 (6th Cir. 2010) (not beyond USFS authority to consider using a forest plan to prohibit gun hunting in areas to be managed for non-motorized recreation).

⁴¹⁷ FSM 2643 (2016).

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.⁴¹⁸ 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.⁴¹⁹ A prior joint agreement with appropriate state fish and wildlife agencies is needed for any introductions.⁴²⁰ Such MOUs must document agreements on each fish and wildlife translocation project and appropriate environmental documentation.⁴²¹ When stocking and reintroductions occur, the USFS has the responsibility to prevent damage to resources occurring on NFS lands and comply with the ESA and Wilderness Act.⁴²²

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 the USFS commits the USFS to considering state goals when developing its forest plans.⁴²³ It also recognizes that special use permits may be needed for some state actions on federal lands. 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.” It also contains a savings clause regarding state and federal authorities.

e. Special Designated Areas Managed by USFS

The laws and regulations reviewed above generally apply throughout the National Forest System. But the System also includes special areas, designated by Congress or the President, that may include additional authority and direction for managing wildlife. These include an assortment of USFS-administered national recreation areas, conservation areas and other specially-designated landscapes.⁴²⁴ These include National Monuments that are

⁴¹⁸ FSM 2640.3 (2016). *See also* Exec. Order 11987 (1977) (generally restricting federal agencies from introducing species to lands they administer, and encouraging the prevention of introductions by other levels of government and by private citizens).

⁴¹⁹ *Id.* The State has the responsibility to make the determination as to which wildlife and fish species are native or indigenous.

⁴²⁰ FSM 2640.4 (2016).

⁴²¹ FSM 2641 (2016).

⁴²² *Id.*

⁴²³ FSM 1561.2 - Exhibit 02, R4 Supplement 1500-94-3 (2016).

⁴²⁴ For a comprehensive listing of “special recreation and conservation overlays,” *see* George Cameron Coggins et al., *Federal Public Land and Resources Law* 946–47 (2007). Included in the listing for National Forest lands are special management areas (such as Greer Spring, Missouri, 16 U.S.C. § 539h (2006)), recreation management areas (such as Fossil Ridge, Colorado, 16 U.S.C. § 539i (2006)), protection areas (such as Bowen Gulch, Colorado, 16 U.S.C. § 539j (2006)), scenic areas (such as Columbia River Gorge, Oregon-Washington, 16 U.S.C. § 544-544m (2006)), scenic research areas (such as Opal Creek, Oregon, 16 U.S.C. § 545b (2006)), national scenic areas (such as Mount Pleasant, Virginia, 16 U.S.C. § 545 (2006)), national forest scenic areas (such as Mono Basin, California, 16 U.S.C. § 543 (2006)), and national preserves (such as Valles Caldera, New Mexico, 16 U.S.C. § 698v (2006)). *See also* NATURAL RESOURCES

established by the President using the Antiquities Act.⁴²⁵ A recent national monument established on National Forest System lands (which also includes BLM lands) is the Sand to Snow National Monument in California.⁴²⁶ 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” and 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 this area a critical bridge for wildlife traversing the high elevations of southern California’s desert landscape.” The Proclamation orders the 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.”⁴²⁷

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 the BLM is the Federal Land Policy Management Act (FLPMA) of 1976.⁴²⁸ FLPMA is considered to be the BLM’s Organic Act because it consolidated and articulated the agency’s mission and management responsibilities. 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.⁴²⁹ 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:

[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

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 and Michael Fiebig, *Managing the National Forests Through Place-Based Legislation*, 37 Ecology L.Q. 1 (2010).

⁴²⁵ 54 U.S.C. §320301.

⁴²⁶ Presidential Proclamation, Establishment of the Sand to Snow Nat’l Monument, Feb. 12, 2016. <https://www.whitehouse.gov/the-press-office/2016/02/12/presidential-proclamation-establishment-sand-snow-national-monument>

⁴²⁷ *Id.*

⁴²⁸ Act of Oct. 21, 1976, Pub. L. No. 94-579, 90 Stat. 2744, 43 U.S.C. §§1701 *et seq.*

⁴²⁹ See e.g., DEBRA L. DONAHUE, THE WESTERN RANGE REVISITED, REMOVING LIVESTOCK FROM PUBLIC LANDS TO CONSERVE NATIVE BIODIVERSITY (1999); JAMES R. SKILLEN, THE NATION’S LARGEST LANDLORD: THE BUREAU OF LAND MANAGEMENT IN THE AMERICAN WEST (2009).

and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use.⁴³⁰

FLPMA also codified a multiple use mandate,⁴³¹ 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.⁴³²

Three components of this definition are essential to understanding the 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 the BLM is given direction to manage include "wildlife and fish," and not just fish and wildlife *habitat*. We return to this issue in Part III(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 informed land use planning process. To this end, FLPMA requires the preparation of resource management plans.⁴³³ 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 lands, their resources, and others values," and to "weigh long-term benefits to the public against short-term benefits."⁴³⁴

⁴³⁰ 43 U.S.C. §1701(a)(8).

⁴³¹ Congress first codified multiple use management for the BLM in the Classification and Multiple Use Act of 1964, Pub. L. No. 88-607, 78 Stat. 986.

⁴³² 43 U.S.C. §1702(c) (emphasis added).

⁴³³ 43 U.S.C. §1712.

⁴³⁴ 43 U.S.C. §1712(c).

As in the case of the national forests, the multiple use mandate given to the BLM provides a great deal of agency discretion.⁴³⁵ 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.⁴³⁶ 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,”⁴³⁷ and (2) the requirement that the Secretary of Interior (and hence the BLM) must “take any action necessary to prevent unnecessary or undue degradation of the lands.”⁴³⁸

i. Areas of Critical Environmental Concern

FLPMA requires the BLM’s land use planning process to “give priority to the designation and protection of areas of critical environmental concern [ACECs].”⁴³⁹ 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.⁴⁴⁰

This is a unique provision in federal land law. ACECs are often designated because of the fish and wildlife values associated with them.⁴⁴¹ Congress, in unambiguous fashion, ordered the agency to *prioritize* the designation and protection of ACECs. This means that the BLM should be giving ACECs priority for consideration in the planning process and extra weight in decision making.⁴⁴² As summarized in a recent study, “The legislative history of FLPMA documents Congress’ consistent and purposeful intent to provide for the protection of ACECs and to require BLM to give priority to that protection in the

⁴³⁵ See e.g., *Natural Resources Defense Council v. Hodel*, 624 F. Supp. 1045 (D. Nev. 1985), *aff’d*, 819 F. 2d 927 (9th Cir. 1987).

⁴³⁶ *Nat’l Wildlife Fed’n et al. v. BLM*, 140 I.B.L.A. 85 (1997). For a more complete history of this case and its implications for multiple use see Joseph M. Feller, *The Comb Wash Case: The Rule of Law Comes to the Public Rangelands*, 17 Pub. Land L. Rev. 25 (1996).

⁴³⁷ 43 U.S.C. §1702(c).

⁴³⁸ 43 U.S.C. §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).

⁴³⁹ 43 U.S.C. § 1712(c)(3).

⁴⁴⁰ 43 U.S.C. §1702(a) (emphasis added).

⁴⁴¹ Karin P. Sheldon, Pamela Baldwin, and Trevor J. Pellerite, *Areas of Critical Environmental Concern: Unfulfilled Potential for Public Land Conservation: A Report to the Pew Charitable Trusts* Appendix A (July 30, 2015) (providing a comparison of ACECs in selected resource management plans).

⁴⁴² See Debra L. Donahue, *Federal Rangeland Policy: Perverting Law and Jeopardizing Ecosystem Services*, 22 J. LAND USE & ENVTL. L. 299, 338 (2007) (noting that Congress repeatedly emphasized the “priority” to be given to ACECs).

agency's inventory, designation and planning processes.”⁴⁴³ 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 restoring “the visibility and effectiveness of ACECs” in BLM regulations, policy guidance and budget justifications and providing them “the heightened level of protection called for by FLPMA.”⁴⁴⁴

ii. BLM Regulation and Policy

Three provisions are of particular importance to wildlife management on public lands managed by the BLM.⁴⁴⁵ The first is the “fundamentals of rangeland health” regulation that requires standards and guidelines to be developed by the BLM, including those focused on wildlife habitat. 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.”⁴⁴⁶

The second is found in the BLM Manual for management of “special status species.”⁴⁴⁷ This policy was written pursuant to FLPMA, the ESA, and other laws. 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.”⁴⁴⁸ 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.”⁴⁴⁹ Candidate species for ESA listing are included in the Bureau's sensitive species category.⁴⁵⁰ Furthermore, the BLM must address “Bureau sensitive species and their habitats in land use plans and associated NEPA documents.”⁴⁵¹ With respect to implementation-level planning, the 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.”⁴⁵²

⁴⁴³ Karin P. Sheldon, Pamela Baldwin, and Trevor J. Pellerite, *Areas of Critical Environmental Concern: Unfulfilled Potential for Public Land Conservation: A Report to the Pew Charitable Trusts* (July 30, 2015), at v. See also DONAHUE, *THE WESTERN RANGE REVISITED*, *supra* note, at 208-210.

⁴⁴⁴ Sheldon, *supra* note, at vii.

⁴⁴⁵ See e.g., *W. Watersheds Project v. Salazar*, 843 F. Supp. 2d 1105 (2012).

⁴⁴⁶ 43 C.F.R. §4180.1(d).

⁴⁴⁷ BLM Manual, Special Status Species Mgmt., §6840 (2008), available at http://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/blm_manual.Par.43545.File.dat/6840.pdf.

⁴⁴⁸ BLM Manual, *supra* note, § 6840.01.

⁴⁴⁹ *Id.* §6840.02.

⁴⁵⁰ *Id.* §6840.01 (and Glossary 5).

⁴⁵¹ *Id.* § 6840.2A1 (Planning).

⁴⁵² *Id.*

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. The BLM is obligated to regulate the use and occupancy of public lands⁴⁵³ 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.⁴⁵⁴ 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;⁴⁵⁵ (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) other information BLM finds appropriate.⁴⁵⁶ The 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.”⁴⁵⁷

b. The National Landscape Conservation System

The BLM is also tasked with managing units within the National Landscape Conservation System (NLCS).⁴⁵⁸ These include BLM-administered national conservation areas (NCAs) and similar designations, national monuments, and wilderness study areas, providing direction, either through statute or presidential proclamation, in how to manage individual units.⁴⁵⁹ It is beyond the scope of this Article to review the full extent and diversity of this System. Importantly, however, several conservation areas and monuments managed by the 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

⁴⁵³ 43 U.S.C. § 1732(b)

⁴⁵⁴ 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(2). 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 any “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.*

⁴⁵⁵ Permits must be consistent with the applicable resource management plan for the area. *See* 16 U.S.C. §1732(a); 43 C.F.R. §1610.5-3(a).

⁴⁵⁶ 43 C.F.R. §2932.26.

⁴⁵⁷ 43 C.F.R. §2932.41.

⁴⁵⁸ 16 U.S.C. § 7202.

⁴⁵⁹ The BLM manages roughly 4.1 million acres of NCAs and lands with similar designations and roughly 8.1 million acres of national monuments. Federal wilderness areas are also included in the NLCS and we address those areas in Part II(B)(7). Figures from the National Landscape Conservation System, available at http://www.blm.gov/wo/st/en/prog/blm_special_areas/NLCS/nlcs_resources_.html (last visited July 20, 2016).

therewith.”⁴⁶⁰ 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.”⁴⁶¹ In 2009, Congress formally recognized and established the NLCS and provided another wildlife-specific savings clause that would serve as a back-up if the enabling legislation was silent on the matter.⁴⁶²

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 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.*⁴⁶³

⁴⁶⁰ Pub. L. No. 103-64 (1993).

⁴⁶¹ See e.g., Proclamation 7398 (Jan. 17, 2001), Establishment of the Upper Missouri River Breaks National Monument, 66 Fed. Reg. 7359 (Jan. 22, 2001).

⁴⁶² “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).

⁴⁶³ 43 U.S.C. §1712(c)(9) (emphasis added).

This provision provides state governors the opportunity to advise the BLM of their positions on draft land use plans. The BLM must consider this advice in so-called “consistency reviews.”⁴⁶⁴

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 the 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 III(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 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.⁴⁶⁵

This provision was at the center of a dispute involving a proposed wolf hunt on federal lands by the State of Alaska. In *State of Alaska v. Andrus*, the district court 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.”⁴⁶⁶ Furthermore, said the court, under the power of “administration,” “[T]he Secretary is commanded to manage the public lands under principles of multiple use [and] [m]ultiple use includes the management of wildlife.”⁴⁶⁷ 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

464 See 43 C.F.R. §1610.3-2; *New Mexico ex rel. Richardson v. BLM*, 565 F.3d 683 (10th Cir. 2009) (“A meaningful opportunity to comment is all the regulation requires.”). See also *Western Exploration v. USDI* (D. Nevada, March 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.”)

465 43 U.S.C. § 1732(b) (emphasis added).

466 429 F.Supp. 958, 962 (1977), *aff’d*, 591 F.2d 537 (9th Cir. 1979).

467 *Id.*

because there was no major federal action.⁴⁶⁸ 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.”⁴⁶⁹ We return to the questions unresolved by these courts in Part III(D).

The Department of the Interior sought to provide more guidance on state-federal relationships through a policy statement in 1983.⁴⁷⁰ In essence, Interior’s Policy simply recognizes some of the principles of wildlife federalism that we covered in Parts I and II(A) of the Article, from states as trustees of wildlife to federal constitutional powers to manage 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.”⁴⁷¹

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.”⁴⁷² In other sections, the Policy recognizes that “[s]tate jurisdiction remains concurrent with Federal authority,”⁴⁷³ 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.”⁴⁷⁴ While the Policy does acknowledge basic constitutional principles pertaining to the Property Clause, Commerce Clause, federal preemption and treaty-making powers,⁴⁷⁵ it also makes the often-repeated assertion that the BLM “has custody of the land itself and the habitat upon which fish and resident wildlife are dependent” and that

⁴⁶⁸ 42 U.S.C. 4332(c). See George Cameron Coggins and Robert L. Glicksman, “Federal Action,” 2 Pub. Nat. Resources L. § 17:16 (2016) (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”).

⁴⁶⁹ *State of Alaska v. Andrus*, 591 F. 2d 537, 538 (9th Cir. 1979). The District of Columbia Circuit Court reached the same conclusion regarding NEPA, but used language in dicta that was relatively favorable to the state’s authority to manage wildlife. See *Defenders of Wildlife v. Andrus*, 627 F. 2d 1238, 1249 (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.’”).

⁴⁷⁰ Dept. Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642 (Mar. 18, 1983) (43 C.F.R. Part 24). Although the Policy appears in the C.F.R. “as a matter of convenience to the public,” *id.* at 11,642, it was not subject to the rulemaking requirements of the Administrative Procedure Act, 5 U.S.C. 553, and as such does not carry the force of law. *Christensen v. Harris Cnty.*, 529 U.S. 576, 587 (2000).

⁴⁷¹ 43 C.F.R. § 24.1(a).

⁴⁷² 43 C.F.R. § 24.2(a).

⁴⁷³ 43 C.F.R. § 24.3(c).

⁴⁷⁴ 43 C.F.R. § 24.4(c).

⁴⁷⁵ 43 C.F.R. § 24.3.

“[m]anagement of the habitat is a responsibility of the Federal Government,”⁴⁷⁶ thereby implying that BLM only has power over the land and not the wildlife that inhabit it.

In Part III(C), we explain the fundamental problems with 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 (ANILCA)

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 Act (ANILCA),⁴⁷⁷ which creates new land categories⁴⁷⁸ and statutory exceptions⁴⁷⁹ that do not exist elsewhere, as well as an overarching system of subsistence management, which adds an additional management mission/goal to nearly all federal lands in Alaska.⁴⁸⁰ In *Sturgeon v. Frost*,⁴⁸¹ 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...”⁴⁸²

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.⁴⁸³ 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 exceptions⁴⁸⁴ and creates

⁴⁷⁶ 43 C.F.R. § 24.4(d).

⁴⁷⁷ 16 U.S.C. §§ 3101-3233 (1980).

⁴⁷⁸ Such as National Preserves (a subcategory of National Park Lands on which sport hunting is permitted). ANILCA § 203 and § 1313.

⁴⁷⁹ 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. ANILCA § 811, § 1110(a), and § 1111(a).

⁴⁸⁰ ANILCA §§ 801-816.

⁴⁸¹ *Sturgeon v. Frost*, 136 S.Ct. 1061 (2016).

⁴⁸² *Id.* at 1070.

⁴⁸³ ANILCA §§ 201-202, 302-303, 401, 403, 501, 601-603, and 701-704.

⁴⁸⁴ 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. ANILCA § 202 (1) and (3)(a).

a subsistence preference that applies to rural Alaskans and grants them a priority position in relation to other consumptive users of fish and game.⁴⁸⁵

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...”⁴⁸⁶ More colloquially, it refers to rural hunting, fishing, and gathering of resources for personal use.⁴⁸⁷ 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.⁴⁸⁸ 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 to the Alaska Supreme Court.⁴⁸⁹ Several efforts were made to amend the Alaska constitution so that the state could reclaim authority over all hunting, but those attempts were never successful.⁴⁹⁰ 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.⁴⁹¹

ANILCA instructs the agencies to manage subsistence “consistent with sound management principles, and the conservation of healthy populations of fish and wildlife”⁴⁹² and “consistent with management of fish and wildlife in accordance with recognized scientific principles and the purposes for each unit.”⁴⁹³ ANILCA also states that “[n]othing in this title shall be construed as (1)...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.”⁴⁹⁴ 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

⁴⁸⁵ See ANILCA § 804 (“nonwasteful subsistence uses of fish and wildlife and other such resources shall be the priority consumptive uses of all such resources on the public lands of Alaska”).

⁴⁸⁶ ANILCA § 803.

⁴⁸⁷ 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.” ANILCA § 801(2).

⁴⁸⁸ ANILCA § 805(d).

⁴⁸⁹ *McDowell v. Alaska*, 785 P.2d 1 (Alaska 1989).

⁴⁹⁰ FRANK NORRIS, *The Federal Assumption Process 1989-1993*, in *ALASKA SUBSISTENCE: A NATIONAL PARK SERVICE HISTORY* Ch. 7 (2002).

⁴⁹¹ *Id.*; Kyle Joly, Sanford P. Rabinowitch, and Julie Lurman Joly, *Dual Management of Wildlife in Alaska: Making Federal Practice Align with Federal Mandates*, 32 *GEORGE WRIGHT FORUM* 18 (2015).

⁴⁹² ANILCA § 802(1).

⁴⁹³ *Id.*

⁴⁹⁴ ANILCA § 815.

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.⁴⁹⁵

ii. Sport Hunting

Sport hunting (non-subsistence hunting) is permitted on most non-Park lands in Alaska⁴⁹⁶ and is managed largely through the state regulatory process, as it is elsewhere in the U.S. However, ANILCA creates a new category of Park lands called Preserves where sport hunting and commercial trapping are permitted.⁴⁹⁷ The State of Alaska regulates sport hunting state-wide, including on federal lands. 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 (moose, caribou, and deer).⁴⁹⁸ This intensive management requirement often leads to predator reduction efforts.⁴⁹⁹ The NPS on the other hand is required to maintain natural and healthy populations of all species according to ANILCA and "to conserve the scenery, natural and historic objects, and the wild life" according to the National Park Service Organic Act.⁵⁰⁰ 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."⁵⁰¹ These state and federal goals are mutually exclusive.⁵⁰²

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 the Park Service's legal obligations under the Organic Act and ANILCA.⁵⁰³ The new rules clarify that state wildlife regulations that conflict with Park Service regulations or laws are not applicable on Park Service lands.⁵⁰⁴ The Alaska Regional Park Service Director will publish a list, at least annually, of all state-permitted activities that are prohibited on Park Service lands.⁵⁰⁵

There has been a great deal of criticism of these rule changes and the FWS' ultimately successful effort to follow a similar course was initially marked by efforts to block the

⁴⁹⁵ ANILCA § 810.

⁴⁹⁶ ANILCA § 1314(c).

⁴⁹⁷ ANILCA § 203 and § 1313; 16 U.S.C. § 3201. *See* 80 Fed. Reg. 64,325, 64,325 (2015).

⁴⁹⁸ ALASKA STAT. § 16.05.255.

⁴⁹⁹ Alaska; Hunting and Trapping in National Preserves, 80 Fed. Reg. 64,325, 64,326 (Nov. 23, 2015) (codified at 36 C.F.R. pt. 13).

⁵⁰⁰ 16 U.S.C. § 1.

⁵⁰¹ NPS Management Policies 2006 §§4.1, 4.4.1, 4.4.1.2, and 4.4.2; 80 Fed. Reg. 64,325, 64,326.

⁵⁰² Joly and Rabinowitch, *supra* note , at 165.

⁵⁰³ 80 Fed. Reg. 64,325. As we saw above, *supra* notes _____, this rule change has been followed by a similar rule change on National Wildlife Refuges.

⁵⁰⁴ 80 Fed. Reg. 64,325, 36 C.F.R. § 13.42(a) and (f).

⁵⁰⁵ 80 Fed. Reg. 64,325, 36 C.F.R. § 13.42(f)(1).

development of such rules on NWRs.⁵⁰⁶ Ultimately, in 2017 Congress, exercising its authority under the Congressional Review Act,⁵⁰⁷ abolished the FWS regulations.⁵⁰⁸ 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 as well. The 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. Additionally, the Park Service's effort has been criticized by the state as statutory overreach and a violation of the public trust doctrine,⁵⁰⁹ though both ANILCA and the Organic Act recognize the Park Service's authority to regulate these activities.⁵¹⁰ As the Park Service 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."⁵¹¹

7. The National Wilderness Preservation System

a. The Policy and Objectives of Wilderness Act

The Wilderness Act of 1964⁵¹² 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*

⁵⁰⁶ Senator Sullivan (R. AK) submitted an amendment, which was ultimately never passed, to the Bipartisan Sportsmen's Act of 2015 that would prohibit the 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*, NEWSMINER, Jan. 20, 2016, available at http://www.newsminer.com/news/alaska_news/sullivan-moves-to-prohibit-federal-refuge-predator-hunt-rules/article_cb73cb86-bff4-11e5-8ae5-3704d5ccd02b.html.

⁵⁰⁷ 101 Stat. 847 at 868-874 (1996), Pub. L. 104-121. The law authorizes Congress to review and repeal federal agency regulations passed within the last 60 legislative days.

⁵⁰⁸ Pub. L. 115-20 (04/03/2017).

⁵⁰⁹ Doug Vincent Lang, *Alaska must reject feds' claim to control hunting in preserves and refuges*, ALASKA DISPATCH NEWS, Jan. 10, 2016 available at <http://www.adn.com/article/20160110/alaska-must-reject-feds-claim-control-hunting-preserves-and-refuges>. Lang is the former director of Wildlife Conservation at the Alaska Department of Fish and Game.

⁵¹⁰ 80 Fed. Reg. 64,325, at 64,329 and 64,333.

⁵¹¹ 80 Fed. Reg. 64,325, 64,331.

⁵¹² Pub. L. No. 88-577 (codified at 16 U.S.C. §§ 1131-1136).

*manner as will leave them unimpaired for future use and enjoyment as wilderness.*⁵¹³

The Act defines wilderness⁵¹⁴ and imposes a duty on the federal agencies to administer designated areas for “the preservation of their wilderness character.”⁵¹⁵ In addition, Congress designated fifty-four areas managed by the USFS,⁵¹⁶ detailed inventory procedures,⁵¹⁷ prohibited a number of uses,⁵¹⁸ and adopted special provisions to clarify certain other uses.⁵¹⁹ Parts 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.”⁵²⁰ To implement this requirement, the four wilderness-managing agencies have endorsed⁵²¹ 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.⁵²²

⁵¹³ 16 U.S.C. § 1131(a) (emphasis added). [Note to Editor: this punctuation (comma outside quotation mark) is as in official version from Congress].

⁵¹⁴ 16 U.S.C. § 1131(c).

⁵¹⁵ 16 U.S.C. § 1133(b).

⁵¹⁶ 16 U.S.C. § 1132(a).

⁵¹⁷ 16 U.S.C. § 1132(b)-(d). The BLM’s authority to inventory for wilderness characteristics and to manage areas designated by Congress was expressed in FLPMA, 43 U.S.C. § 1711 and § 1782.

⁵¹⁸ 16 U.S.C. § 1133(c).

⁵¹⁹ 16 U.S.C. § 1133(d).

⁵²⁰ 16 U.S.C. § 1133(b).

⁵²¹ 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).

⁵²² Peter Landres *et al.*, *Keeping It Wild 2: An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System*, For. Service Gen. Tech. Rept. RMRS-GTR-340 at 7 (2015) (*hereinafter* KIW2). 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.*, *Keeping It Wild: An Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System*, For. Service Gen. Tech. Rept. RMRS-GTR-212 (2008); Peter Landres *et al.*, *Monitoring Selected Conditions Related to Wilderness Character: A National Framework*, For. Service Gen. Tech. Rept. RMRS-GTR-151 (2005).

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.⁵²³ 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 untrammeled by man” that “generally appears to have been affected primarily by the forces of nature” and “retain[s] its primeval character and influence.”⁵²⁴ Untrammeled means “essentially unhindered and free from the intentional actions of modern human control or manipulation.”⁵²⁵ In terms of wildlife management, this concept precludes intentional manipulation of species, populations, and individuals (with the exception of casual, non-commercial hunting and fishing, where allowed).⁵²⁶ 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 Endangered Species Act or to improve another quality of wilderness character), action should be taken with the utmost restraint and humility.⁵²⁷

Natural. The Act provides that wilderness is “protected and managed so as to preserve its natural conditions.”⁵²⁸ This means that ecological systems within wilderness areas “are substantially free from the effects of modern civilization.”⁵²⁹ 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). These ecosystems should be uncompromised by non-native species, or by artificially increased (or decreased) populations of native species or other biophysical conditions. 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.⁵³⁰

Undeveloped. The Wilderness Act also identifies wilderness as “an area of undeveloped Federal land . . . without permanent improvements or human habitation, . . . where man

⁵²³ 16 U.S.C. § 1131(c).

⁵²⁴ *Id.*

⁵²⁵ KIW2, *supra* note, at 10-11, 33-36 and app. 6.

⁵²⁶ *See id.* at 104.

⁵²⁷ Sandra B. Zellmer, *Wilderness Imperatives and Untrammeled Nature*, in ENVIRONMENTAL LAW AND CONTRASTING IDEAS OF NATURE: A CONSTRUCTIVIST APPROACH 179 (Keith H. Hirokawa, ed. 2014).

⁵²⁸ 16 U.S.C. § 1131(c).

⁵²⁹ KIW2, *supra* note, at 11. *See id.* at 39-43 and App. 7.

⁵³⁰ *See* KIW2, *supra* note, App. 7.

himself is a visitor who does not remain . . . with the imprint of man’s work substantially unnoticeable.”⁵³¹ This means that wilderness is unmarred by “the sights and sounds of modern human occupation.”⁵³² The Act’s prohibition on “improvements” is not restricted to those that are permanent, but includes any physical developments (such as structures, installations, and both permanent and temporary roads) as well as temporal developments (that is, where the wilderness is “developed” for the duration of the use of the prohibited tool -- such as motor vehicles, motorized equipment, and mechanical transport).⁵³³ Again, restraint and humility are key: “[In wilderness areas] we stand without our mechanisms that make us immediate masters over our environment.”⁵³⁴ The implications for wildlife management are discussed in greater detail in “Prohibition of Certain Uses,” below.

Solitude or Primitive and Unconfined Recreation. Wilderness areas provide “outstanding opportunities for solitude or a primitive and unconfined type of recreation.”⁵³⁵ 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.”⁵³⁶ 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.

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.”⁵³⁷ “This quality captures important elements or ‘features’ of a particular wilderness that are not [necessarily] covered by the other four qualities.”⁵³⁸ 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.

ii. *Within and Supplemental*

Under section 4(a) of the Wilderness Act, “The purposes of this Act 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.”⁵³⁹ As section 4(b) makes clear, however, “each agency administering any area designated as

⁵³¹ 16 U.S.C. § 1131(c).

⁵³² KIW2, *supra* note, at 11. *See id.* at 45-48.

⁵³³ 16 U.S.C. § 1133(c).

⁵³⁴ Howard Zahniser, *The Need for Wilderness Areas*, in 59 THE LIVING WILDERNESS 37, 38 (1956).

⁵³⁵ 16 U.S.C. § 1131(c).

⁵³⁶ KIW2, *supra* note, at 11. *See id.* at 51-55.

⁵³⁷ 16 U.S.C. § 1131(c).

⁵³⁸ KIW2, *supra* note, at 12. *See id.* at 57-60.

⁵³⁹ 16 U.S.C. § 1133(a).

wilderness shall be responsible for *preserving the wilderness character* of the area, and shall administer the area for such other purposes for which it may have been established in such away also *to preserve its wilderness character.*⁵⁴⁰ For all four agencies, upon designation as wilderness, the preservation of wilderness character becomes the primary duty of the underlying unit,⁵⁴¹ and management of the other purposes must meet the requirements of the Wilderness Act in addition to the requirements of each agency’s Organic Act.

All four land management agencies struggle with this concept, but it has been especially problematic for the FWS and NPS, largely because they believe that their conservation-oriented purposes are equivalent to wilderness preservation.⁵⁴² How these agencies have addressed this problem is discussed in the Agency Policy section below. Implications and continuing issues surrounding “within and supplemental” are discussed in Part III(E). The “within and supplemental” requirement crops up routinely with respect to justifying uses explicitly prohibited by the Wilderness Act.

iii. Prohibition of Certain Uses

Section 4(c) of the Wilderness Act specifically prohibits ten uses. These are all subject to two exceptions: “Except as specifically provided for in this Act, and subject to existing private rights.”⁵⁴³ Notably, there are no “existing private rights” associated with the management of wildlife in wilderness, and other specific provisions are discussed below in the section “Special Provisions.” Two of the ten prohibited uses—commercial enterprise and permanent roads—are subject *only* to these two exceptions (unless specifically authorized in subsequent legislation). 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.”⁵⁴⁴ Only three types of commercial activity may be allowed in wilderness as they are specifically provided for in the Act: livestock grazing,⁵⁴⁵ exercising certain mineral rights,⁵⁴⁶ and commercial services.⁵⁴⁷ Absent those three activities, no commercial enterprise can take place in wilderness, and no wilderness resources can be removed for

⁵⁴⁰ *Id.* § 1133(b) (emphases added).

⁵⁴¹ *See Wilderness Watch v. Vilsack*, No. 4:16-cv-12-BLW, 2017 WL 241320 *8 (D.Idaho Jan. 18, 2017) (“Congress made preservation of wilderness values ‘the primary duty of the Forest Service, and it must guide all decisions as the first and foremost standard of review for any proposed action.’”) (citing *Greater Yellowstone Coalition v. Timchak*, CV-06-04-E-BLW, 2006 WL 3386731 *6 (D. Idaho Nov. 21, 2006)).

⁵⁴² For analysis of wilderness management on dominant use lands, see Sandra B. Zellmer, *Wilderness in National Parks and Wildlife Refuges*, 44 *Envtl. L.* 497 (2014).

⁵⁴³ 16 U.S.C. § 1133(c).

⁵⁴⁴ *See Wilderness Society v. USFWS*, 353 F.3d 1051, 1061 (9th Cir. 2003) (en banc) (hereinafter *Tustemena Lake*) (stating that commerce is “work that is intended for the mass market”; “even non-profit entities may engage in commercial activity”).

⁵⁴⁵ 16 U.S.C. § 1133(d)(4)(2).

⁵⁴⁶ 16 U.S.C. §§ 1133(d)(3), 1134.

⁵⁴⁷ 16 U.S.C. § 1133(d)(5). *See infra* Part II(B)(7)(b)

financial gain, including animals or parts of animals, such as antlers and fur. 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, 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.”⁵⁴⁸

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 Act.”⁵⁴⁹ 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. 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.⁵⁵⁰

“*For the administration of the area.*” Otherwise-prohibited uses cannot be authorized to facilitate management objectives or activities occurring *outside* of the wilderness area.⁵⁵¹ Notably, in Section 4(c), Congress clearly referenced “*the area*,” not, as the Act does elsewhere, the National Wilderness Preservation System as a whole. 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,’”⁵⁵² it

⁵⁴⁸ *Tustemena Lake*, 353 F.3d at 37 (prohibiting FWS approval of salmon stocking within the Kenai Wilderness).

⁵⁴⁹ 16 U.S.C. § 1133(c).

⁵⁵⁰ *Id.*; 16 U.S.C. § 1133(b).

⁵⁵¹ See *High Sierra Hikers Ass'n v. U.S. Forest Service*, 436 F.Supp.2d 1117 (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 enhancement of fisheries was not necessary to meet minimum requirements for the administration of the area); *High Point, LLLP v. Nat'l Park Serv.*, No. 15-11825, 850 F.3d 1185, 1197 (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, 1093 (11th Cir. 2004)).

⁵⁵² *Wilderness Watch v. U.S. Fish & Wildlife Serv.*, 629 F.3d 1024, 1037 n.8 (9th Cir. 2010) [hereinafter *Kofa*].

offered no measure of exactly how necessary is necessary enough to meet the statute's requirements when coupled with the qualifier "minimum."⁵⁵³ To guide the agencies, the Arthur Carhart National Wilderness Training Center 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.⁵⁵⁴ 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.⁵⁵⁵ 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.⁵⁵⁶

iv. Special Provisions

The Wilderness Act contains a number of "Special Provisions."⁵⁵⁷ 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."⁵⁵⁸ Like similar savings clauses, this provision retains federal jurisdiction over wildlife on federal lands, while recognizing the traditional authority of the states with respect to wildlife management insofar as consistent with

⁵⁵³ 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").

⁵⁵⁴ See Arthur Carhart National Wilderness Training Center, MINIMUM REQUIREMENTS DECISION GUIDE OVERVIEW (Dec. 19, 2016), at http://www.wilderness.net/MRDG/documents/MRDG_overview.pdf.

⁵⁵⁵ See, e.g., Bur. Land Mgmt., MANAGEMENT OF DESIGNATED WILDERNESS AREAS, Manual 6340 App. B; FWS Wilderness Policy, 610 FW 1.18; U.S.D.A. For. Serv., RECREATION, WILDERNESS, AND RELATED RESOURCE MANAGEMENT, CHAP. 2320 - WILDERNESS MANAGEMENT, FSM 2326; Nat'l Park Serv., DIRECTOR'S ORDER #41, WILDERNESS MANAGEMENT, § 6.4.

⁵⁵⁶ See *Kofa*, 629 F.3d at 1037 ("The 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, 646–47 (9th Cir. 2004) (construing the 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).

⁵⁵⁷ 16 U.S.C. § 1133(d).

⁵⁵⁸ 16 U.S.C. § 1133(d)(7). This provision was extended to the BLM in 43 U.S.C. § 1782(c): "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."

Wilderness Act purposes.⁵⁵⁹ Federal land managers cannot defer to state management prerogatives when doing so would violate the express terms of the Wilderness Act,⁵⁶⁰ or undermine the purposes of the Act.⁵⁶¹

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 conditions as the Secretary . . . deems desirable.”⁵⁶² 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.⁵⁶³

⁵⁵⁹ See Lindsay Sain Jones, *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 v. St. Clair*, 353 F.Supp. 698 (D.Minn.1973), *reversed and remanded on other grounds*, 497 F.2d 849 (8th Cir.), *cert. denied*, 419 U.S. 1009 (1974) (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).

⁵⁶⁰ See *Tustemena Lake, amended on rehearing en banc*, 360 F.3d 1374 (9th Cir. 2004) (prohibiting a salmon enhancement project as a prohibited “commercial enterprise” even though the state had previously administered and maintained regulatory control over the project); *Kofa*, 629 F.3d at 1044 (invalidating a cooperative initiative with Arizona to maintain guzzlers); *Californians for Alternatives 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 by eradicating non-native trout with rotenone); *High Sierra Hikers Ass'n. v. U.S. Forest Service*, 436 F.Supp.2d 1117 (E.D. Cal. 2006) (holding that the repair, maintenance, and operation of dams in a wilderness area to enhance fisheries were not necessary to meet minimum requirements and thus were prohibited despite involvement and support of the California Dept. of Fish and Game).

⁵⁶¹ See *Wolf Recovery Found. v. U.S. Forest Serv.*, 692 F. Supp. 2d 1264, 1270 (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”).

⁵⁶² 16 U.S.C. § 1133(d)(1). See *U.S. v. Gregg*, 290 F. Supp. 706 (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 prohibition at places where the use of aircraft was established before passage of the Act); *Wilderness Watch, Inc. v. Bureau of Land Mgmt.*, 799 F. Supp. 2d 1172 (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).

⁵⁶³ See, e.g., U.S. Dep’t of Agric., U.S. Forest Serv., *Helicopter Landings in Wilderness Final Environmental Impact Statement*, R10-MB-340b, at 2-3 (Nov. 1997) (“Established helicopter use was for general public access, not helicopter access authorized by...law (...or administrative use by the Forest Service or other agencies).”). See also James Sippel, *Wilderness Planner*, Bureau of Land Management, Memorandum to Juan Palma, Las Vegas Field Manager, “Las Vegas

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.”⁵⁶⁴ 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.”⁵⁶⁵ 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.”⁵⁶⁶ 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.”⁵⁶⁷

*b. Subsequent Wilderness Legislation with Wildlife Provisions*⁵⁶⁸

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 subsequent legislation makes no substantive difference in the implementation of the Wilderness Act’s provisions.

As of 2017, Congress has designated 711 wilderness areas⁵⁶⁹ since the original fifty-four were designated in 1964.⁵⁷⁰ 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.”⁵⁷¹

Metropolitan Police Department proposal for helicopter landing in Wilderness during search and rescue training” (Mar. 1, 2007) (on file with authors) (holding that this section of the Act is a reference to previously existing landing strips used as fly-in trailheads in a relatively few wilderness areas).

⁵⁶⁴ 16 U.S.C. § 1133(d)(5).

⁵⁶⁵ *High Sierra Hikers v. USDI*, 848 F.Supp.2d 1036 (N.D. Cal. 2012).

⁵⁶⁶ *High Sierra Hikers v. Weingardt*, 521 F.Supp.2d 1065 (N.D. Cal. 2007) (emphasis added). The court noted that the agency’s conclusion “improperly equates ‘preference’ with ‘need.’” *Id.* at 1078.

⁵⁶⁷ *High Sierra Hikers v. Blackwell*, 390 F.3d 630, 647 (9th Cir. 2004).

⁵⁶⁸ For the comprehensive analysis of wildlife management provisions in post-1964 wilderness bills, see FAQ, available at.

⁵⁶⁹ National Wilderness Preservation System, *Summary Fact Sheet*, <http://www.wilderness.net/factsheet.cfm> (last visited Apr. 21, 2017).

⁵⁷⁰ 16 U.S.C. § 1132(a).

⁵⁷¹ *See, e.g.*, Pub. L. No. 90-271 § 3 (1968) (“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.”); Pub. L. No. 114-46 § 102(a) (2015) (same). With minor variations, this wording is found in every subsequent law designating wilderness.

The first wilderness legislation to include extra special language⁵⁷² specifically pertaining to wildlife was passed in 1972, with the establishment of the Sawtooth National Recreation Area, including the Sawtooth Wilderness. The relevant language of this extra special provision makes no actual difference in wildlife management within the Sawtooth Wilderness.⁵⁷³ In 1978, Congress started the custom of including not only the blanket “boilerplate” direction,⁵⁷⁴ but also repeating or re-wording the Wilderness Act’s statement on wildlife jurisdiction and responsibilities.⁵⁷⁵

Of the 139 laws⁵⁷⁶ designating wilderness since the passage of the 1964 Act, only four have extra special language that create minor effects in wilderness stewardship of wildlife resources in those particular wilderness areas,⁵⁷⁷ 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 as embedded within the Carl Levin and Howard P. ‘Buck’ McKeon National Defense Authorization Act for Fiscal Year 2015.⁵⁷⁸ 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”⁵⁷⁹ and House Report 101-405 Appendix B.⁵⁸⁰ 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 USDA Forest Service and the Nevada Department of Wildlife State

⁵⁷² 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.

⁵⁷³ See Pub. L. No. 92-400 § 8 (1972) (stating 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.* § 2(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.”).

⁵⁷⁴ See *supra* notes ___ and accompanying text.

⁵⁷⁵ Pub. L. No. 95-495, § 14 (1978). Cf. Pub. L. No. 107-282, § 208(a) (2002), where nothing “affects or diminishes” state jurisdiction.

⁵⁷⁶ 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.

⁵⁷⁷ See Pub. L. No. 95-237 § 4(c) (1978) (directing the Forest Service to conduct wildlife research in cooperation with the state of Idaho in the Gospel-Hump Wilderness); Pub. L. No. 98-140 § 2(c) (1983) (limiting the use of motor vehicles for wildlife management in the Lee Metcalf Wilderness); Pub. L. No. 103-433 § 506(b) (1994) (directing the Secretary to allow hunting in the Mojave National Preserve Wilderness (created largely out of BLM lands where hunting was permitted)); Pub. L. No. 113-137 § 3 (2014) (mandating fish stocking in the Stephen Mather Wilderness).

⁵⁷⁸ Pub. L. No. 113-291, Div. A, Title XXX, Subtitle E, § 3066 (2014).

⁵⁷⁹ *Id.* § 3066(c)(1).

⁵⁸⁰ *Id.* § 3066(d)(2)(B)(ii).

of Nevada’ and signed [in] 1984.”⁵⁸¹ 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: “The Forest Service agrees to 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.”⁵⁸² 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.”⁵⁸³ 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.”⁵⁸⁴ By this definition, any species from anywhere in the world that is currently anywhere within the continental United States is not exotic (and, according to the MOU, no Forest Service advanced approval is necessary for them to be transplanted by the State). This directly conflicts with the Executive Order defining exotic species as, “[w]ith respect to a particular ecosystem, any species... that is not native to that ecosystem,” and defining a native species as, “[w]ith respect to a particular ecosystem, a species that, other than as the result of introduction, currently occurs or historically occurred in that ecosystem.”⁵⁸⁵

Two other statutes are notable in that they contain language affecting the management of wildlife in multiple wilderness areas. The first is ANILCA,⁵⁸⁶ 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.”⁵⁸⁷ 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.”⁵⁸⁸ 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,⁵⁸⁹ and public use of motor vehicles for subsistence hunting.⁵⁹⁰ Additional analysis of wildlife provisions in ANILCA is found in Part II(B)(6).

⁵⁸¹ *Id.* § 3066(d)(5)(A).

⁵⁸² U.S. Dep’t of Agric., U.S. Forest Serv., External Relations, FSM Chapter 1500, R4 Supplement 1500-94-3, § 1561.2, Exhibit 03 at A.1 (Jun. 2, 1994).

⁵⁸³ *Id.* at C.16.

⁵⁸⁴ *Id.* at B.6.

⁵⁸⁵ Exec. Order No. 13112, 64 Fed. Reg. 6183 (1999) (emphasis added).

⁵⁸⁶ Pub. L. No. 96-487 (1980).

⁵⁸⁷ *Id.* § 1315(a).

⁵⁸⁸ *Id.* § 1315(b).

⁵⁸⁹ *Id.* § 1316.

⁵⁹⁰ *Id.* § 811(b).

The other wilderness legislation with extra special language affecting multiple areas is in Title I of the California Desert Protection Act of 1994,⁵⁹¹ which designated 69 wilderness areas under the stewardship of the BLM. 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.*”⁵⁹² The contradictory use of “shall” and “may” caused considerable confusion in the offices tasked with stewardship of these areas. Ultimately, the BLM determined the correct interpretation of this language is that “BLM continues to hold ultimate responsibility” for managing any actions in the wilderness areas and “[w]hen BLM and 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.”⁵⁹³

Another notable wilderness bill is the Arizona Desert Wilderness Act of 1990,⁵⁹⁴ 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).”⁵⁹⁵ As discussed below, this Report is a verbatim transcript of the substantive portions of the 1986 International Association of Fish and Wildlife Agencies (IAFWA) agreement,⁵⁹⁶ and Congressional direction here contains two important points: 1) management actions “*may be carried out*” (emphasis added)—that is, action is not mandatory but discretionary; 2) actions should be “consistent with relevant wilderness management plans”—that is, discretion to take action lies with the federal land manager. In short, except for aerial fish stocking,⁵⁹⁷ 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 which reaffirm federal discretion, but (with one exception⁵⁹⁸) these sections change nothing of substance from the authority found in the Wilderness Act itself.⁵⁹⁹ The

⁵⁹¹ Pub. L. No. 103-433 (1994).

⁵⁹² *Id.* § 103(f) (emphasis added).

⁵⁹³ Interpretation of Fish and Game Management Language in the California Desert Protection Act, BLM Cal. State Director Memorandum, Sep. 30, 1997.

⁵⁹⁴ Pub. L. No. 101-628 (1990).

⁵⁹⁵ *Id.* § 101(h).

⁵⁹⁶ U.S. Dept. of Ag, U.S. For. Serv., and U.S. Dept. of the Int., *Policies and Guidelines for Fish and Wildlife Management in Wilderness Areas* (1986) [*hereinafter* IAFWA 1986 Agreement]. For details, see *infra* (“Wilderness and the Association of Fish & Wildlife Agencies”).

⁵⁹⁷ 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.* § 10 (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 discussed above in Section XX, *supra* (Prohibition of Certain Uses).

⁵⁹⁸ See *supra* notes (discussing the Wovoka Wilderness legislation. We review extra special wildlife provisions in wilderness law in the FAQ accompanying this Article. See

⁵⁹⁹ Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282 § 208(a)-(f); Lincoln County Conservation, Recreation, and Development Act of 2004,

considerable confusion and misinterpretation of these laws by federal managers, state employees, and non-governmental organizations is discussed in Part III(E).

c. Agency Policy

Each of the four agencies has developed policy measures to guide wilderness managers.

According to NPS policy, both planning and management activities “must ensure that wilderness character is likewise preserved” within designated units of the National Park System.⁶⁰⁰ 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.”⁶⁰¹ 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.⁶⁰²

FWS 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 the Service’s mission in areas designated as wilderness, we do so in a way that preserves wilderness character.”⁶⁰³

For the National Forest System, USFS policy states that “[w]ildlife and fish management programs shall be consistent with wilderness values.”⁶⁰⁴ It commits the agency to: “Base any Forest Service recommendation to State wildlife and fish agencies on the need for protection and maintenance of the wilderness resource”;⁶⁰⁵ “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”;⁶⁰⁶ and “Discourage measures for direct

Pub. L. No. 108-424 § 209(a)-(f); Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432 § 329(a)-(f); Omnibus Public Land Management Act of 2009, Pub. L. No. 111-11 § 1503(b)(8)(A)-(C); Pub. L. No. 113-291 §§ 3064(e)(1)-(5), 3066(d)(1)-(5) and (e) (2014). For a section-by-section analysis of these laws, see FAQ.

⁶⁰⁰ Nat’l Park Serv., Management Policies 2006 §§ 6.1, 6.3.1, available at <https://www.nps.gov/policy/MP2006.pdf>.

⁶⁰¹ *Id.*

⁶⁰² *Id.* § 6.3.1.

⁶⁰³ U.S. Fish and Wildlife Serv., NATURAL AND CULTURAL RESOURCES MANAGEMENT, WILDERNESS STEWARDSHIP, 610 FW 1.12(B) (2008), available at <https://www.fws.gov/policy/610fw1.html> [*hereinafter* FWS Wilderness Policy].

⁶⁰⁴ U.S. Forest Service, *Recreation, Wilderness, and Related Resource Management*, FS Manual 2323.32(2) (2009), available at https://www.fs.fed.us/cdt/main/fsm_2350_2300_2009_2.pdf.

⁶⁰⁵ *Id.* at 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.*

⁶⁰⁶ *Id.* at 2323.31(1).

control (other than normal harvest) of wildlife and fish populations.”⁶⁰⁷ In addition, practical application of the USFS policies reflects the “Policies and Guidelines for Fish and Wildlife Management in National Forest and Bureau of Land Management Wilderness” developed with the Association of Fish and Wildlife Agencies (AFWA).⁶⁰⁸ This document is discussed below.

The BLM’s wilderness policy was completely rewritten in 2012.⁶⁰⁹ Though never explicitly stated, the wildlife section of this policy purposefully adheres more closely to the IAFWA 1986 Agreement than the 2006 Agreement.⁶¹⁰ Importantly, the 2012 BLM policy states that “States have a primary and critical role” rather than “*the* primary role” in wildlife management,⁶¹¹ 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,”⁶¹² emphasizes wilderness preservation and requires the use of the Carhart Minimum Requirements Decision Guide for any wildlife management action.⁶¹³ It also clarifies the prohibition on commercial use of wildlife.⁶¹⁴

d. Wilderness and the Association of Fish & Wildlife Agencies

While Congress hasn’t 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 the (International) Association of Fish and Wildlife Agencies (IAFWA or AFWA) (the Association changed names in 2006).

In 1986, the USFS and BLM made a comprehensive revision of their wilderness management directives with the cooperation of IAFWA.⁶¹⁵ 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

⁶⁰⁷ *Id.* at 2323.31(2).

⁶⁰⁸ *See id.* 2323.32(5) (citing USDA For. Serv., Bur. of Land Mgmt., and Assoc. of Fish & Wildlife Agencies, Policies and Guidelines for Fish and Wildlife Management in National Forest and Bureau of Land Management Wilderness (2006), available at https://www.blm.gov/style/medialib/blm/wo/Information_Resources_Management/policy/im_attachments/2007.Par.31564.File.dat/im2007-052attach1.pdf [*hereinafter* AFWA 2006 Agreement]. For details on AFWA, see *infra* Section II.d.

⁶⁰⁹ Bureau of Land Mgmt., Bureau of Land Mgmt. Manual 6340, Management of Designated Wilderness Areas § 1.6.C.21 (2012) [*hereinafter* BLM Manual 6340], superseding in part BLM Instruction Memorandum No. 2007-052, Feb. 5, 2007.

⁶¹⁰ *Id.* *See* AFWA 2006 Agreement, *supra* note ; IAFWA 1986 Agreement, *supra* note .

⁶¹¹ BLM Manual 6340, *supra* note , at 1.6.C.21.b.i. This is a shift from the misleading language of 43 CFR 24.3, see *infra/supra* Section XXX.

⁶¹² *Id.* at 1.6.C.21.b.ii.

⁶¹³ *Id.* at 1.6.C.21.b.iii (citing Arthur Carhart National Wilderness Training Center, Minimum Requirements Decision Guide, *supra* note).

⁶¹⁴ *Id.* at 1.6.C.21.c.ix.E.

⁶¹⁵ IAFWA 1986 Agreement, *supra* note.

cooperation with the states.⁶¹⁶ It maintains federal control over decision-making processes, 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.”⁶¹⁷ As noted above, these guidelines were incorporated into House Report 101-405 and referenced in several subsequent wilderness bills.⁶¹⁸

Although the USFS, BLM, and IAFWA “reaffirmed [their] mutual commitment” to the 1986 Agreement in 1995⁶¹⁹ and again in 2002,⁶²⁰ within the year, the agencies initiated a complete revision of the document and ultimately issued a revamped “Policies and Guidelines” in 2006.⁶²¹ There were remarkable changes between the 1986 Agreement and the 2006 Agreement.⁶²² The solicitor assigned to review the 2006 Agreement on behalf of the Department of the Interior noted several problems with it, including significant

⁶¹⁶ *Id.* 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; wildlife damage control; visitor management to protect wilderness wildlife resources; and management of fire.

⁶¹⁷ *Id.* at 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 6 (emphasis added).

⁶¹⁸ See *supra* note ____ and accompanying text.

⁶¹⁹ Memorandum from Jack Ward Thomas, Chief, U.S. For. Serv., Mike Dombeck, Dir., Bur. of Land Mgmt., and R. Max Peterson, Executive Vice President, Intl. Assoc. of Fish & Wildlife Agencies, to Regional Foresters, State Directors, and State Govt. Members of the Intl. Assoc. of Fish & Wildlife Agencies 1 (Feb. 23, 1995) (on file with authors).

⁶²⁰ See Memorandum from Dale N. Bosworth, Chief, U.S. For. Serv., Kathleen B. Clarke, Dir., Bur. of Land Mgmt., and R. Max Peterson, Executive Vice President, Intl. Assoc. of Fish & Wildlife Agencies, to State Govt. Members of the Intl. Assoc. of Fish & Wildlife Agencies, USDA For. Serv. Regional Foresters, and USDI Bur. of Land Mgmt. State Directors 3 (Aug. 9, 2002) (on file with the authors) (noting “the statutory endorsement of the existing guidelines by the Arizona Desert Wilderness Act”).

⁶²¹ See AFWA (2006), *supra* note.

⁶²² See Nie and Barns, *supra* note, at 258-263..

inconsistencies with federal law.⁶²³ At least one AFWA officer was unconcerned: “USDI Solicitors balked but BLM Director made the decision to sign.”⁶²⁴

A complete inventory of the changes is available elsewhere,⁶²⁵ but problematic additions or deletions include the following:

- Stating 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,”⁶²⁶ 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).
- Giving states the responsibility to determine whether wildlife and fish species are indigenous, thereby possibly degrading the Natural Quality of wilderness character. Associated with this change is the deletion of the IAFWA 1986 Agreement prohibition on stocking exotic fish.⁶²⁷
- Identifying any state plans and agreements as sufficient to establish if 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.”⁶²⁸
- 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 to the states, when

⁶²³ See Memorandum from Kris Clark, USDI Off. of the Sol, Land & Water Res., to Dwight Fielder, Chief, BLM Div. of Fish, Wildlife, and Plant Conservation and Jeff Jarvis, Chief, Div. of Natl. Landscape Cons. Sys (Aug. 10, 2005) (on file with the authors) (“[T]he handling of the “minimum requirements” analysis appears to conflict with the Wilderness Act” and “materially changes the meaning of the provision [in the Wilderness Act, § 4(c)]; the memo fails to recognize that “Federal law, including regulations and discretionary actions, preempt[s] state jurisdiction.”). See also Memorandum from Kris Clark to Dwight Fielder (June 22, 2006) (on file with authors) (“[D]ecisions about federal agency management of wildlife in wilderness areas is not the appropriate subject for negotiation with an outside group”; the memo’s characterizations of the Wilderness Act “are misleading and in many cases incorrect”).

⁶²⁴ See E-mail from Gary J. Taylor, Legislative Director, AFWA, to AFWA members, “Wilderness Policies and Guidelines Signed” (July 18, 2006) (on file with the authors) (“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.”); *id.* (stating that the FS Chief, BLM Director, and AFWA executive vice president “all agreed no fanfare, news release or anything spotlighting it”).

⁶²⁵ BLM and FS AFWA Policies Comparison Table (Dec. 7, 2016), available at <http://www.wilderness.net/wildlife#>.

⁶²⁶ AFWA 2006 Agreement at 5, *supra* note.

⁶²⁷ IAFWA 1986 Agreement § 9, *supra* note (“Exotic species of fish shall not be stocked.”).

⁶²⁸ 16 U.S.C. § 1133(c).

the Act unequivocally gives federal agencies the sole responsibility to manage wilderness areas and preserve their wilderness character.⁶²⁹

- Analyzing implementation alternatives on the basis of impacts to “the wilderness characteristics (*sic*) (naturalness, outstanding opportunities for solitude or primitive and unconfined recreation, and other special features),” and omitting consideration of other important impacts, in particular, to the Untrammeled Quality and the Undeveloped Quality.⁶³⁰

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.”⁶³¹ 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.⁶³²

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 a manner as will leave them unimpaired for future use and enjoyment *as wilderness*,”⁶³³ and that allowing otherwise prohibited uses to meet minimum necessary requirements must be “for the purpose of this Act,”⁶³⁴ not for meeting “states’ abilities to accomplish big game harvest objectives.”⁶³⁵ The misconception that federal agencies should only utilize “wilderness management planning processes that support the state wildlife agencies and their wildlife management responsibilities and goals”⁶³⁶ 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 fails to do so.

⁶²⁹ AFWA 2006 Agreement, *supra* note, at App. A.

⁶³⁰ *Id.*

⁶³¹ John Kennedy, Fish and Wildlife Management in Wilderness, speech delivered at the National Wilderness Conference in Albuquerque, NM, Oct. 17, 2014, at 2 (on file with authors) [*hereinafter* Kennedy Speech].

⁶³² *See supra* section.

⁶³³ 16 U.S.C. § 1131(a) (emphasis added).

⁶³⁴ 16 U.S.C. § 1133(c).

⁶³⁵ Kennedy Speech, *supra* note, at 6.

⁶³⁶ *Id.* at 11.

PART III. 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 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.” 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 I(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.⁶³⁷ Writing in 1970, the Public Lands Law Review Commission noted that historically “the states have regulated the game population, and the Federal Government has managed the habitat.”⁶³⁸ But the Commission also observed that, increasingly, “[T]he line between the traditional functions has become shadowy” because of the interplay between wildlife populations and habitat.⁶³⁹ The Commission released its report prior to passage of the ESA, NFMA and FLPMA. 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 in Part II(B)(5), the FLPMA and the Sikes Act include provisions related to hunting and fishing on public lands administered by the 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.⁶⁴⁰ 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.

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

⁶³⁷ See Part II(A)(1).

⁶³⁸ *One Third of the Nation’s Land: A Report to the President and to the Congress by the Public Land Law Review Commission* 158 (Washington, D.C.: Government Printing Office 1970).

⁶³⁹ *Id.*

⁶⁴⁰ See *supra* notes _____ accompanying text.

conservation, 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 II(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 II(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. And the purpose of the Act, after all, is “to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved.”⁶⁴¹ Furthermore, the meaning of “harm,” in the definition of “take” in the Act, includes “significant habitat modification or degradation.”⁶⁴² The ESA obligates federal agencies to conserve species and to avoid jeopardizing the continued existence of the listed species or destroying critical habitat.⁶⁴³

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 (2008) measures the distribution of ESA-status species (listed as endangered, threatened or candidate) and species defined by NatureServe as imperiled.⁶⁴⁴ It finds that federal lands are significant reservoirs of biodiversity. Lands managed by the USFS and DOD stand out in terms of supporting the greatest number of species with status under the ESA. Both agencies harbor about 23 percent of species with ESA-status (at least 355 species for each agency), followed by the NPS (19 percent), the FWS (18 percent) and the BLM (16 percent).⁶⁴⁵ The USFS also harbors the most NatureServe-defined imperiled species, approximately 27 percent of the total (at least 821 species).⁶⁴⁶ This is followed by the BLM (20 percent) and military lands (15 percent).⁶⁴⁷

To put these percentages in context, consider the importance of National Forest lands to fish and wildlife more broadly:

⁶⁴¹ 16 U.S.C. § 1531(b).

⁶⁴² 50 C.F.R. § 17.3.

⁶⁴³ 16 U.S.C. § 1536(a)(1)-(2).

⁶⁴⁴ Bruce A. Stein, Cameron Scott, and Nancy Benton, *Federal Lands and Endangered Species: The Role of Military and Other Federal Lands in the Sustaining Biodiversity*, 58(4) *BioScience* 339 (2008). NatureServe provides independent conservation status assessments for extinction risks facing species in the U.S. *Id.* at 340; NatureServe, About Us, www.natureserve.org (last visited May 3, 2017).

⁶⁴⁵ Stein, *supra* note, at 343.

⁶⁴⁶ *Id.*

⁶⁴⁷ *Id.*

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.⁶⁴⁸

Amongst federal land agencies, the BLM has the fewest ESA-status species and ranks second for number of imperiled species.⁶⁴⁹ Nonetheless, 245 ESA-listed species and 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."⁶⁵⁰ While private and other landholdings are essential to biodiversity conservation, federal lands will play an increasingly crucial role in the future.⁶⁵¹

The wildlife conservation mandates given to the 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 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.⁶⁵² 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."⁶⁵³ The wildlife conservation mandate is even more well-defined for the National Wildlife Refuges. The 1997

⁶⁴⁸ U.S. FOREST SERV., BIOLOGICAL ASSESSMENT OF THE USDA 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).

⁶⁴⁹ Stein, *supra* note, at 345.

⁶⁵⁰ BLM Threatened and Endangered Species Program, available at <https://www.blm.gov/programs/fish-and-wildlife/threatened-and-endangered> (last visited May 3, 2017).

⁶⁵¹ 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 to the protection of our native species." Stein, *supra* note __, at 346. See *The Disappearing West*, available at <https://www.disappearingwest.org/> (last visited May 3, 2017); see also U.S. Forest Serv., *Future of America's Forests and Rangelands: Forest Service 2010 Resources Planning Act Assessment*, Gen. Tech. Rep. WO-87, at 11 (2012) (reviewing how development pressure on nonpublic lands is affecting "the ability of those public lands to sustain important ecosystem services and biodiversity").

⁶⁵² See *supra* Part II(B)(2).

⁶⁵³ 16 U.S.C. § 1.

Improvement Act prioritizes “the conservation of fish, wildlife and plants, and their habitat 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.”⁶⁵⁴ The laws governing the 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. 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. The multiple use mandates provide the 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.

The NFMA provides a more substantive and enforceable mandate for the USFS: “to provide for a 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.”⁶⁵⁵ Land and Resource Management Plans, whether written pursuant to the 1982 or 2012 NFMA regulations, must ensure the viability of species in planning areas. 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. Yet the definitions of viability, in both sets of regulations, focus on the population of species (e.g., their distribution, persistence, resilience, etc.).⁶⁵⁶

FLPMA provides the 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. Multiple use is defined in the Act to include “wildlife and fish.” Though “habitat for fish and wildlife and domestic animals” is referenced in FLPMA as well, the language is embedded in a more inclusive section focused on the ecological and other values for which public lands must be managed. The Act also requires the BLM’s land use planning process to “give priority to the designation and protection of areas of critical environmental concern [ACECs]”⁶⁵⁷ and “to protect and prevent irreparable damage” to the “fish and wildlife resources” found within these areas.⁶⁵⁸ Furthermore, whatever discretion the 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

⁶⁵⁴ 16 U.S.C. § 668dd(a)(4).

⁶⁵⁵ 16 U.S.C. § 1604(g)(3)(B).

⁶⁵⁶ 36 C.F.R. § 219.19 (2016).

⁶⁵⁷ 43 U.S.C. § 1712(c)(3).

⁶⁵⁸ 43 U.S.C. § 1702(a).

to conserve wildlife. The National Park Service Organic Act, for example, requires the conservation of “scenery and the natural and historic objects and the wild life” therein and also requires the provision for the enjoyment of same “in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.”⁶⁵⁹ 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.”⁶⁶⁰ In the Wilderness Act, Congress secured “for the American people of present and future generations the benefits of an enduring resource of wilderness.”⁶⁶¹ 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.”⁶⁶² 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.”⁶⁶³

While the multiple use statutes of the 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. The Multiple Use Sustained Yield Act, for instance, requires the USFS to manage multiple uses in a combination “that will best meet the needs of the American people,” and “without impairment of the productivity of the land.”⁶⁶⁴ The NFMA speaks to “the public interest” and serving “the national interest” in the renewable resources program.⁶⁶⁵ And finally, the 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.”⁶⁶⁶ The public trust is also acknowledged in Department of the Interior regulations on intergovernmental cooperation in fish and wildlife management: “The Secretary of Interior reaffirms that fish and wildlife must be maintained for their ecological, cultural, educational, historical, aesthetic, scientific,

⁶⁵⁹ 16 U.S.C. § 100101(a).

⁶⁶⁰ 16 U.S.C. § 668dd(a)(2). *See also* Robert L. Fischman and Robert S. Adamcik, *Beyond Trust Species: The Conservation Potential of the National Wildlife Refuge System in the Wake of Climate Change*, 51 *Natural Resources J.* 1, 6 (2011) (analyzing the USFWS’s “variable and amorphous application of ‘trust terminology and the doctrine that such terminology reflects”).

⁶⁶¹ 16 U.S.C. § 1131.

⁶⁶² 16 U.S.C. § 4331(b)(1).

⁶⁶³ 16 U.S.C. § 1531(a). *See also* *Palila v. Hawaii Dept. of Land and Natural Resources*, 471 F. Supp. 985, 995, n.40 (D. Haw. 1979), *aff’d*, 639 F. 2d 495 (9th Cir. 1981). 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.” For analysis *see* Mary Christina Wood, *Protecting the Wildlife Trust: A Reinterpretation of Section 7 of the Endangered Species Act*, 34 *Envtl. L.* 605 (2004).

⁶⁶⁴ 16 U.S.C. § 529.

⁶⁶⁵ 16 U.S.C. § 1600(2)-(3)

⁶⁶⁶ 16 U.S.C. §§ 1701(2), 1702(c).

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.”⁶⁶⁷

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 the 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,”⁶⁶⁸ and that anti-monopoly restrictions impose a constraint on Congress in making decisions about federal lands as a trust resource.⁶⁶⁹ At least one prominent authority places federal public lands “at the outer reaches of the public trust doctrine.”⁶⁷⁰ This is in part because federal public land law is a field heavy with statutes and regulations, leaving some to question the relevance of applying a common law-based trust doctrine,⁶⁷¹ and also because, in the past, Congress has not hesitated to deploy its Property Clause powers to privatize federal public lands and resources.⁶⁷² But by the same token when it appears that Congress has chosen to dispose of federal property, the Court has demanded a clear expression of congressional intent.⁶⁷³

The issue of a federal trust duty has received vigorous judicial and scholarly debate in recent years,⁶⁷⁴ but the courts have nonetheless referenced a public trust duty in numerous

⁶⁶⁷ 43 C.F.R. § 24.1(b).

⁶⁶⁸ *Light v. United States*, 220 U.S. 523, 537 (1911).

⁶⁶⁹ *Camfield*, 167 U.S. 524; *Trinidad Coal and Coking Co.*, 137 U.S. 160, 170 (1890).

⁶⁷⁰ Charles F. Wilkinson, *The Public Trust Doctrine in Public Land Law*, 14 U.C. Davis L. Rev. 269, 273 (1980-1981).

⁶⁷¹ *See id.* at 276 (“The legislative matrix is sufficiently comprehensive that doubts can fairly be raised as to whether there is room for broad common law doctrine to operate.”).

⁶⁷² *Id. See, e.g., 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).

⁶⁷³ *See* John D. Leshy, *A Property Clause for the Twenty-First Century*, 75 U. Colo. L. Rev. 1101, 1110 (2004) (explaining why “the 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 twentieth century cases. *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.

⁶⁷⁴ Much of the recent debate stems from a misinterpretation of *PPL Montana, LLC v. Montana*, 565 U.S. 576 (2012). *See* *Juliana v. U.S.*, Case No. 6:15-cv-01517-TC, 2016 WL 6661146 *23 (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 of Law Professors in Support of Granting Writ of Certiorari, *Alec L. v. McCarthy*, No. 14-405, 2014 WL 5841697 *3-8 (Nov. 8, 2014); Michael C. Blumm and Lynn S. Schaffer, *The Federal Public Trust Doctrine: Misinterpreting Justice Kennedy and Illinois Central Railroad*, 45 *Envtl. L.* 399, 409 (2015).

federal land cases.⁶⁷⁵ 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.⁶⁷⁶

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 manage and conserve wildlife located on or integral to federal lands.⁶⁷⁷ 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.⁶⁷⁸ Here, 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.”⁶⁷⁹ 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.”⁶⁸⁰ The public trust duty, said the Court, “imposes a duty of continuing supervision over the taking and use of the appropriated water.”⁶⁸¹ In this 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.⁶⁸² Federal agencies

⁶⁷⁵ See Wilkinson, *supra* note, at 298 (identifying 36 court opinions describing “the inland public lands as being held in trust”); *Juliana*, 2016 WL 6661146 *24-25 (applying the public trust doctrine to the federal government as a fundamental attribute of sovereignty).

⁶⁷⁶ See Leshy, *supra* note, at 1101 (reviewing Property Clause powers); *Juliana*, 2016 WL 6661146 *24 (finding that “public trust rights both predated the Constitution and are secured by it”).

⁶⁷⁷ See Melissa K. Scanlon, *A Comparative Analysis of the Public Trust Doctrine for Managing Water in the United States and India* 4 (2016), available at SSRN: <https://ssrn.com/abstract=2863248> (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 UC Davis L Rev. 693, 738 (2012) (characterizing the public trust doctrine as an “interpretive canon . . . that provides courts with a judicially manageable method of vindicating the fundamental principle of public purpose in government management of natural resources”).

⁶⁷⁸ *National Audubon Society v. Superior Court of Alpine County*, 33 Cal. 3d 419 (Cal. 1983), 658 P. 2d 709 (1983).

⁶⁷⁹ *Id.* at 425.

⁶⁸⁰ *Id.* at 446.

⁶⁸¹ *Id.* at 447.

⁶⁸² *Id.* at 452.

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.⁶⁸³ This trust responsibility extends to protecting those off-reservation use rights that were reserved by tribes through treaties. 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.⁶⁸⁴ These off-reservation treaty rights often include hunting and fishing rights, gathering rights, water rights, grazing rights and subsistence rights. The trust responsibility to protect these rights is recognized by Congress, the Executive Branch and the courts.⁶⁸⁵

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

⁶⁸³ Though sovereign, Indian tribes are not foreign nations, but rather distinct political communities “that may, more correctly, perhaps be denominated domestic, dependent nations,” whose “relation to the United States resembles that of a ward to his guardian.” *Cherokee Nation v. Georgia*, 30 U.S. 1, 10 (1831). A less paternalistic way of thinking about this trust relationship is cast in terms of property; the federal government has a duty to prevent harm to another sovereign’s property. See Mary Christina Wood, *Indian Land and the Promise of Native Sovereignty: The Trust Doctrine Revisited*, 1994 Utah L. Rev. 1471 (1994).

⁶⁸⁴ See 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. Res. J. 585 (2008).

⁶⁸⁵ See Exec. Order 13,175, §2(a) (Nov. 6, 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.

See also Dept. of Interior Order 3335: Reaffirmation of the Federal Trust Responsibility to Federally Recognized Indian Tribes and Individual Indian Beneficiaries (Aug. 20, 2014) (providing background on the trust responsibility including a review of relevant statutes and case law). The Department of Agriculture and U.S. Forest Service “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). See also Forest Serv. Handbook 1509.13, Ch. 10; Joint Secretarial Order No. 3206: American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act (June 5, 1997).

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, the 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.

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.”⁶⁸⁶ And a popular text views habitat:

[A]s 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.⁶⁸⁷

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”⁶⁸⁸ 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.”⁶⁸⁹ This text, as do others in the field, call for managing wildlife in this larger ecosystem context.⁶⁹⁰ 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.”⁶⁹¹

⁶⁸⁶ See e.g., Montana Fish, Wildlife and Parks, *Fish Habitat*, <http://fwp.mt.gov/fishAndWildlife/habitat/fish/> (“Habitat is the KEY to wildlife management in Montana.”) (last visited Mar 3, 2017).

⁶⁸⁷ MICHAEL L. MORRISON, BRUCE G. MARCOT, AND R. WILLIAM MANNAN, *WILDLIFE-HABITAT RELATIONSHIPS: CASES AND APPLICATIONS* 10 (3d ed. 2006).

⁶⁸⁸ *Id.* at 380.

⁶⁸⁹ *Id.* at 43.

⁶⁹⁰ See e.g., J. MICHAEL SCOTT ET AL. (EDS.), *PREDICTING SPECIES OCCURRENCES: ISSUES OF ACCURACY AND SCALE* (2002); see also BRENDA C. MCCOMB, *WILDLIFE HABITAT MANAGEMENT: CONCEPTS AND APPLICATIONS IN FORESTRY* 7 (2d 3d. 2016) (noting that “vegetation management by forest-land managers is probably the greatest factor influencing the abundance and distribution of animals in our forests today”).

⁶⁹¹ ALDO LEOPOLD, *A SAND COUNTY ALMANAC: WITH ESSAYS ON CONSERVATION FROM ROUND RIVER* 239 (1949).

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 reviewed in Part II(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*.⁶⁹² Decades later, in *Hughes v. Oklahoma*, the Court called such claims a “19th Century legal fiction.”⁶⁹³

The states are on firm ground when declaring a “sovereign ownership” of wildlife that must be managed in the public interest. A more accurate phrase is to say that states manage wildlife under a doctrine of “sovereign trusteeship.”⁶⁹⁴ In Part I, 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.⁶⁹⁵ 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.⁶⁹⁶

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.”⁶⁹⁷ The *Kleppe* Court also acknowledged that states have “broad trustee and police powers over wild animals within their jurisdictions.”⁶⁹⁸ Although it did not elaborate on these powers, the Court emphasized that they were nevertheless subject to

⁶⁹² 252 U.S. 416, 434 (1920).

⁶⁹³ 441 U.S. 322, 335 (1979), *overruling* *Geer v. Connecticut*, 161 U.S. 519 (1896).

⁶⁹⁴ 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).

⁶⁹⁵ “[B]asic trust principles . . . impose upon the trustee a fiduciary duty to ‘protect the trust property against damage or destruction’ . . . [and the] trustee owes this duty equally to both current and future beneficiaries of the trust.” *Juliana*, 2016 WL 6661146 *19.

⁶⁹⁶ See e.g., Richard M. Frank, *The Public Trust Doctrine: Assessing Its Recent Past and Charting Its Future*, 45 UC Davis L. Rev. 665, 678 (2012) (noting “precious little development of public trust principles in the fish and wildlife context over the past three decades” and that “the 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 (2010) (noting that California courts, for example, have applied the public trust doctrine to wildlife).

⁶⁹⁷ 441 U.S. at 336 (emphasis added).

⁶⁹⁸ *Kleppe v. New Mexico*, 426 U.S. 529, 545 (1976).

the constitutional powers and supremacy of the Federal Government.⁶⁹⁹ Similarly, in *Baldwin v. Fish and 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”⁷⁰⁰ In Part II(A), we 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.⁷⁰¹ 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?⁷⁰² 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?⁷⁰³ It is only when these and related questions are sufficiently answered by the states that the term “sovereign ownership” can be used meaningfully.⁷⁰⁴

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

⁶⁹⁹ *Id.*

⁷⁰⁰ 436 U.S. 371, 386 (1978). *See id.* (“Nor does a State’s control over its resources preclude the proper exercise of federal power.”). *See also* *Otter v. Jewel*, D.C. District, January 5, 2017, Case No. 15-cv-1566, appealed to D.C. Circuit (Sovereign ownership of wildlife based on a state statute did not 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).

⁷⁰¹ *See e.g.*, Susan Morath Horner, *Embryo, Not Fossil: Breathing Life Into the Public Trust in Wildlife*, 35 *Land & Water L. Rev.* 23 (2000).

⁷⁰² *See e.g.*, Jeremy T. Bruskotter, Sherry A. Enzler, Adrian Treves, *Rescuing Wolves from Politics: Wildlife as a Public Trust Resource*, 333 *Science* 1828 (2011); Edward A. Fitzgerald, *The Alaskan Wolf War: The Public Trust Doctrine Missing in Action*, 15 *Animal L.* 193 (2008-2009).

⁷⁰³ *See* *Center for Biological Diversity v. FPL Group, Inc.*, 83 Cal. Rptr. 3d 588 (Cal. App. 2008) (affirming that the public has standing to challenge the State’s management of wildlife under the public trust doctrine).

⁷⁰⁴ Eric Freyfogle and Dale Goble summarize: “The problem with taking the [wildlife] trust language literally is that there is no trust document that sets forth the precise terms of the trust.” So far, they say, “[C]ourts 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.” ERIC T. FREYFOGLE & DALE D. GOBLE, *WILDLIFE LAW: A PRIMER* 33-34 (2009). *Accord* Blumm and Paulsen, *supra* note , at 1471; and Horner, *supra* note , at 27.

used by the states as a way to challenge federal authority (as if “ownership” provides them with more clout than “trust responsibility”) and it does little to help solve conflict or find common ground with federal agencies.⁷⁰⁵

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 discuss 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.⁷⁰⁶ 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.⁷⁰⁷ 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. 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. There was, according to the court, an obligation to act: “[A]ny discretion vested in the Secretary concerning time, place and specifics of the exercise of such powers is subordinate to his paramount legal duty imposed, not only under his trust obligation but by the statute itself, to protect the park.”⁷⁰⁸

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

⁷⁰⁵ As summarized by the Tenth Circuit in the Wyoming National Elk Refuge (NER) dispute, “The 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 NER do little to promote ‘cooperative federalism.’” *Wyoming v. U.S.*, 279 F.3d 1214, 1240 (2002).

⁷⁰⁶ See *Wilkinson*, *supra* note , at 284 (“...the trust concept was used to reach results in favor of the United States, that is, to create and reinforce federal powers”); Eric Pearson, *The Public Trust Doctrine in Federal Law*, 24 *J. Land, Res., & Envtl. L.* 173, 174 (2004) (noting that the trust doctrine “supplements federal power rather than restricts it”). See also *Juliana*, 2016 WL 6661146 (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”). *But see* MICHAEL C. BLUMM & MARY CHRISTINA WOOD, *THE PUBLIC TRUST DOCTRINE IN ENVIRONMENTAL AND NATURAL RESOURCES LAW* 305 (2nd 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).

⁷⁰⁷ See *Illinois Central Railroad Co.*, 146 U.S. at 453 (invalidating a transfer of state trust lands—submerged lands under Lake Michigan—to a private company). See also Robin Kundis Craig, *Adapting to Climate Change: The Potential Role of State Common-Law Public Trust Doctrines*, 34 *Vt. L. Rev.* 781, 783 (2010) (citing numerous cases to demonstrate limitations on the States’ ability to alienate trust resources).

⁷⁰⁸ *Sierra Club v. Dept. of Interior*, 376 F. Supp. 90 (N.D. Cal. 1974).

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.⁷⁰⁹ This co-trustee approach provides one way of re-framing 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.⁷¹⁰

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 the 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. The wolf management cases in Idaho provide another example. 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.

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 non-game 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 non-game management. Increased funding for non-game 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 wildlife trust management. Jacobson and others get to the crux of the matter:

⁷⁰⁹ 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, 85 (2009).

⁷¹⁰ *Id.* at 84-85. Wood calls the approach the “sovereign cotenancy” over shared assets. A cotenancy is a “tenancy under more than one distinct title, but with unity of possession.” *Id.* at 85. She cites, among other cases, *Puget Sound Gillnetters Ass’n v. U.S. Dist. Court*, 573 F. 2d 1123, 1126 (9th Cir. 1978), where the Ninth Circuit invoked the cotenancy model to describe shared sovereign rights to migrating salmon. The most referenced case pertaining to co-trusteeship is *United States v. 1.58 Acres of Land* 523 F. Supp. 120 (D. Mass. 1981). See *Amicus Curiae, Alec L.*, 2014 WL 5841697 *7 (reviewing the co-trustee/cotenancy model and its application to wildlife and other resources). See also 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, 71 (2009).

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 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.⁷¹¹

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. Its frequent invocation by AFWA and the states is problematic, from providing a particularly narrow and hunting-centric view of conservation history to asserting the power and authority of the states to regulate wildlife.⁷¹²

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.⁷¹³ This exacerbates the potential for intergovernmental conflict by displaying an institutional bias towards 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 it provides, are increasingly significant to biodiversity. Any story of wildlife conservation failing to acknowledge the contribution of federal lands—and the laws and regulations governing them—is woefully incomplete.

⁷¹¹ Cynthia A. Jacobson, et al., *A Conservation Institution for the 21st Century: Implications for State Wildlife Agencies*, 74(2) J. WILDLIFE MGMT. 203, 205-206 (2010).

⁷¹² See e.g., Brief for Ass'n of Fish and Wildlife Agencies as Amici Curiae 10, *Wisconsin v. Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin*, 135 S.Ct. 1842 (2015) (referencing the Model to assert that “States have legal authority to manage fish and wildlife within their borders, except for federally protected species”). See also Part I (providing examples of the Model’s role in various cases).

⁷¹³ See e.g., John Kennedy, *Fish and Wildlife Management in Wilderness*, National Wilderness Conference, Albuquerque, NM (Oct. 17, 2014) (paper on file with authors) (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).

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 U.S. 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.”⁷¹⁴ 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. Interior’s Policy Statement on State-Federal Relationships

In Part IIB(5)(C), we reviewed the Interior Department’s 1983 policy statement and regulations on state-federal relations in wildlife policy. Although the Policy appears in the Code of Federal Regulations “as a matter of convenience to the public,”⁷¹⁵ it was not subject to the rulemaking requirements of the Administrative Procedure Act,⁷¹⁶ and as such does not carry the force of law.⁷¹⁷ 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.

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.⁷¹⁸ 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.”⁷¹⁹ It makes clear that “Congress may choose to preempt State management of fish and wildlife on Federal lands...,”⁷²⁰ but then asserts that Congress nonetheless “reaffirmed” the “basic responsibility and authority of the States to manage fish and resident wildlife on Federal lands.”⁷²¹

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 II(A), which expresses the vast constitutional powers held by Congress to conserve wildlife on federal lands.

⁷¹⁴ J.F. ORGAN ET AL., THE NORTH AMERICAN MODEL OF WILDLIFE CONSERVATION: THE WILDLIFE SOCIETY TECH. REVIEW 12-04, at 29 (Bethesda, MD: The Wildlife Society and Boone and Crockett Club 2012).

⁷¹⁵ Dept. Interior Fish and Wildlife Policy; State-Federal Relationships, 48 Fed. Reg. 11,642 (1983) (43 C.F.R. Part 24).

⁷¹⁶ 5 U.S.C. § 553.

⁷¹⁷ *Christensen v. Harris Cnty.*, 529 U.S. 576, 587 (2000).

⁷¹⁸ 43 C.F.R. §24.3(b).

⁷¹⁹ 43 C.F.R. §24.1(b)

⁷²⁰ 43 C.F.R. §24.3(a)

⁷²¹ 43 C.F.R. §24.3(b)

A separate provision 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."⁷²² The word "primary" is not defined and it is used in an inconsistent fashion throughout the Policy. 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.*"⁷²³ When placed in context, however, it becomes clear that this provision is merely another type of savings clause, recognizing state authority and responsibility where appropriate under existing law, and where appropriate to achieve the objective of "improved conservation of fish and wildlife."⁷²⁴

The Policy is more problematic with respect to lands managed by the 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."⁷²⁵ The problem is that FLPMA did not do so such thing. The word "primary" is not used in the statute nor is it implied.⁷²⁶ 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.⁷²⁷ Furthermore, as we discuss in Part II(B)(C)(5), 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.⁷²⁸

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

⁷²² 43 C.F.R. 24.2(a).

⁷²³ 43 C.F.R. 24.1(a) (emphasis added).

⁷²⁴ 43 C.F.R. 24.2(a).

⁷²⁵ 43 C.F.R. § 24.4(c).

⁷²⁶ Confusing matters even further, in another section of the same provision, Interior acknowledges its responsibility for multiple use management as defined in FLPMA, "including fish and wildlife *conservation.*" 43 C.F.R. § 24.4(c) (emphasis added).

⁷²⁷ 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 *One Third of the Nation's Land: A Report to the President and to the Congress by the Public Land Law Review Commission* (Washington, D.C.: Government Printing Office 1970). 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. 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," and concluding that "this authority is superior to that of a state." *Id.* at 158 (Recommendation 60), citing Interior Dec. 469, 473, 476 (Dec. 1, 1964).

⁷²⁸ 43 U.S.C. § 1732(b).

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.⁷²⁹ 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 the BLM nor the Department of Interior has the authority to rewrite FLPMA,⁷³⁰ much less to redraw the constitutional boundaries of federal and state powers that were so clearly addressed in *Kleppe v. New Mexico*.⁷³¹ There, the Court explained why “the complete power’ that Congress has over public lands *necessarily* includes the power to regulate and protect the wildlife living there.”⁷³² 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 II(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 II(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.”⁷³³ The distinction has legal significance with regard to the second question above.

⁷²⁹ See 5 U.S.C. § 706(2) (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, 235 (2001) (finding that informal agency interpretations are not entitled to *Chevron* deference, but only receive the level of deference proportional to their “power to persuade”) (citing *Chevron, U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837 (1984)).

⁷³⁰ See 43 U.S.C. §§ 1702(a), 1702(c).

⁷³¹ 426 U.S. 529 (1976).

⁷³² *Id.* at 541 (emphasis added). *Kleppe* is discussed in detail in Section II(A), *supra notes* ____

⁷³³ Under the Administrative Procedure Act, a reviewing court may “compel agency action unlawfully withheld.” 5 U.S.C. § 706(1). “Agency 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.*” 5 U.S.C. § 551(13) (emphasis added). For analysis, see Julie Lurman, *Subsistence at Risk: Failure to Act and NEPA Compliance in Post-ANILCA Alaska*, 36 *Env. L.* 289 (2006).

As explained by the Supreme Court in *Norton v. SUWA*, 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.⁷³⁴ There was no duty for the 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 how to achieve it.”⁷³⁵ 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.”⁷³⁶

In addition to FLPMA, the plaintiffs in both *SUWA* and *Defenders of Wildlife* alleged violations of NEPA. The courts determined that where there was simply inaction, NEPA procedures were not required. Conversely, failure to act when there is a legal obligation to do so may trigger NEPA.⁷³⁷ 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).⁷³⁸ Moreover, “Nonfederal actors may . . . be enjoined under NEPA if their proposed action cannot proceed without the prior approval of a federal agency.”⁷³⁹

As described in Part II(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.⁷⁴⁰

⁷³⁴ 542 U.S. 55, 66 (2004).

⁷³⁵ *Id.* (citing 43 U.S.C. § 1782(c)).

⁷³⁶ *Defenders of Wildlife v. Andrus*, 627 F.2d 1238, 1245-49 (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 The Wilderness Soc. v. Kane County, Utah*, 632 F. 3d 1162, 10th Circuit 2011 (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 Supremacy Clause of the U.S. Constitution).

⁷³⁷ *See* 40 C.F.R. §1508.18 (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)).”

⁷³⁸ *See* Lurman, *supra* note.

⁷³⁹ *Fund for Animals, Inc. v. Lujan*, 962 F.2d 1391, 1397 (9th Cir. 1992) (citing *Friends of the Earth, Inc. v. Coleman*, 518 F.2d 323, 329 (9th Cir.1975)).

⁷⁴⁰ *See id.* Such injunctions are not limited to NEPA violations. *See Karuk Tribe of California v. U.S. Forest Service*, 681 F.3d 1006, 1024 (9th Cir. 2012) (holding that Forest Service’s approval of Notices of Intent to mine constituted “agency action” under the ESA and thus required consultation), *cert. denied*, 133 S. Ct. 1579 (2013), discussed *supra* at. *See also* *Dubois v. USDA* 102 F.3d 1273 (1st Cir. 1996) (expansion of ski resort enjoined where Forest Service failed to require a NPDES permit in accordance with the Clean Water Act).

In *Maughan v. Vilsack*, a court declined to enjoin the state of Idaho from contracting to kill wolves in a national forest wilderness area.⁷⁴¹ However, the court cautioned that its decision was only for the purposes of a temporary restraining order, and “the USFS has not yet reached a determination regarding the IDFG program let alone concluded that a special use permit is required.”⁷⁴² Until that time, there was no federal action subject to NEPA. In *Wilderness Watch v. Vilsack*, 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.⁷⁴³ It concluded that the state must obtain approval from the USFS before undertaking its project in the wilderness area, and that any action taken by Idaho without federal approval would be contrary to the Wilderness Act.⁷⁴⁴

In *Friends of Columbia Gorge, Inc. v. Elicker* the court construed the Forest Service 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 on federal land.⁷⁴⁵ For this and other reasons the Forest Service was required to comply with NEPA. 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. These species included three plant species listed as “sensitive” by the Forest Service. The court 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 “every time state-managed wildlife enters federal land.”⁷⁴⁶ These cases indicate that it is incumbent on the land managers to evaluate any state action against the

⁷⁴¹ *Maughan v. Vilsack*, No. 4:14-CV-0007-EJL, 2014 WL 201702, at *3 (D. Idaho Jan. 17, 2014) (accepting, for the purpose of a TRO, 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, as quoted *supra*).

⁷⁴² *Id.*

⁷⁴³ *Wilderness Watch v. Vilsack*, 4:16-CV-12-BLW, 2017 WL 241320 (D. Idaho Jan. 18, 2017).

⁷⁴⁴ *Id.* at * 7-8 (citing 16 U.S.C. § 1133(c)). The injunction was based in part on a violation of NEPA. Section XX, *infra*, assesses other issues posed by this case, in particular, the Wilderness Act’s requirement that the Forest Service 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 Service*, D. Idaho, filed 3/31/17, Case 4:14-cv-00488-REB (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 the Forest Service for six other organized hunts. The 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.)

⁷⁴⁵ 598 F.Supp.2d 1136 (D. Oregon 2007) (subsequently vacated as a result of settlement). *See* 36 C.F.R. §241.2.

⁷⁴⁶ *Utah Native Plant Society v. U. S. Forest Service*, D. Utah – March 2, 2017. However, the court also indicated that the Forest Service would have authority to remove the goats and would “need to take a position” after sufficient study. *Id.* at 10. The authority to remove wildlife was established in *Hunt* and *Kleppe supra*. (The Forest Service had earlier told the state it objected to the reintroduction.)

regulatory criteria for permits so that they can properly authorize (or deny) the use and occupancy of federal lands.

As noted in Part II(B), federal agencies are encouraged to complete memorandums of understanding (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 NEPA or ESA.⁷⁴⁷ The agencies should expect scrutiny of the assignment of blanket authority to states using MOUs.⁷⁴⁸ 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.⁷⁴⁹ Similarly, an MOU that delegated authority to the state to assert federal reserved water rights in the Black Canyon of the Gunnison was enjoined as violating the federal agency's nondiscretionary duties to protect federal resources.⁷⁵⁰ Conversely, the 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* because FLPMA authorized the BLM to enter into such agreements, rendering a permit requirement superfluous.⁷⁵¹ The court also affirmed the applicability of NEPA to the MOU in lieu of the permit process.

An important take-away point is that MOUs cannot be used to evade legal obligations. 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. 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 NEPA or ESA, those requirements would attach to the MOU decision

⁷⁴⁷ *Defenders of Wildlife v. Andrus*, 627 F.2d 1238 (D.C. Cir. 1980) (citing *Kleppe v. Sierra Club*, 427 U.S. 390, 399 (1976)).

⁷⁴⁸ *See Gallatin Wildlife Association v. U. S. Forest Service*, CV-15-27-BU-BMM, 2016 WL 3282047 (D. Mont. June 14, 2016) (finding NEPA violations in an EIS for a Forest Plan where the Forest Service 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. Aug. 19, 2016).

⁷⁴⁹ *Bunch v. Hodel*, 642 F. Supp. 363, 365 (W.D. Tenn. 1985). *See High Country Citizens' All. v. Norton*, 448 F. Supp. 2d 1235, 1249 (D. Colo. 2006) (holding that the relinquishment of a federal reserved water right was an agency action subject to judicial review).

⁷⁵⁰ *High Country Citizens' All.* 448 F. Supp. 2d at 1245. (“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.”)

⁷⁵¹ 572 F.3d 1115 (10th Cir. 2009).

itself because that decision would constitute “affirmative conduct” necessary before a non-federal actor could proceed.⁷⁵²

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.⁷⁵³

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.”⁷⁵⁴ That outcome, as detailed above in Section II(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 statutory construction that exceptions to the Act’s overarching preservation mission are to be construed narrowly.⁷⁵⁵

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 “written to

⁷⁵² See *Mineral Policy Ctr. v. Norton*, 292 F. Supp. 2d 30, 54-55 (D.D.C. 2003) (“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”).

⁷⁵³ *Wilderness Watch v. Vilsack*, 4:16-cv-12-BLW, 2017 WL 241320 *8 (Jan. 18, 2017) (“Congress made preservation of wilderness values ‘the primary duty of the Forest Service, and it must guide all decisions as the first and foremost standard of review for any proposed action.’”) (citing *Greater Yellowstone Coalition v. Timchak*, 2006 WL 3386731 *6 (D. Idaho Nov. 21, 2006)).

⁷⁵⁴ *Wilderness Watch v. Iwamoto*, 853 F.Supp.2d 1063, 1071 (W.D. Wash. 2012) (citing *High Sierra Hikers Assn. v. U.S. For. Serv.*, 436 F.Supp.2d 1117, 1138 (E.D. Cal. 2006)).

⁷⁵⁵ See *Wilderness Watch v. U.S. Forest Serv.*, 143 F. Supp. 2d 1186, 1206 (D. Mont. 2000) (quoting *Spokane & I.E.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 *supra* Part II(B)(7)(b) (discussing subsequently enacted, site-specific wilderness legislation).

support a pre-determined decision”⁷⁵⁶ where preserving wilderness character is not the default conclusion. 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 Arizona Game and Fish Department (hereinafter 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.⁷⁵⁷ FWS authorized the construction as a project “categorically excluded” from detailed environmental analysis under NEPA.⁷⁵⁸ It made a rudimentary minimum requirements analysis,⁷⁵⁹ and approved the construction. The Ninth Circuit found that FWS had not provided a reasoned determination of necessity in employing the prohibited use of an installation. Its opinion created a litmus test for a minimum requirements analysis:

[A] *generic* finding of necessity does not suffice” [and] “the Service must make a finding that the structures are ‘necessary’ to meet the ‘*minimum*’ requirements for the administration of the area.... The key question—whether water structures were necessary at all—remains entirely unanswered... The 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 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.⁷⁶⁰

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

⁷⁵⁶ USFS Wilderness Advisory Group, Minimum Requirements Analysis: FAQs and Common Errors 16 (2015), available at http://www.wilderness.net/MRDG/documents/MRA_FAQ.pdf (last viewed Feb. 2, 2017).

⁷⁵⁷ Kofa Natl. Wildlife Refuge & Ariz. Game & Fish Dept., INVESTIGATIVE REPORT AND RECOMMENDATIONS FOR THE KOFA BIGHORN SHEEP HERD (Apr 17, 2007) [hereinafter *Investigative Report*].

⁷⁵⁸ U.S. Fish & Wildlife Serv., YAQUI AND MCPHERSON TANKS REDEVELOPMENT PROJECTS (May 2007) [hereinafter *Redevelopment CX*].

⁷⁵⁹ U.S. Fish & Wildlife Serv., MINIMUM REQUIREMENTS ANALYSIS AND NEPA WORKSHEETS, YAQUI AND MCPHERSON TANKS REDEVELOPMENT PROJECTS (May 30, 2007) [hereinafter *Kofa original MRA*].

⁷⁶⁰ *Wilderness Watch v. U.S. Fish & Wildlife Serv.*, 629 F.3d 1024, 1037-1038 (9th Cir. 2010) [hereinafter *Kofa*] (emphasis in original). The court listed the options that should have been analyzed, including closing areas, eliminating hunting, cancelling the transplant program, and killing predators.

because the installations need to be no more than three miles apart for “[o]ptimal distribution of water, especially for lactating ewes.”⁷⁶¹

In the meantime, FWS authorized the killing of certain mountain lions in the Kofa Wilderness to limit predation on bighorns.⁷⁶² 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 the Service from attaining bighorn sheep population objectives.”⁷⁶³ The explicit bighorn population objectives were “based on...the need to maintain a population large enough to support . . . regional and landscape level transplant programs,”⁷⁶⁴ and to make it easier for hunters to locate “trophy rams.”⁷⁶⁵ The minimum requirements analysis correctly identified the No Action alternative as the one which would best protect wilderness character.⁷⁶⁶ However, the Preferred Alternative—the removal of “offending” lions—was chosen. 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.⁷⁶⁷ The Yaqui could have been constructed without a catchment system with water supplied by tanker on the adjacent road outside the wilderness. As constructed, the Yaqui tank cannot have been the minimum necessary under any circumstance. Yet the FWS claims these two particular installations are among only twenty-four critical for bighorn survival in the Kofa NWR.⁷⁶⁸ At the least, that would mean all the remaining wildlife water developments in the Kofa Wilderness fail the test of “necessity” by the 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.”⁷⁶⁹

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.”⁷⁷⁰ Perhaps in response to the vastly greater number of pictures of predators and mule deer

⁷⁶¹ U.S. Fish & Wildlife Serv., Necessity Determination: Construction of the McPherson and Yaqui Wildlife Water Catchments, Kofa National Wildlife Refuge (Dec. 2014) [*hereinafter* Necessity Determination].

⁷⁶² U.S. Fish & Wildlife Serv., LIMITING MOUNTAIN LION PREDATION ON DESERT BIGHORN SHEEP ON THE KOFA NAT’L WILDLIFE REFUGE FINAL ENVIRONMENTAL ASSESSMENT (Dec. 2009) [*hereinafter* *Lion EA*].

⁷⁶³ *Id.*

⁷⁶⁴ *Lion EA*, *supra* note, at 7.

⁷⁶⁵ *Id.* at 10.

⁷⁶⁶ *Id.* at 112.

⁷⁶⁷ Redevelopment CX 5, *supra* note.

⁷⁶⁸ *Id.* at 4, citing Investigative Report, *supra* note, at 32.

⁷⁶⁹ 16 U.S.C. § 1131(c).

⁷⁷⁰ *See supra* notes ___ and accompanying text (analyzing the untrammled nature of wilderness).

than of bighorn sheep recorded at the guzzlers,⁷⁷¹ FWS wrote, “Desert bighorn sheep will likely use the new water sources more frequently as they become familiar with the location of the waters.”⁷⁷² 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 Range than Desert bighorn sheep.⁷⁷³

In the end, though, 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,”⁷⁷⁴ and with the objective to re-establish them as a “transplant source herd.”⁷⁷⁵ To do so, AFGD 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.⁷⁷⁶ Maximizing production is an 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,”⁷⁷⁷ 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.”⁷⁷⁸ In the Kofa Wilderness, FWS has failed to do so by taking actions that degrade Kofa’s untrammelled quality and that are not the minimum necessary, all for non-wilderness purposes.⁷⁷⁹

⁷⁷¹ As found in remote camera studies of the two new guzzlers, 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. Chris Barns, Personal Inspection of FWS Photographs, April 2012.

⁷⁷² *Id.* at 1.

⁷⁷³ Necessity Determination, *supra* note , at 6. See Bill Broyles & Tricia L. Cutler, *Effect of Surface Water on Desert Bighorn Sheep in the Cabeza Prieta National Wildlife Refuge*, 27 WILDLIFE SOC’Y BULL. 1082-88 (1999) (finding that the availability of perennial surface water did not affect bighorn populations on another desert wilderness refuge).

⁷⁷⁴ Investigative Report, *supra* note , 14.

⁷⁷⁵ *Id.* at 19.

⁷⁷⁶ *Id.* at 9.

⁷⁷⁷ Necessity Determination, *supra* note , at 2.

⁷⁷⁸ FWS Wilderness Policy, 610 FW 2.16. Section 2.16.B.3 is especially notable: “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.” *Id.* (emphasis added).

⁷⁷⁹ Other agencies have engaged in similar actions, based on similarly flawed analyses. See U.S. For. Serv., Tonto Natl. For., Preliminary Environmental Assessment for Authorization of Helicopter Landings in Wilderness, Aug. 2014 (authorizing up to 450 helicopter landings for

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 permit from the BLM Ely and Southern Nevada District Offices for using helicopters to access wildlife water developments within designated wilderness areas. BLM failed to undertake any analysis to determine whether any water installations were necessary in the first place. However, in preparation for their draft EA, BLM conducted a minimum requirements analysis on methods of access, concluding that helicopter access was necessary for 15 of the 20 big game water developments but that the others could be accessed on foot or by horse.⁷⁸⁰ 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.⁷⁸¹ In addition 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.”⁷⁸² 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 administration of the area as wilderness. If so, it is the 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.⁷⁸³ If not, no maintenance can be allowed, and eventually the installations should be removed to comply with the Act.

Second, the letter claimed, “It is clear in both the Clark and Lincoln County legislation that Congress intended that helicopter use be allowed.”⁷⁸⁴ However, Congress used the word “may,” demonstrating its intent that helicopter use be considered, not that it be

capturing bighorn sheep despite almost half of the bighorn habitat being outside wilderness); NPS Isle Royale NP: Draft EIS to Address the Presence of Wolves, Dec. 2016 (identifying a Preferred Alternative that re-stocks the island with wolves, despite correctly analyzing the No Action Alternative as the one that best preserves wilderness character).

⁷⁸⁰ Bur. of Land Mgmt., Ely and Southern Nev. Dist. Offices, Environmental Assessment - Issuance of Authorizations to Nevada Department of Wildlife for Wildlife Water Development Inspection, Maintenance and Repairs within BLM Wilderness Areas in Nevada: DOI-BLM-NVL030–2012–0003–EA - Draft, (Dec. 1, 2011), 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.

⁷⁸¹ Letter from Shaaron Netherton, Executive Director, Friends of Nevada Wilderness, to Rosemary Thomas, Dist. Manager, BLM Ely Dist. Office, RE: Environmental Assessment: Issuance of Authorizations to Nevada Department of Wildlife for Wildlife Water Development Inspection, Maintenance and Repairs within BLM Wilderness Areas in Nevada: DOI-BLM-NVL030–2012–0003–EA. (Dec. 30, 2011). (note to editor, Shaaron is spelled correctly)

⁷⁸² *Id.* at 1.

⁷⁸³ *See supra* Section II(B)(7).

⁷⁸⁴ *Id.* at 3. This instance is not the only time this organization has urged BLM to prioritize non-conforming wildlife developments. *See* E-mail from Shaaron Netherton, Executive Director, Friends of Nevada Wilderness, to Neil Kornze, Director, Bureau of Land Management (Apr. 1, 2014) (on file with the authors) (asking that radio collars no longer be defined as an installation so sportsmen could put them on wildlife in wilderness without agency determination of necessity).

automatically approved.⁷⁸⁵ Senator Harry Reid, who introduced the legislation, 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.”⁷⁸⁶

In the end, BLM authorized NDOW helicopter access to all sites, referring to “[a]dditional information...obtained during the comment period”⁷⁸⁷ in disregard of the Wilderness Act and the BLM’s own analysis. 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, among 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.

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.⁷⁸⁸ 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 which, among other things, provides federal penalties for transporting in interstate commerce any wildlife taken in violation of state

⁷⁸⁵ See Clark County Conservation of Public Land and Natural Resources Act of 2002, Pub. L. No. 107-282 § 208(c) (“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 in the Wilderness.”). See also Lincoln County Conservation, Recreation, and Development Act of 2004, Pub. L. No. 108-424 § 209(c); Tax Relief and Health Care Act of 2006, Pub. L. No. 109-432 § 329(c) (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), and those restrictions are set forth in agency policy: “The 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 6340, *supra* note , at 1.6.C.2.b.

⁷⁸⁶ Letter from Sen. Harry Reid to Bob Abbey, Director, Bur. of Land Mgmt., May 27, 2010 (on file with authors).

⁷⁸⁷ Bur. of Land Mgmt., Ely Dist. Office, 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 3 (Jan. 13, 2012).

⁷⁸⁸ See, e.g., Association of Fish and Wildlife Agencies, *Wildlife Management Authority: The State Agencies' Perspective, Recommendation 5*, at 22, February 2014 (suggesting that the cooperative language found in the Sikes Act could be strengthened and extended to all of the land management agencies).

law.⁷⁸⁹ Another example is provided by the Pittman-Robertson and Dingell-Johnson Acts, as discussed in Part I(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, NWRSIA, 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.
- 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 section II(B) of this paper 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 in the planning and land acquisition programs substantive opportunities for intergovernmental cooperation are prescribed by statute. In addition to these opportunities for cooperation are those opportunities provided in other federal statutes and programs such as the National Environmental Policy Act (NEPA), the Landscape Conservation Cooperative network coordinated by the FWS, the Joint Ventures program of the FWS, and the State Wildlife Grants Program.⁷⁹⁰

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."⁷⁹¹ To carry out the policy of cooperation, NEPA requires the federal agency conducting an EIS to provide early notification to, and solicit the views of, any state entity which may be significantly impacted.⁷⁹² Any

⁷⁸⁹ 16 U.S.C. § 3371-3378.

⁷⁹⁰ For a review of these and other programs *see* Vicky J. Meretsky, et al., *A State-Based National Network for Effective Wildlife Conservation*, 62(11) *BioScience* 970 (2012).

⁷⁹¹ 42 U.S.C. § 4331(a).

⁷⁹² 42 U.S.C. § 4331(D)(iv).

disagreements about impacts, between federal and state agencies, must be enumerated within the EIS.⁷⁹³ 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."⁷⁹⁴ 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. In the aftermath of that decision the FWS and the 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.⁷⁹⁵ 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 2008.⁷⁹⁶

In an even more focused attempt to encourage integrated management, the Landscape Conservation Cooperative (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."⁷⁹⁷ There are 22 LCCs in the network. Each is self-directed by a voluntary steering committee, though the whole enterprise is coordinated through the FWS. The goals of the LCC program are to develop science-based information about the implications of climate change and other stressors, develop shared landscape-level conservation objectives and strategies, facilitate scientific exchange, monitor and evaluate the effectiveness of the LCC's strategies, and develop linkages between LCCs.⁷⁹⁸ A 2015 National Academy of Sciences review concluded 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

⁷⁹³ *Id.*

⁷⁹⁴ 40 C.F.R. § 1501.6.

⁷⁹⁵ U.S. Fish & Wildlife Service and National Park Service, Final bison and elk management plan and environmental impact statement for the National Elk Refuge and Grand Teton National Park/John D. Rockefeller, Jr., Memorial Parkway 2007, *available at* <https://www.fws.gov/bisonandelkplan/Final%20Bison%20and%20Elk%20Management%20Plan%20and%20Environmental%20Impact%20Statement.htm>.

⁷⁹⁶ Wyoming Game and Fish Department, Jackson Bison Herd (B101) Brucellosis Management Action Plan, May 20, 2008, *available at* https://wgfd.wyo.gov/WGFD/media/content/PDF/Wildlife/BMAP_JACKSONBISON_FINAL.pdf.

⁷⁹⁷ Landscape Conservation Cooperation Network website, *available at* <https://lccnetwork.org/>.

⁷⁹⁸ Landscape Conservation Cooperation Network, *About Landscape Conservation Cooperatives*, <https://lccnetwork.org/about/about-lccs> (visited May 3, 2017).

leveraging efforts of diverse partners at a much greater scale than any one entity could achieve alone."⁷⁹⁹

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.⁸⁰⁰ 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 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."⁸⁰¹ For instance, there has been a movement recently among local governments to try to use the coordination clauses in FLPMA and the NFMA to force federal agencies to conform their actions to the wishes of local interests.⁸⁰² However, this is not a reasonable interpretation of the statutes, as was demonstrated in Part II(B) of this Article. Both provisions 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.⁸⁰³ Local and state governments must work to improve

⁷⁹⁹ LCC Press Release, *National Academy of Sciences Releases Its Review of the Landscape Conservation Cooperatives*, Dec. 3, 2015, available at <https://lccnetwork.org/news/national-academy-sciences-releases-its-review-landscape-conservation-cooperatives>.

⁸⁰⁰ See Michelle Bryan, et al., *Cause for Rebellion? Examining How the Federal Land Management Agencies & Local Government Collaborate on Land Use Planning*, 6 J. of Energy & Env. L. 1, 14 (2016) ("Collaboration must be genuine and not perfunctory to truly be successful in the long term....").

⁸⁰¹ *Id.* at 2.

⁸⁰² Joshua Zaffos, *Counties Use a 'Coordination' Clause to Fight the Feds*, High Country News, May 11, 2015, available at <http://www.hcn.org/issues/47.8/counties-use-a-coordination-clause-to-fight-the-feds>.

⁸⁰³ See *Alaska v. Andrus*, 429 F. Supp. 958, 962 (1977) (citing 43 U.S.C. § 1732(b)), *aff'd*, 591 F.2d 537 (9th Cir. 1979). 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 coordinators recognize that the BLM has no obligation to adhere to any local plan or policy that is inconsistent with federal laws and regulations.

their own use of federal processes, to get involved knowledgably and 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.⁸⁰⁴ For example, the National Parks Conservation Association (NPCA) recently complained that the proposed Greater Yellowstone grizzly bear de-listing plan "Fails to provide the Park Service a formal seat at the table to work with state agencies on the management of park bears that occasionally move beyond park borders."⁸⁰⁵ 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 to 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."⁸⁰⁶ 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."⁸⁰⁷ For true cooperation to be successful, local, state, and federal governments must work as partners.⁸⁰⁸ To that end, states should create similar opportunities for federal agencies to engage in state and local decision making.

3. *Cooperation does not equal federal acquiescence*

In none of the cooperation sections reviewed in Part II(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

Public Lands Council, *A Beginner's Guide to Coordination*, at 10 (2012), available at http://www.co.harney.or.us/PDF_Files/County%20Court/public%20land%20issues/Coordination%20Handbook%20-%20Public%20Lands%20Council%20-%202012.pdf.

⁸⁰⁴ See Bryan, *supra* note , at 3-5 (providing an overview of local and state land use planning).

⁸⁰⁵ Stephanie Adams, *Iconic grizzlies deserve a more thoughtful plan*, Bozeman Daily Chronicle, Oct. 15, 2016, available at

http://www.bozemandailychronicle.com/opinions/guest_columnists/iconic-grizzlies-deserve-a-more-thoughtful-plan/article_282c4660-a561-58c7-a0a8-9ba58329490f.html.

⁸⁰⁶ Bryan, *supra* note , at 4.

⁸⁰⁷ *Id.* at 5.

⁸⁰⁸ *Id.* at 2.

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 at all possible to meet the needs of other governmental entities, but 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. 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. 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."⁸⁰⁹ 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* states, "Wildlife management policies affecting the interests of multiple sovereigns demands a high degree of intergovernmental cooperation."⁸¹⁰ 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.

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), 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."⁸¹¹

A tension between federal and state interests is embedded in federal land and resources law. In each of the statutes reviewed in Part II(B), Congress required these lands and

⁸⁰⁹ *Id.*

⁸¹⁰ 279 F.3d at 1218.

⁸¹¹ *Hughes v. Oklahoma*, 441 U.S. 322, 336 (1979).

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.”⁸¹² Nothing has changed in this regard. As discussed in Part I, 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.

⁸¹² George Cameron Coggins and Michael E. Ward, *The Law of Wildlife Management on Federal Lands*, 60 Oregon L. Rev. 59, 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 some members of Congress applaud “the federal self-denial.” *Id.* at 75, 83. 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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How Vulnerable Are Denning Bears to Disturbance?

Author(s): John D. C. Linnell, Jon E. Swenson, Reidar Andersen and Brian Barnes

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How vulnerable are denning bears to disturbance?

John D. C. Linnell, Jon E. Swenson, Reidar Andersen, and Brian Barnes

Abstract When exposed to human disturbance, most large carnivores are able to move away from the source with little energetic cost. Bears represent an exception in that during winter, most individuals spend several months in an energy-saving state of hibernation in a den. This implies that disturbance of denning bears has the potential to have a large energetic cost, although data on the subject are rather diffuse. We reviewed the literature on den-site selection, denning physiology, and responses to disturbance for the brown bear (*Ursus arctos*), black bear (*U. americanus*), and polar bear (*U. maritimus*). Generally, bears select dens one to 2 km from human activity (roads, habitation, industrial activity) and seemed to tolerate most activities that occurred more than one km from the den. Activity closer than one km and especially within 200 m caused variable responses. Some bears tolerate disturbance even inside the den, but bears will abandon dens in response to activity within this zone, especially early in the denning period. Den abandonment by brown and black bear females with cubs of the year can lead to increased cub mortality. Specific excavated or ground dens are rarely reused, whereas natural caves or hollow trees are reused with varying frequency. There is often some distance between an individual bear's consecutive dens. This indicates that loss of a single denning area following human disturbance will not always lead to deleterious effects, if alternative denning areas are available within the home range.

Key words black bear, brown bear, dens, disturbance, hibernation, physiology, polar bear, *Ursus*

Human activities such as recreation and resource extraction, even when they do not involve direct persecution or habitat degradation, can disturb wildlife (Bromley 1985, McLellan 1990). Responses of mammals to disturbance vary in degree from minor changes in activity pattern to displacement (escape) and reduced reproductive success or survival (Bromley 1985). Some species are able to minimize effects of chronic disturbance by moving away from disturbed areas or limiting use to times when disturbance is absent (Bromley 1985, Mace

and Waller 1996). Only if the habitat they are displaced from is limited in availability and critical will other costs, such as increased predation risk or a long-term decrease in foraging efficiency, become significant enough to affect survival and recruitment. However, many animals have certain life stages when they are more vulnerable. Carnivores, for example, tend to be confined to an area around a breeding den during the postpartum period when altricial offspring are developing locomotory skills. Disturbance resulting in displacement at this stage

Address for John D. C. Linnell: Norwegian Institute for Nature Research, Tungasletta-2, 7485 Trondheim, Norway; e-mail: john.linnell@ninatrd.ninaniku.no. Address for Jon E. Swenson: Norwegian Institute for Nature Research, Tungasletta-2, 7485 Trondheim, Norway, and Department of Biology and Nature Conservation, Agricultural University of Norway, P.O. Box 5014, 1432 Ås, Norway. Address for Reidar Andersen: Norwegian Institute for Nature Research, Tungasletta-2, 7485 Trondheim, Norway, and Zoology Department, Norwegian University of Science and Technology, 7491 Trondheim, Norway. Address for Brian Barnes: Institute of Arctic Biology, University of Alaska, Fairbanks, AK 99775, USA.

of the life cycle could have deleterious effects as a new den site must be found and offspring moved (Chapman 1977, Ballard et al. 1987, Thomson 1992).

For most carnivores, the denning period corresponds with summer conditions and only reproductive animals are affected. Bears (Ursidae) represent an exception. Parturient females and most individuals of other age and sex classes remain sequestered in dens for up to 6 months when hibernating (Ramsay and Dunbrack 1986). Because of strict energy constraints and the importance of the den structure, disturbance in this phase of the annual cycle may have greater negative effects on survival and reproduction than disturbance at other times of the year.

For many bear populations, potential for human disturbance at winter dens has increased because 1) winter recreation in bear habitats is becoming increasingly popular, 2) extraction industries (logging, mining) are increasing their activity in bear habitat, and 3) bear populations are re-expanding their range into many areas with human activity. Many authors have expressed concern about the impacts of human activity on denning bears (Mannville 1983, Peek et al. 1987, Mattson 1990, Goodrich and Berger 1994, Wiig et al. 1996), and the subject was ranked among the top 5 research needs with respect to military activity (Asherin and Gladwin 1988).

This review summarizes what is known about bear denning chronology, behavior, physiology, and habitat selection and how denning bears respond to specific disturbance stimuli. The review covers 3 species of bears found in temperate and arctic regions, polar bears (*Ursus maritimus*), brown bears (*U. arctos*), and black bears (*U. americanus*).

Chronology of denning: potential for disturbance in time

While hibernation and denning are effective methods to conserve energy during winter, not all bears enter dens (Table 1). Among polar bears, pregnant females are the only class to consistently use dens (Ramsay and Stirling 1988). Other age and sex classes may reduce activity for periods of up to a month and use temporary shelters, but these are not regarded as true dens (Messier et al. 1992, 1994). Most age and sex classes of brown bears enter dens for part of winter. One exception is on Kodiak Island, Alaska, where some males remain

active all winter, possibly because of the availability of spawning salmon (*Oncorhynchus* spp., Van Daele et al. 1990). Some male brown bears from southern Europe also remain active during all or part of winter (Clevanger et al. 1992, Huber and Roth 1996, Roth et al. 1996). The variation observed in denning behavior reflects the large geographic area over which black bears are found. All black bears in northern latitudes den for winter, but many males and nonreproductive females remain intermittently or continually active during winter in southern ranges that lack snowfall (Hellgren and Vaughan 1987, Doan-Griber and Hellgren 1996).

Within populations, dates of den entry and exit vary greatly among age and sex classes and years. Adult males den consistently for shorter periods than pregnant females, with other classes having intermediate denning periods (Table 1, Lindzey 1981). In consequence, entry or emergence dates can vary by several months within a population in the same year (LeCount 1983, Van Daele et al. 1990). Annual variation in dates of den entry is generally attributed more to availability of autumn foods (berries, nuts, mast, salmon) than snowfall (Craighead and Craighead 1972, Johnson and Pelton 1980a, Tietje and Ruff 1980, Schooley et al. 1994, Van Daele et al. 1990). Emergence dates can vary with spring snowmelt and the consequent risk of dens being flooded (Schoen et al. 1987). Generally, length of time spent in dens is determined by climate and thereby habitat, latitude, and altitude. Bears living in northern areas den for longer periods than their southern counterparts. For example, duration of hibernation for pregnant female black bears can vary from 7 months in Alaska (Smith et al. 1994) to 3 months in Tennessee (Johnson and Pelton 1980a).

The period with potential for disturbing denning bears clearly varies with region and year. This period is not just the period of snow cover, as many bears begin denning before snow falls and may emerge before or after snowmelt. Because the denning period appears to be relatively predictable within a given region if snow conditions and autumn food abundance are monitored, there is a possibility of avoiding potentially disturbing activity during the period when bears den. However, hunting in early spring or late autumn, any snow-oriented winter recreation activities, and extraction industries that use frozen ground in winter all have the potential to disturb denning bears.

Table 1. Chronology of denning for polar, brown, and black bears.

Location	Latitude	Who dens? ^a	Denning period ^b										Ref. ^d	
			Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June		
Polar bears														
Svalbard	78	rF only								oo	oo		1	
Canada														
archipelago	72-76	rF only	oo•o	oo++	++++	++++	++++	++++	++++	ooo•	o		2	
Beaufort Sea	68-76	rF only		oooo	oo•o	++++	++++	++++	++++	oooo	•ooo		3	
Wrangel Island	72	rF only		?	?					oo•	oo		4	
Manitoba	57	rF only		?	?				o	o•oo	o		5	
Manitoba	57	rF only		oooo	o+++	++++	++++	++++	+++o	oooo			6	
Ontario	55	rf only		?	?				o	•ooo	o		7	
Brown bears														
NW Alaska	68	all		ooo•	oooo	++++	++++	++++	++++	++++	+++oo	o•o	8	
N Sweden	67	all	o	•oo+	++++	++++	++++	++++	++++	++++	+++oo	•ooo	9	
Central Alaska	62	all	o	o•oo	o+++	++++	++++	++++	++++	++++	+ooo	•ooo	o	10
S Sweden	61	all	o	ooo•	oooo	++++	++++	++++	++++	oooo	o•oo	oooo	o	9
SE Alaska	57	all		oo•	oooo	oo++	++++	++++	++++	+++oo	oooo	•ooo		11
NE Kodiak Island	57	not all aM		oo	•ooo	oooo	++++	++++	++++	+ooo	oooo	•ooo	oooo	12
SW Kodiak Island	57	all		oo	ooo•	oooo	++++	++++	++++	oooo	oooo	•ooo	oooo	12
Banff NP Alberta	52				oo++	++++	++++	++++	++++	+++o	oo			13
NW Montana	48	all			o•o	++++	++++	++++	++++	+++o	o•o			14
NW Montana	48	all		ooo	•ooo	o+++	++++	++++	++++	+ooo	•ooo	oo		15
Croatia	48	not all												16
Yellowstone NP	44	all		o	o•++	++++	++++	++++	++++	++++	oo			17
Yellowstone NP	44	all	o	oooo	o•oo	ooo+	++++	++++	+++oo	ooo•	oo			18
N Spain	43							oo			oo			19
N Spain	43					ooo	oo•o	++++	++++	+o•o	oo			21
Abruzzo, Italy	42	not all aM												21
Black bears														
Central Alaska	64	all	oo	•oo+	++++	++++	++++	++++	++++	++++	+oo•			22
Central Alaska	62	all	ooo	o•oo	oo++	++++	++++	++++	++++	++++	+ooo	•oo		23
Kenai, Alaska	60	all	o	oo•o	oo++	++++	++++	++++	++++	+++o	oo•o	oo		23
Central Alberta	55	all		oo•o	o+++	++++	++++	++++	++++	++++	o•o			24
Cental Ontario	55	all	o	ooo•	oooo	++++	++++	++++	++++	+++o	o•oo			25
NW Montana	48	all		oooo	o•oo	++++	++++	++++	++++	+++o	•ooo	o		15
N Minnesota	47	all		•							•			26
N Maine	46	all		ooo	o•o+	++++	++++	++++	++++	++++	ooo•	o		27
Washington	46	all		o	•ooo	++++	++++	++++	++++	o•oo	oo			28
S Montana	45	all	o	oo•o	o+++	++++	++++	++++	++++	++++	o•oo	o		29
N Michigan	45	all			ooo	o•oo	++++	++++	++++	o•oo	oo			30
Idaho	44	all		ooo	•ooo	++++	++++	++++	++++	++++	+o•o			31
New York	42	all			oooo	•ooo	++++	++++	++++	+ooo	•ooo			32
California	38	63% aM act			o	oo•				•	oooo	oooo		33
Nevada	37	all				o•o+	++++	++++	++++	+o•o	o			34
Nevada	37	all			o•	o+++	++++	++++	++++	+ooo	•o			34
Virginia	36	14% act				oo•	oo++	++++	++++	+ooo	•oo			35
N. Carolina	35	some act				oo•	o+++	++++	++++	++++	o			36
Arizona	35	all		oo	oo•o	oo++	++++	++++	+++o	oooo	•ooo	o		37
Tennessee	35	all				o	•o++	++++	++++	+ooo	•ooo	o		38
E Arkansas	35	5 % act				•o	oo++	++++	++++	+ooo	o•			39
E Arkansas	33	all					o•o+	++++	++++	+o•o				40
California	34	no			oooo	o•oo	++++	++++	++++	oo•o	o			41
Louisiana	fo ^c 32	34 % act			o	•o++	++++	++++	++++	++++	ooo•	oooo		42
Florida	fo 30	all aM act				o•	o+++	++++	++++	++++	+++•	oo		43
N. Mexico	fo 29	all aM act				o•	o+++	++++	++++	++++	+o•o			44

^a "rF" = reproductive female (with yearlings or cubs-of-the-year), "aM" = adult males, "act" = active.

(continued)

Table 1 (continued). Chronology of denning for polar, brown, and black bears.

^b Each month is divided into 4 quarters. The quarter containing the average entrance and emergence dates (•), the range of quarters in which bears began to den or emerge (o), and the quarters during which all bears were denned (+) are shown.

^c Populations where data on females only is presented are marked with "fo".

^d 1=Larsen 1985, 2=Messier et al. 1994, 3=Armstrup and Gardner 1994, 4=Uspenski and Kistchinski 1972, 5=Jonkel and Cowan 1971, 6=Ramsay and Stirling 1988, 7=Kolenosky and Prevett 1983, 8=Ballard et al. 1991, 9=Swenson unpublished, 10=Miller 1990, 11=Schoen et al. 1987, 12=Van Daele et al. 1990, 13=Vroom et al. 1977, 14=Servheen and Klaver 1983 cited in LeFrance et al. 1997, 15=Aune 1994, 16=Huber and Roth 1996, 17=Craighead and Craighead 1972, 18=Judd et al. 1986, 19=Clevanger and Purroy 1991, 20=Naves and Palomero 1993, 21=Roth et al. 1996, 22=Smith et al. 1994, 23=Schwartz et al. 1987, 24=Tietje and Ruff 1980, 25=Kolenosky and Strathearn 1987, 26=Rogers 1987, 27=Schooley et al. 1994, 28=Lindzey and Meslow 1976, 29=Mack 1990, 30=Manville 1987, 31=Beecham et al. 1983, 32=O'Pezio et al. 1983, 33=Graber 1990, 34=Goodrich and Berger 1994, 35=Hellgren and Vaughan 1989, 36=Hamilton and Marchinton 1980, 37=LeCount 1983, 38=Johnson and Pelton 1980a, 39=Smith 1986, 40=Oli et al. 1997, 41=Novick et al. 1981, 42=Weaver and Pelton 1994, 43=Wooding and Hardisky 1992, 44=Doan-Crider and Hellgren 1996.

Den construction and den-site selection: potential for disturbance in space

Types of dens used and the locations selected varied within and among species (Table 2). Polar bears generally use snow dens (dens tunneled into snowdrifts). Only in the southerly Hudson Bay region did polar bears excavate dens in the soil (Kolenosky and Prevett 1983, Clark et al. 1997). Generally, polar bear dens were located in tundra habitats, although pack ice was used extensively in the Beaufort Sea (Lentfer and Hensel 1980, Armstrup and Gardner 1994) and the tundra-boreal forest ecotone was used around Hudson Bay (Ramsay and Stirling 1990, Clark et al. 1997). Dens on land were commonly concentrated, resulting in locally high densities (Uspenski and Kistchinski 1972, Larsen 1985, Armstrup and Gardner 1994, Clark et al. 1997, Ovsyanikov 1998), although this trend was not universal (Messier et al. 1994). These concentrations often were associated with the upper portion of steep hillsides and lee slopes (Larsen 1985, Ovsyanikov 1998). Dens in the tundra-forest ecotone tended to be more dispersed, although confined generally to specific suitable regions (Clark et al. 1997, Ramsay and Stirling 1990). Successive dens occupied by individual bears tended to be within the same geographic region, but not at the same site, with a mean of 308 km (range 20–1,300 km) between dens. In some regions, annual variation in denning location could be due to shifting ice conditions (Stirling and Andriashok 1992). Dens varied in distance from the sea, with dens on Svalbard (Norway) averaging 3 km and dens around Hudson Bay ranging from 29 to 118 km (Kolenosky and Prevett 1983, Larsen 1985, Ramsay and Andriashok 1986). Pack-ice dens

were the most dispersed and least predictable, in part due to the shifting nature of the substrate (Armstrup and Gardner 1994, Lentfer 1975). The nature of snow dens precludes reuse.

Brown bears used a greater variety of den types, with much variation among populations. Excavations in soil, often dug under tree roots or ant hills for stability, were the most common, although natural cavities and caves appeared to be used where they occur, especially in southern European and coastal Alaskan areas. Brown bear dens were associated rarely with hollow trees or were simply dug in snow. Dens in natural cavities were reused at much greater rates than excavated dens, indicating that they were either preferred and more limited or that excavated dens did not persist (Van Daele et al. 1990, Groff et al. 1998). Concentrations of denning brown bears have been found in areas where natural cavities (Naves and Palomero 1993, Huber and Roth 1996) and excavated dens (Swenson et al. 1996) were used. Successive dens for individual bears tended to be within the same region but almost never in the same den structure, with mean distances varying from 1.7 km to 8.8 km in separate studies and with a few individuals moving up to 30 km (Schoen et al. 1987, Miller 1990, Van Daele et al. 1990, Ballard et al. 1991). Females showed greater degrees of den-area fidelity than males (distances separating dens in separate years averaging 3.5 versus 8.8 km in Southeast Alaska, 1.7 versus 7.8 km on Kodiak Island for females and males, respectively). Fidelity to region rather than den also indicated that suitable denning sites are not often limited. Dens were located in treeless alpine areas, the forest-alpine ecotone, or forest depending on availability. There appeared to be a trend for middle elevations to be used, with valley bottoms and high peaks avoided (Table 2). The general pattern was

for the use of relatively high-altitude areas with the most stable snow conditions possible, rather than specific habitat types. Use of steep slopes was

strong, with mean slopes ranging from 30° to 50°. Aspect use varied enormously within and between studies (Harding 1976, Judd et al. 1986), perhaps

Table 2. Topographic and habitat characteristics (mean and (range)), and den construction type of brown bear and black bear dens.

Location	Slope use in degrees	°N	Altitude used	Altitude available	Den construction (%) ^a				Habitat type (%) ^b						Ref ^c		
					N	Exc	Cave	Veg	Sn	Tr	n	Tun	For	Eco		Alp	
Brown bears																	
N. Yukon	40 (20-80)	70				24	96			4		24	100				1
N. Alaska	54	70	816			29	93	7				29					2
N. Alaska	>30	70	1,063			49	70	30							10		3
NW Alaska	(20-35)	68	500	0-1,200		86	100										4
N. Alaska		68				52	75	25									5
N Sweden		67				21	47	43		10							47
Central Alaska		62	1,200 (320-1,626)			96	99	1				102			48		6
SW Yukon		62	1,250			10	100										7
S Sweden		61				125	86	10		4							47
SE Alaska		57	640 (6-1,190)	0-1,400		38	29	63		8		38		52	22	13	8
Kodiak Island		57	450 (128-915)	0-1,000		135	82	13		5		320		1	43	56	9
(2 sites)			665 (91-1,189)	0-1,300													
SW Alaska		57	450 (30-1,000)	0-1,200		30	96			4		30			50	50	10
Rocky Mts.		53	2,174			60	93	7				60			100		11
Rocky Mts		53	2,057									24		42	8	50	12
Jasper NP		53	2,236			10	90	10						71	29		13
Banff NP		53	2,200 (2,050-2,300)	1,300-1,500		47	100					38					14
NW Montana		48	2,124 (2,050-2,500)	850-3,000		15	100										15
NW Montana		48	2,166	1,280-2,800													16
N. Italy		46	1,431 (970-1,940)	500-3,000		21	10	90				19		95		5	17
N. Italy		46	1,600 (951-2,450)	700-2,300		12	75	25									18
Croatia		46	836 (450-1,370)	400-1,500		28	7	79		10		4		100			19
Yellowstone NP		44	2,470 (2,000-3,050)	1,500-4,200		33	91	6		3		55		100			20
Yellowstone NP		44				11	100										21
N Spain		43	(1,400-1,520)			7		100				7		100			22
N Spain		43	1421 (580-2,400)			74	22	78				74		95	5		23
S France		43				11	42	68				11		100			24

^a Exc = excavated, Cave = natural cave or cavity, Veg = vegetation only nest, Sn = snow den, Tr = tree or hollow log den,

^b Tun = tundra / muskeg, For = forest / swamp forest and shrub, Eco = forest / alpine ecotone, Alp = alpine meadows

^c 1=Harding 1976, 2=Garner et al. 1984, 3=Quimby and Snarski 1974 cited in LeFrance et al. 1987, 4=Ballard et al. 1991, 5=Reynolds et al. 1976, 6=Miller 1990, 7=Russel 1978, 8=Schoen et al. 1987, 9=Van Daele et al. 1990, Smith and Van Daele 1990, 10=Lentfer et al. 1972, 11=Aune et al. 1986, 12=Wielgus 1986 cited in LeFrance et al. 1987, 13=Russell 1978 cited in LeFrance et al. 1987, 14=Vroom et al. 1977, 15=Servheen and Klaver 1983 cited in LeFrance et al. 1987, 16=Aune 1994, 17=Groff et al. 1998, 18=Roth 1972, 19=Huber and Roth 1996, 20=Judd et al. 1986, 20=Craighead and Craighead 1972, 22=Clevanger and Purroy 1991, 23=Naves and Palomero 1993, 24=Camara 1987, 25=Smith et al. 1994, 26=Schwartz et al. 1987, 26=tiefje and Ruff 1980, 28=Kolenosky and Sratheam 1987, 29=Lindzey and Meslow 1976, 30=lonkel and Cowan 1971, 31=Manville 1987, 32=Mack 1990, 33=Beecham et al. 1983, 34=Alt and Gruttadauria 1984, 35=Beck 1986, 36=Goodrich and Berger 1994, 37=Hayes and Pelton 1994, 38=Oli et al. 1997, 39=Hellgren and Vaughan 1989, 40=Hamilton and Marchinton 1980, 41=LeCount 1983, 42=Johnson and Pelton 1980b, 43=Wathen et al. 1986, 44=Novick et al. 1981, 45=Weaver and Pelton 1994, 46=Wooding and Hardisky 1992, 47=Doan-Crider and Hellgren, 1996, 48=Swenson unpublished.

due to selection for slopes with the right wind and sun exposure to produce stable snow conditions for the required length of time.

Black bears used a much greater diversity of den types (Table 2) compared to polar or brown bears. Excavated dens and natural cavities are used commonly in northern regions, whereas hollow trees and ground nests constructed in dense vegetation are used commonly in southern regions. Rates of reuse vary from 5–6% to 30–58% for excavated dens (Lindzey and Meslow 1976, Tietje and Roff 1980, Beecham et al. 1983, LeCount 1983, Schwartz et al. 1987) and up to 70–100% for natural cavities (Schwartz et al. 1987). Reuse is rarely by the same bear (Novick et al. 1981). Forest or dense shrub areas were the most commonly used habitats for dens. Many black bear populations live in flat taiga or coastal swamp areas, where slope or altitude selection cannot be displayed. In areas with greater topographic variation, 20–50° slopes are generally selected at middle altitudes. In areas where black and brown bears have been studied in sympatry, black bears selected lower altitudes than brown bears (Miller 1990, Aune 1994). Aspect selection was complex, without a clear trend, but it was presumed that the local stability of snow conditions is among the important determinants.

Spatial potential for disturbing denning bears is great, as their choice of habitat is often similar to that of people. In arctic areas, industrial activity tends to concentrate along the coast, therefore leading to potential conflict with denning polar bears (Armstrup 1993, Armstrup and Gardner 1994, Wiig et al. 1996). While much development (road and house construction, hydroelectric development) occurs in valley bottoms and thus avoids prime den areas, ski resorts tend to be built on steep slopes with stable snow conditions, exactly the same conditions that brown and black bears select (Goodrich and Berger 1994). Black bears will generally be more vulnerable to valley-bottom disturbance than brown bears because of their greater use of lower slopes (Miller 1990, Aune 1994). The fact that suitable denning habitat can be identified, from field study or by using GIS maps (Clark et al. 1998), means that important areas with concentrations of sites can be given special consideration when planning activity in winter. If disturbance is unavoidable, the fact that bears usually move several kilometers between successive denning seasons and generally have a low level of den reuse implies that loss of a localized denning area (smaller than individual home ranges) to devel-

opment should have minimal effects provided suitable alternative habitat is available nearby (within the individuals' home ranges). An exception may occur if the disturbed area contains a high number of natural cavities or hollow trees, where these are favored over excavated dens.

There are reasons to expect that different den types offer different levels of physical protection, thermal insulation, acoustic insulation, and vulnerability to flooding and that these factors should have significant effects on reproduction and vulnerability to disturbance (Smith 1986, Oli et al. 1997, McDonald and Fuller 1998). Despite the fact that this data is essential to evaluate the relative importance of the different den types, there is not enough information yet for definitive conclusions.

Hibernation physiology and the potential energetic costs of disturbance

The occurrence of true hibernation in bears has been debated for over 30 years, but the answer depends on how hibernation is defined (Watts et al. 1981). If the definition is generalized to include significant energy savings through body temperature reduction and a slowing of metabolism, then bears must be regarded as functional hibernators (Folk et al. 1977, Farley and Robbins 1995).

During the denning period, bears decrease core body temperature to between 32°C and 35°C (Hissa 1997, Hellgren 1998). Although smaller hibernating species may allow their body temperatures to drop to close to 0°C, bears appear to have a limit of 32°C (Hissa 1997, Hellgren 1998). Metabolism is reduced and heart rate slows to approximately 18 beats/minute (Reynolds et al. 1986). An energy-sparing sleep state called non-rapid eye movement (NREM) is entered. The structure of the den, any bedding, and the layer of air trapped between bear and den wall provide thermal insulation from winter temperature extremes. Rates of heat flow between the bear and outside are therefore reduced and rates of energy use are reduced by between 60 and 80% (Watts et al. 1987, Watts and Jonkel 1988, Watts and Cuyler 1988).

Bears do not eat, drink, defecate, or urinate between den entry and den emergence. Therefore, all energy is provided by fat reserves, water is obtained as a product of fat metabolism, and all metabolic waste products are stored (Folk et al. 1972, Ramsay and Dunbrack 1986, Hissa 1997,

Hellgren 1998). Energy requirements of pregnant females are relatively high while denning because they give birth to multiple altricial young in mid-

winter and lactate for several months (Ramsay and Dunbrack 1986, Farley and Robbins 1995). Despite the reduced metabolism of the hibernation state,

Table 2 (continued). Topographic and habitat characteristics (mean and (range)), and den construction type of brown bear and black bear dens.

Location	°N	Slope use in degrees	Altitude used	Altitude available	Den construction (%) ^a					Habitat type (%) ^b					Refc	
					N	Exc	Cave	Veg	Sn	Tr	n	Tun	For	Eco		Alp
Black bears																
Central Alaska	64			Flat	41	83	5		12			41	100			25
Central Alaska	62	35	624 (267-1,324)	300-2,300	91	56	41			3		91	91		9	26
South Alaska	61	35		Flat	17	20	60			20						26
South Alaska	60			Flat	96	96	3			1		96	100			26
Central Alberta	55			Flat	37	95						37	100			27
Central Ontario	53			Flat	98	89	3	3		5		98	100			28
NW Montana	48	28 (20-38)	1,715 (1,632-1,798)	1,280-2,863												16
Washington	46				12	67	16			17						29
Central Montana	46				127	14	72	13								30
N Michigan	45			Flat	31	78		3	19			31	100			31
S. Montana	45	28 (14-37)	2,239 (1,768-2,682)	1670-3000	16	31	69									32
W. Idaho	44	15			65	72	3			25		65	100			33
Pennsylvania	40				27	11	63	22		4						34
Colorado	37				55	35		3								35
Nevada	37	15(0-35)	2,656 (2,250-3,000)	1,890-3,460	9		56	22		22						36
Nevada	37	21 (10-33)	2,310 (1,799-2,713)	1,560-2,940	30	3	37			60						36
Arkansas	36				48	12	67			4		48	100			37
Arkansas	36			Flat	51	4		6		90		51	100			38
Virginia	36			Flat	28	39		50		11		29	100			39
N Carolina	35			Flat	5			80		20		5	100			40
Arizona	35	30 (7-48)	1,500 (750-1,900)	575-2,300	68	76	24			66		68	100			41
Tennessee	35				36	28	6			66		36	100			42
Tennessee	35	31	963	230-2,024	95	13	11	7		69						43
S California	34	49 (30-60)	2,250 (1,900-2,500)	1,200-2,750	7	100						7	100			44
Louisiana	32			Flat	32			44		56		32	100			45
N. Florida	30			Flat	14			100				14	100			46
N. Mexico	29				14		100									47

^a Exc = excavated, Cave = natural cave or cavity, Veg = vegetation only nest, Sn = snow den, Tr = tree or hollow log den,

^b Tun = tundra / muskeg, For = forest / swamp forest and shrub, Eco = forest / alpine ecotone, Alp = alpine meadows

^c 1=Harding 1976, 2=Garner et al. 1987, 3=Quimby and Snarski 1974 cited in LeFrance et al. 1991, 4=Ballard et al. 1991, 5=Reynolds et al. 1976, 6=Miller 1990, 7=Russel 1978, 8=Schoen et al. 1987, 9=Van Daele et al. 1990, Smith and Van Daele 1990, 10=Lentfer et al. 1972, 11=Aune et al. 1986, 12=Wielgus 1986 cited in LeFrance et al. 1987, 13=Russell 1978 cited in LeFrance et al. 1987, 14=Vroom et al. 1977, 15=Servheen and Klaver 1983 cited in LeFrance et al. 1987, 16=Aune 1994, 17=Groff et al. 1998, 18=Roth 1972, 19=Huber and Roth 1996, 20=Judd et al. 1986, 20=Craighead and Craighead 1972, 22=Clevanger and Purroy 1991, 23=Naves and Palomero 1993, 24=Camarra 1987, 25=Smith et al. 1994, 26=Schwartz et al. 1987, 26=Tietje and Ruff 1980, 28=Kolenosky and Srathear 1987, 29=Lindzey and Meslow 1976, 30=Jonkel and Cowan 1971, 31=Manville 1987, 32=Mack 1990, 33=Beecham et al. 1983, 34=Alt and Gruttaduria 1984, 35=Beck 1986, 36=Goodrich and Berger 1994, 37=Hayes and Pelton 1994, 38=Oli et al. 1997, 39=Hellgren and Vaughan 1989, 40=Hamilton and Marchinton 1980, 41=LeCount 1983, 42=Johnson and Pelton 1980b, 43=Wathen et al. 1986, 44=Novick et al. 1981, 45=Weaver and Pelton 1994, 46=Wooding and Hardisky 1992, 47=Doan-Crider and Hellgren, 1996, 48=Swenson unpublished.

weight loss during winter can be substantial. Weight losses of 8–20% have been reported for nonreproductive animals and from 25 to 40% for reproductive females (Tietje and Ruff 1980, Watts et al. 1981, Kingsley et al. 1983, Watts 1990, Farley and Robbins 1995) and appear to be more pronounced for brown bears than black bears (Farley and Robbins 1995). Clearly there is a limited margin of energy available for bears to compensate for increased energetic expenditure due to disturbance while denning.

In general, little is known about the physiological responses of denning bears to disturbances and their energetic costs, but there are enough indications and a sufficient understanding of the behavioral and physiological processes to make predictions. Potential responses to disturbance range along a continuum. First-level responses could involve waking from NREM sleep, slight body warming, or increased heart rate. These are followed by movement within the den, raising body temperature to normal levels with an accompanying 60–80% increase in metabolic rate, and ultimately den abandonment. Based on the data reviewed here, we predict that the impact of these responses on survival increases dramatically at each step, with den abandonment having the greatest cost, especially for neonatal cubs, which may not survive exposure to ambient temperature during midwinter (Blix and Lentfer 1979). However, even minor physiological changes like frequent waking or small increases in body temperature may have a cumulative effect on energy use and consequent weight loss that may be significant.

Unlike small mammalian hibernators, bears can wake and achieve relatively full mobility over a matter of minutes (Nelson and Beck 1984). Observations indicate that experimental bears are sensitive to sounds and may change physiological state in response to minor

acoustic stimuli (B. Barnes, personal observation), although no experimental work is known which specifically tested these responses. The period required to regain their previous quiescent, hibernating state may vary from a few days to over a week (Craighead et al. 1976).

How do denning bears respond to disturbance?

No systematic data are available on how denning bears react to disturbance using controlled stimuli. The only response that has been generally reported is den abandonment, which is the most extreme reaction possible. Here we review the available information and try to derive some patterns from it.

Reynolds et al. (1986) presented data on heart rate and activity responses of 3 brown bears exposed to human activity (seismic exploration). Results were varied, but in 3 of 5 cases, bears responded to seismic shots, drilling, or a vehicle driving at a distance of one to 2 km with increased heart rate or increased physical activity. A snow-tractor driving within 100 m of the den had no effect on one bear. Other studies have reported increased activity of denned bears indicated by motion-sensitive radio-collars in response to radio-

Table 3. Linear mean distances (with range) of bear dens to various centers of human activity.

Region	Distance ^a to human activity ^b km				Reference
	Path	Road	Habitation	Activity	
Brown Bear					
Yellowstone		0.5 (0.1–1.5)	1.5 (0.2–4.0)		Craighead & Craighead 1972
Italy	0.2(0.1–0.5)	1.2 (0.4–2.8)	3.5 (1.3–6.5)		Groff et al. 1998
Spain		1.7	2.0		Naves & Palomero 1993
Croatia		0.5 (0.1–1.6)	1.4 (0.2–4.0)		Huber & Roth 1996
SW Alaska				≥1.5	Smith & Van Daele 1990
Black Bear					
Nevada		≥0.8			Goodrich & Berger 1994
Alberta		≥0.3		≥1.5	Tietje & Ruff 1983
Michigan				1.0(0.1–2.7)	Manville 1987
SE Alaska				≥3.4	Schoen et al. 1987

^a Distances do not account for differences in altitude, which in some cases may be significant. In several cases the distance presented does not represent the mean or the range, but is based on a minimum distance that some bears were observed to den from human activity areas.

^b Path = a nonvehicle pedestrian path, road = vehicle use, habitation = house, village or town, activity = industrial activity and other unspecified point sites with human presence in winter.

tracking overflights (Schoen et al. 1987, Smith and Van Daele 1990).

Further indications of bear response to disturbance are available from the distances of dens from human features like roads, towns, and industrial sites (Table 3). The presence of bear dens within one kilometer of regularly traveled roads or areas of active human habitation indicates that bears do not totally avoid denning in areas purely because of their proximity to human activity (Tietje and Ruff 1983). A large black bear population denned within an extensive military training area (Fort Wainwright, Alaska) without any registered cases of disturbance by military activity (Hechtel 1991; Smith et al. 1994; M. E. Smith, personal communication). Although Schoen et al. (1987) reported that brown bears gradually withdrew their den sites from an area of developing mining activity in Alaska, the short distances reported for European brown bears were to long-established sources of potential disturbance. In general, bears often appeared to choose dens close (within one km) to fixed sources of predictable disturbance (Smith and Van Daele 1990, McDonald and Fuller 1998). In a sparsely populated area of southern Sweden, brown bears were shown to prefer den sites more than one km from roads and houses and >3 km from villages (Swenson et al. 1996).

Armstrup (1993) and Armstrup and Gardner (1994) present data on polar bear response to disturbance. Denned polar bears appeared to be very tolerant to disturbance close to dens, although when disturbed, they were more prone to leave dens earlier in the season. After they gave birth, the cost of den relocation rises dramatically, as young cubs will be exposed to thermal stress and predation before they are fully mobile. Therefore, females with cubs should tolerate greater levels of disturbance without abandoning dens. Oil-field activity, snow vehicles, and aircraft were tolerated to within 500 m of dens without abandonment. Some approaches <250 m of a few dens caused abandonment, although there was no overall difference between the abandonment rates of disturbed and nondisturbed bears. Two bears were approached to <50 m by snowscooters without effect. This variation could result from how different sounds or vibrations are transferred through snow to the denning bear, as snow dens provide excellent acoustic insulation (Blix and Lentfer 1992). The stress of parturition recapture inside the den and subsequent relocation of den site did not appear to have

any dramatic effects on litter size or spring weight of cubs (Ramsay and Stirling, 1986).

Brown bears showed a similar tolerance for industrial activity disturbance within a few kilometers of dens (Harding and Nagy 1980, Schoen et al. 1987, Smith and Van Daele 1990). Dens that were approached directly were sometimes abandoned (Harding and Nagy 1980, Reynolds et al. 1986, Huber and Roth 1996). Craighead and Craighead (1972) dug into a den, photographed the occupant, and retreated without the bear abandoning the den. Den abandonment also may result from natural circumstances such as flooding (Schoen et al. 1987, Huber and Roth 1996, Oli et al. 1997).

Swenson et al. (1997) found that in Sweden, 9% of brown bears (194 bear winters) abandoned or changed their dens during winter, with no differences between males and females. Adult females with cubs of the year that abandoned dens during winter had significantly greater mortality among their cubs than those that did not abandon their dens (60% versus 6% lost at least one cub). In 18 cases of den abandonment that were investigated on the ground, 12 showed evidence of human activity close by. These activities included hunters (4), forest workers (2), dog tracks (1), digging machine (1), and "people" (4, Swenson et al. 1997). New dens were found within a mean of 5.1 km (range 0.1-30 km) from the former den. In Norway in April 1996, an unmarked female with cubs of the year abandoned her den after being disturbed by a skier and dog looking inside the den. These cubs were abandoned and were humanely killed after several days.

Black bears also abandon dens through natural causes (Hamilton and Marchinton 1980, LeCount 1983, Schwartz et al. 1987, Smith 1986, Mack 1990, Oli et al. 1997). Flooding has been shown to cause cub mortality (Alt 1984); however, the greatest proportion of den abandonments were caused by human disturbance, especially researcher activity. Black bears in dens are often approached on foot to determine den structure and reproductive state and are often weighed and recollared in dens as part of standard field protocols. While some individuals tolerate approach and handling (Doan-Griber and Hellgren 1996) and even weighing and collaring of cubs (Elowe and Dodge 1989) without abandoning their den, others do abandon the den (Table 4). This has led to the abandonment of newborn cubs (Graber 1990, Goodrich and Berger 1994). Black bears that changed dens during winter had a

Table 4. Studies of black bears that report den abandonment (abnd.) from various human-induced causes.

Region	Bear response to disturbance	Reference
Alaska	3 cases of abnd. after den visit	Schwartz et al. 1987
Alberta	6 of 109 den visits caused abnd.	Tietje and Ruff 1980
Ontario	19 of 97 den visits caused abnd.	Kolenosky and Strathearn 1987
Michigan	22 of 45 den visits caused abnd. 2 cases of abnd. following mechanical activity within 200m	Manville 1983 Manville 1987
Montana	3 of 26 bears abnd. during winter following human activity	Mack 1990
Minnesota	2 litters died following female abandonment caused by nonresearch, human disturbance	Elowe and Dodge 1989
Minnesota & Massachussetts	Den visits led to abandonment and cub mortality (unspecified percentage)	Macdonald and Fuller 1998
Idaho	11 of 19 den visits caused abnd. early in season	Beecham et al. 1983
California	8 of 63 den visits caused abnd.	Graber 1990
Nevada	12 of 36 den visits caused abnd.	Goodrich and Berger 1994
N. Carolina	10 of 14 den visits caused abnd.	Hellgren and Vaughan 1989
N. Carolina	1 cases of abnd. after researcher approach 1 case of hunting dogs driving bear from den	Hamilton and Marchinton 1980 Hamilton and Marchinton 1980
N. Carolina	8 of 11 bears abnd. dens due to disturbance	Lombardo 1990
Arkansas	9 of 36 den visits caused abnd.	Smith 1986

greater weight loss than undisturbed bears (25% weight loss versus 16%, Tietje and Ruff 1980). Bears appeared more likely to abandon dens when disturbed early in the season (Tietje and Ruff 1980, Smith 1986, Kolenosky and Strathearn 1987) than later. Southern bears appeared to abandon dens at greater frequency than northern bears (Table 4, but see Doan-Griber and Hellgren 1996 for an exception). Milder winter climates clearly impose a smaller cost of abandonment, thereby implying that bears vary their threshold to disturbance depending on costs. Thresholds varied, but often a cautious human approach (<100 m) to the den was enough to make some bears leave (Manville 1983, Graber 1990, Goodrich and Berger 1994). Smith (1986) found different thresholds for different den types, with tree-denning bears being more tolerant of approach than ground-nesting bears. Other documented sources of disturbance leading to abandonment have included military training (Lombardo 1990), hunting dogs (Hamilton and Marchinton 1980), snowscooter traffic (Elowe and Dodge 1989), and oil-well activity within 200 m of the den (Manville 1987). Most disturbed bears redenned (Kolenosky and Strathearn 1987, Hellgren and Vaughan 1989) and even successfully had cubs (Smith 1986), although this trend was not universal, as some cubs died following den abandonment (Elowe and Dodge 1989, Goodrich and Berger 1994).

In conclusion, there appears to be a pattern that bears readily den within one to 2 km of human activity (roads, habitation, industrial activity) and appear to be undisturbed by most activities that occur at distances greater than one km. Activity closer than one km and especially within 200 m has variable results, with some bears tolerating activity right up to the den. However, there is a significant risk that activity within this zone will lead to abandonment, especially early in the denning season. Den abandonment has been shown to cause cub mortality in black and brown bears. The fact that dens are rarely reused (cavities and tree dens excepted) and that bears usually separate consecutive dens by several kilometers implies that loss of an area to disturbance will not have a great effect, provided that other suitable areas exist nearby.

Recommendations and research needs

Based on this review and analysis, we recommend the following regarding human activity and bear denning:

- 1) Den concentrations should be identified;
- 2) den trees or natural cavities should be protected;
- 3) winter activity should be minimized in suitable or traditional denning areas;
- 4) if winter activity is unavoidable, it should

begin around the time bears naturally enter dens, so that they can choose to avoid disturbed areas;

5) winter activity should be confined to regular routes as much as possible; valley-floor activity should generally have less effect than valley-slope activity;

6) activity should avoid known bear dens by at least one km;

7) the slightest degree of off-road activity is likely to cause greater effects than any degree of fixed-point or predictable-route activity and should therefore be minimized;

8) tagging cubs in dens may lead to extra mortality and should be avoided in small or endangered populations.

These conclusions are tentative. Controlled disturbances and experiments are required to further determine 1) thresholds that bears have to different stimuli, 2) how bears behaviorally respond to stimuli, and 3) what the costs are in terms of increased metabolism. Because of the endangered nature of many bear populations, such experiments should be conducted on captive bears or on large populations. Furthermore, experiments on the thermal and acoustic properties of different den types are required, as is an extended analysis of existing data on the reproductive effects of den type.

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John D. C. Linnell (photo) is a research ecologist at the Norwegian Institute for Nature Research in Trondheim, Norway. He received both his bachelor's and Ph.D. degrees from University College in Cork, Ireland. His research interests include lynx and roe deer ecology in boreal forest habitats, large carnivore conservation in general, and conservation ecology of the endangered arctic fox populations in Norway. **Jon E. Swenson** is a lecturer at the Agricultural University of Norway



and a research ecologist at the Norwegian Institute for Nature Research, and holds a Ph.D. from the University of Alberta. His current research focuses on Scandinavian brown bears. **Reidar Andersen** is a lecturer at the Norwegian University of Science and Technology and a research ecologist at the Norwegian Institute for Nature Research. His research interests have developed from moose and roe deer to the problems associated with large carnivore management in the multi-use landscapes of Scandinavia. **Brian Barnes** is employed at the Institute of Arctic Biology, University of Alaska, Fairbanks, and his research focuses on the physiology of sleep and hibernation.



Associate editor: Jacobson

SHORT COMMUNICATION

Short communication articles are short scientific entities often dealing with methodological problems or with byproducts of larger research projects. The style should be the same as in original articles

Winter den abandonment by brown bears *Ursus arctos*: causes and consequences

Jon E. Swenson, Finn Sandegren, Sven Brunberg & Petter Wabakken

Swenson, J. E., Sandegren, F., Brunberg, S. & Wabakken, P. 1997: Winter den abandonment by brown bears *Ursus arctos*: causes and consequences. - Wildl. Biol. 3: 35-38.

Winter den abandonment by brown bears *Ursus arctos* in south central Sweden and southeastern Norway was found to occur in 9% of 194 bear-winters, based on 68 radio-marked bears almost two years old and older. There was no statistical difference between the sexes, between adults and subadults, nor did protection from military or timber-harvesting activities reduce the rate of abandonment. Although anecdotal, observations suggest that human disturbance was a major cause of den abandonment. Most abandonment occurred early in the denning period, before mid-winter. Bears moved up to 30 km before denning again. Distance was not related to sex, age, or time of abandonment. Apparently for the first time, a fitness cost of den abandonment is documented: pregnant females that changed dens prior to parturition lost young in or near the den significantly more often than those that did not move.

Key words: brown bear, den abandonment, disturbance, *Ursus arctos*

Jon E. Swenson, Norwegian Institute for Nature Research, Tungasletta 2, N-7005 Trondheim, Norway

Finn Sandegren, Research Division, Swedish Hunters' Association, Box 7002, S-750 07 Uppsala, Sweden

Sven Brunberg, Noppikoski 158, S-794 98 Orsa, Sweden

Petter Wabakken, Environmental Protection Division, Country Governor's Office, Fylkeshuset, N-2300 Hamar, Norway

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Brown bears *Ursus arctos* hibernate during the winter to conserve energy, with metabolism reduced by about 70% (Watts & Jonkel 1988). Bears neither eat nor drink, and young are born in the den in late December/early January (Danilov, Tumanov & Rusakov 1993). Weight loss during the winter may be large, 22% for male brown bears and up to 40% for

females, the loss increasing with age (Kingsley, Nagy & Russell 1983). We have recorded a weight loss of 53% for a lone 2-year-old female in northern Sweden (unpubl. data). Lactating females lose about twice as much weight per day during hibernation as non-lactating females (Farley & Robbins 1995).

This implies that bears are vulnerable to disturb-

ance during this sensitive period. However, little documentation exists about the consequences of changing dens during the winter (Linnell, Barnes, Swenson & Anderson 1996). Tietje & Ruff (1980) found that black bears *Ursus americanus* that changed dens had a greater weight loss (25%) than those that did not (16%). There are also reports of black bear females that have abandoned their young in the den after human disturbance, but most of the available literature concerning this in black bears is related to the effects of entering the dens to remark radio-collared bears as part of research projects (Linnell et al. 1996).

Here we report the rate of den abandonment by brown bears in south-central Sweden and southeastern Norway. We document a direct fitness cost of den abandonment and provide observations of possible causes of the abandonment.

Methods

The present study was conducted in the southern part of the study area of the Scandinavian Brown Bear Research Project: northern Kopparberg and western Gävleborg counties in Sweden and eastern Hedmark County in Norway. The study area is dominated by forest, primarily Scots pine *Pinus sylvestris* and Norway spruce *Picea abies*, with some deciduous trees, mostly birches *Betula pubescens* and *B. pendula*. Other important landscape elements are bogs and lakes. The terrain is generally flat to rolling, with about 40% of the area sloping less than 3° and only 1.5% of the area sloping more than 15°. Elevations vary from 160 m a.s.l. in the southeast to 1,040 m a.s.l. in the west, but about 70% of the area is between 300 and 700 m a.s.l. During the vegetation period, when temperatures exceed 5°C, there is 350-450 mm precipitation and 800-1,100 degree-days. Snow cover lasts from about November to April/early May (Swenson, Heggberget, Sandström, Sandegren, Wabakken, Bjärvall, Söderberg, Franzén, Linnell & Andersen 1996).

We monitored 68 different radio-collared brown bears during 194 bear-winters from winter 1986-87 through winter 1995-96. In our study, bears were not marked until they left the dens as yearlings, and almost all (97%, $N = 31$) separated from their mothers during the spring of their yearling year. Thus, all bears in our study were at least coming two-year-olds. The bears were located weekly prior to denning, and at least once a month while they were in their dens,

usually from roads, but sometimes from an airplane. We were careful not to disturb denning bears ourselves. We define winter den abandonment as leaving a den and entering another; this does not include leaving a den in spring without showing further hibernation behaviour. Whenever a bear had changed den sites, project personnel inspected the abandoned den sites to try to identify possible reasons for the move. After females had left their dens in the spring, and usually while there was still snow present, project personnel inspected the den sites and surrounding areas to determine if any dead young were present. Protection from disturbance was afforded radio-marked bears denning in the Älvdalen Military Shooting Range. Also, many radio-marked bears denning on the properties of Orsa Communal Forest were protected from timber harvesting activities near the den.

Frequency data were generally tested for homogeneity by χ^2 -independence tests, corrected for continuity and Fisher's exact test if the requirements for a χ^2 were not fulfilled, with one exception. The exception was a test of den abandonment frequency among individuals, which has 13×2 cells, most with fewer than five observations. Here, we used a χ^2 -test, but estimated the P-value using an exact test of homogeneity and 10,000 simulations (software developed by S. Engen, Norwegian University of Science & Technology, Trondheim). Differences in ages of bears in different groups were tested using the t-test, and differences in distances moved by bears in different groups were tested using the Mann-Whitney U test. All tests were two-tailed unless otherwise stated. All tests were run with SPSS software, except the exact test of homogeneity.

Results

All brown bears in our study denned during the winter, entering the den in September-November and leaving it in March-May (rarely June). An analysis of den abandonment by 13 bears followed five or more winters showed no significant individual variation ($\chi^2 = 13.23$, $df = 12$, $P = 0.31$). There was no statistical difference between rates of den abandonment for males (10%, $N = 108$) and females (8%, $N = 86$, $\chi^2 = 0.06$, $df = 1$, $P = 0.81$). All the data were therefore combined for further analyses. We also found no statistical difference between rates of den abandonment for adults (5 years and older; 8%, $N = 100$) and subadults (11%, $N = 83$, $\chi^2 = 0.03$, $df = 1$, $P = 0.86$).

The rate of den abandonment for all bears combined was 9% (N = 194).

Protection was expected to reduce the rate of den abandonment, but no statistically significant difference was found in relation to the protection afforded some bears from military and timber harvesting activities (protected bears moved in 5% of the bear-winters, N = 22, not protected bears moved in 10%, N = 172, Fisher's exact test, one-tailed P = 0.37). Still, it appeared that human disturbance was an important factor promoting changing of dens. Project personnel visited all 18 dens after abandonment had been documented. Human activity was found at 12 (67%) of them. No human activity was found at the other six, but tracks could have been obliterated, e.g. by snowfall and wind, so human activity at 67% of the dens that were abandoned is most likely a minimum estimate. The following activities near the dens were suspected to contribute to their abandonment: hare hunting (twice), forestry survey activity at the den site (twice), a bird hunter shot a bird at the den site, a roe deer hunter 50 m from the den site, moose and dog tracks 10 m from the den, ski tracks 80-90 m from the den, ice fishermen 100 m from the den with a dog that had been at the den site, an excavation machine working 75 m from the den, and 'people present' (twice). We were careful not to disturb denning bears ourselves, so we have no estimate of the frequency of human activity at or near dens that were not abandoned.

After abandoning a den, the bears either dug a new den, or made a bed of branches and lay on the ground. Movements to new sites varied from 100 m to 30 km, but one bear returned to the original den. Mean distance of movement was 5.1 km, and 56% moved two kilometres or less. Distance moved was not related to sex (Mann-Whitney U = 26.5, N = 18, P = 0.26), age (U = 26.5, N = 18, P = 0.26), or period, i.e. before or after 1 January (U = 33.0, N = 18, P = 0.61). Bears changed dens more often early in the winter. The distribution was: five in November, six in December, two in late December/early January, three in January, one in late January/early February, and one in April.

Den abandonment had a negative effect on reproductive success. Of five pregnant females that moved during the winter prior to giving birth, three (60%) lost at least one young in or near the second den, but only 6% (N = 36) of those that did not move lost a young in or near their dens (Fisher's exact test, P = 0.009). The age of adult females that abandoned dens (7.1 ± 0.7 years (SE), N = 7) did not differ from the

age of those that did not abandon dens (8.8 ± 0.5 years, N = 48, $t = 1.25$, $df = 53$, $P = 0.22$), nor was the age of females that lost young in the den (5.0 ± 0.7 years; N = 5) significantly different from the age of those that did not lose young (7.2 ± 0.6 years, N = 35, $t = 1.37$, $df = 38$, $P = 0.18$). Using an ANOVA that incorporated loss of young as the dependent variable, den abandonment as an independent variable, and female age as a covariable, also showed an effect of den abandonment ($F = 14.62$, $df = 1$, $P < 0.0001$), but not of female age ($t = 1.01$, $df = 38$, $P = 0.28$). One female moved her young-of-the-year in April and stayed in a new den with them for 2-3 weeks prior to leaving it. She was not included in the above analyses, which only considered pregnant females. If she had been included (she did not lose any young), the difference would still be statistically significant (Fisher's exact test, $P = 0.015$).

Discussion

Our results showed that den abandonment had a fitness cost, with a higher loss of young during the denning period and at emergence in the group of pregnant females that moved prior to parturition. Although our sample size of pregnant females that abandoned their dens was small, the finding of a fitness effect of abandonment is not surprising considering the cost of lactation in the den (Farley & Robbins 1995) and the documented increased weight loss associated with den abandonment (Tietje & Ruff 1980). This is apparently the first time a negative effect of den abandonment on reproduction has been documented in brown bears (Linnell et al. 1996).

Although our observations of human activity near the abandoned dens are anecdotal, they do suggest that human activity is an important factor causing the bears to abandon their dens. This has also been found elsewhere. Linnell et al. (1996) concluded from a literature review that brown bears showed a tolerance for industrial activity as long as the source of the noise was some kilometres from the den, but dens visited directly by people were often abandoned. The efforts to protect dens from disturbance on our study area were not measurably successful, but there was a tendency towards reduced abandonment. Perhaps there was enough unregulated human activity in the den areas protected from military and timber-harvesting activities to confound our results.

Most of the den abandonments occurred early; only

5 of 18 occurred after mid-winter. Brown bears may be less tolerant to disturbance early in the denning period, as has been suggested for black bears and polar bears *Ursus maritimus* (Linnell et al. 1996), or perhaps there are just more people out in the forest at this time. An important disturbance activity seems to be hunting, which occurs early in the denning period.

It is difficult to predict where bears will den and thereby steer activity away from these areas. However, areas with a definite concentration of brown bear dens have been identified in many areas, such as Norway (Swenson et al. 1996), European Russia (Danilov et al. 1993), Spain (Naves & Palomero 1993), the Caucasus Mountains (Kudaktin & Chestin 1993), and Alaska (van Daele, Barnes & Smith 1990). To minimise den abandonment, we recommend that an area around known active bear dens be avoided by humans. Our limited data suggest that this distance should be over 100 m, perhaps up to 1 km. In addition, potentially disturbing activity be minimised in areas that traditionally have dense concentrations of dens.

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2016
Annual Flathead National Forest
Forest Plan Amendment 19
Implementation Monitoring Report
and Responses to
Amendment 19 Revised Implementation Schedule
Terms and Conditions

January 2018

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Introduction

This document includes:

1. A summary of 2016 changes from past annual reports.
2. The Flathead National Forest 2016 LRMP Amendment 19 Monitoring Report, including:
 - ✓ Tables 1a, 1b; 2a, 2b; 3a, 3b; 4a, 4b; and Figures 1, 2 and 3. Open Route Density (ORD), Total Route Density (TRD), and Security Core (CORE) summaries for all grizzly bear management subunits. Tables 1a/1b are compiled from numbers found in Tables 2a/b through 4a/b below.
 - ✓ Table 5. Late Spring Open and Total Route Density and Security CORE percentages.
 - ✓ Table 6. Decommissioning Mileage Summaries since 1995.
 - ✓ Table 7. Summary of Closure Device Monitoring for 2016, A19 analysis area only.
 - ✓ Table 8a and 8b. Summary of Closure Device Monitoring, entire Forest from 1995.
 - ✓ Table 9. Subunits that exceeded Administrative Use for 2016.
3. Responses to Amendment 19 Revised Implementation Schedule (BO Grizzly Bears 10/25/06) terms and conditions.

Questions regarding this report should be directed to Kathy Ake @ 406.758.5358 or Amy Jacobs @ 406.758.3544.

Changes from Past Years

OPEN Route Motorized Density. Thirty-seven (37) of 47 subunits with >75% NFS lands meet or are less than 19% OMRD (32 subunits) or meet the amended standards (5 subunits) (see Tables 1, 2a and Figure 1). Two (2) additional subunits are at 20% OMRD; 5 subunits are between 21 and 30 percent; and 3 subunits are over 30 percent.

TOTAL Route Motorized Density. Thirty-one (31) of 47 subunits with >75% NFS lands meet or are less than 19% TMRD (29 subunits) or meet the amended standards (2 subunits) (see Tables 1, 3a and Figure 2). Two (2) additional subunits are at 20% TRMD; 6 subunits are between 21 and 30 percent; and 8 subunits are over 30 percent.

Security CORE. Thirty-one (31) of the 47 subunits with >75% NFS lands meet or are over 68% CORE (27 subunits) or meet the amended standards (4 subunits) (see Tables 1, 4a and Figure 3).

Four (4) additional subunits are between 57 and 67 percent CORE; 1 subunit is within 3% of their amended standard; and 11 subunits are less than 57 percent.

As of fall 2013, roads acquired through the MT Legacy project are all re-assigned to NFSR roads in the database, changing the miles of NFSR roads managed by the Flathead NF. Additionally, all of these roads are having field road logs completed, which may or may not result in updates to the INFRA database, such as type and location of closure devices. It is expected for this to occur over the next couple of years, and will probably cause shifts in OMRD, TMRD and CORE.

Changes for 2016 Report – Specific Subunits

The following 10 subunits had changes in road management, spatial re-alignments, and re-alignments of the ownership feature class, which resulted in a whole percent value change in at least one of the following: OPEN route density, TOTAL route density, and Security CORE.

Red Meadow Moose. TMRD increased from 17% to 18% (17.39% to 18.11%). Change is due to one road having a stream-aligned culvert and therefore included in TMRD calculations. Subunit still meets TMRD standard of 19%.

Coal and South Coal. TMRD increased from 19% to 24%. Change is due to sections of four roads having a stream-aligned culvert and therefore included in TMRD calculations. Subunit no longer meets TMRD standard of 19%.

Canyon McGinnis. TMRD increased from 32% to 33% (32.00% to 33.40%). Change is due to one road having a stream-aligned culvert and therefore included in TMRD calculations. Additionally, a short spur road (0.1 mile) needed to be included in TMRD as it became revegetated naturally, without a signed decision. Subunit still meets amended TMRD standard of 33%.

Meadow Smith. Security CORE decreased from 42% to 41% (41.55% to 41.49%). Change is due to spatial realignments of the GIS layer in order to more accurately reflect locations on the ground.

Crane Mountain. TMRD increased from 58% to 59% (57.68% to 59.28%). Change is due to three roads having a stream-aligned culvert and therefore included in TMRD calculations.

Cold Jim. TMRD decreased from 57% to 55% (56.77% to 55.40%). Security CORE increased from 43% to 44% (43.18% to 43.51%). Change is due to decommissioning of several roads that had gates or barriers.

Doris Lost Johnny. TMRD increased from 19% to 23%. Change is mainly due to one road having a stream-aligned culvert and therefore included in TMRD calculations. Additionally, one motorized trail was spatially realigned to more accurately reflect its location on the ground. As a result, subunit no longer meets TMRD standard of 19%.

Cedar Teakettle (No Net Increase/Decrease subunit). TMRD increased from 27% to 28% (27.36% to 27.53%). Change is due to a road in the adjacent Canyon McGinnis subunit. That road has a stream-aligned culvert and is now included in TMRD calculations.

Noisy Red Owl (No Net Increase/Decrease subunit). TMRD increased from 16% to 17% (15.86% to 16.59%). Change is due to updates to the spatial layer to correctly reflect on the ground conditions.

Porcupine Woodward (No Net Increase/Decrease subunit). OMRD increased from 27% to 28% (27.44% to 27.72%). TMRD increased from 73% to 74% (73.49% to 73.54%). The OMRD change is due to a road that had been correctly updated for the 2015 report to show it as closed, but that was updated to open for 2016 since access issues were resolved. The TMRD change is due to a road in the adjacent Crane Mountain subunit. That road has a stream-aligned culvert and is now included in TMRD calculations. Additionally, one short state road is now classified as impassable.

Table 1a. Existing status of BMU Subunits where NF ownership >75%. Numbers are compiled from Tables 2a and 2b through 4a and 4b below.

#	BMU Subunit	RD	OPEN Route Density	TOTAL Route Density	Security CORE
1	Frozen Lake	GV	10	4	80
2	Ketchikan	GV	14	3	73
3	Upper Trail	GV	14	4	88
4	Lower Whale (amended 37-19-47)	GV	36	17	50
5	Upper Whale Shorty	GV	12	11	86
6	Red Meadow Moose	GV	25	18	68
7	Hay Creek	GV	25	16	55
8	Coal and South Coal	GV	15	24	73
10	Werner Creek (amended 29-19-63)	GV	29	20	63
11	Lower Big Creek	GV	18	19	71
12	Canyon McGinnis (amended 19-33-53)	GV/TL	19	33	50
17	Peters Ridge	HH/SL	52	25	34
19	Swan Lake	SL	39	26	45
22	Lion Creek	SL	18	47	41
23	Meadow Smith	SL	20	53	41
24	Buck Holland	SL	24	41	40
25	Crane Mountain	SL	31	59	25
27	Piper Creek	SL	19	45	55
28	Cold Jim	SL	18	55	44
29	Hemlock Elk	SL	6	30	64
30	Glacier Loon	SL	22	41	48
31	Beaver Creek	SL	6	26	66
32	Doris Lost Johnny (amended 57-19-36)	HH	57	23	36
33	Wounded Buck Clayton (amended 27-30-65)	HH	27	30	65
35	Emery Firefighter	HH	19	20	58
36	Riverside Paint	HH	18	16	71
37	Jewel Basin Graves	HH	19	19	68
38	Wheeler Quintonkon (amended 25-19-68)	HH/SB	25	19	68
39	Logan Dry Park	HH/SB	30	36	51
40	Lower Twin	SB	9	2	92
41	Twin Creek	SB	0	0	100
42	Moccasin Crystal	HH	8	1	81
43	Stanton Paola	HH	8	3	81
44	Dickey Java	HH	9	0	81
45	Long Dirtyface	HH	0	0	100
46	Tranquil Geifer	HH	0	2	85
47	Skyland Challenge	HH	20	17	65
48	Plume Mtn Lodgepole	HH/SB	0	0	97
49	Flotilla Capitol	HH/SB	0	0	99
50	Ball Branch	SB	7	12	84
51	Kah Soldier	SB	19	19	68
52	Spotted Bear Mtn	SB	19	18	68
53	Big Bill Shelf	SB	11	6	80
54	Jungle Addition	SB	19	19	68
55	Bunker Creek	SB	5	3	92
56	Gorge Creek	SB	0	0	90
57	Harrison Mid	SB	1	0	95

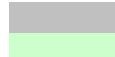
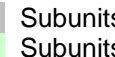
 Subunits meet LMRP A19 objective.
 Subunits meet amended LMRP A19 objective.

Table 1b. Existing status of BMU Subunits where NF ownership <75%. Numbers are compiled from Tables 2a and 2b through 4a and 4b below.

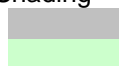
#	BMU Subunit	RD	OPEN Route Density	TOTAL Route Density	Security CORE
9	State Coal Cyclone	GV	29	25	58
13	Cedar Teakettle	GV	25	28	24
18	Noisy Red Owl	SL	20	17	52
20	South Fork Lost Soup	SL	25	47	37
21	Goat Creek	SL	23	59	39
26	Porcupine Woodward	SL	28	74	15
34	Coram Lake Five	HH	26	46	14

 Subunits meet LMRP A19 objective.

Table 2a. Subunit % Open Route Density for BMU Subunits where NF ownership >75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
1	Frozen Lake	GV	10	10		0
2	Ketchikan	GV	19	14		-5
3	Upper Trail	GV	18	14		-4
4	Lower Whale (amended 37%)	GV	60	36		-24
5	Upper Whale Shorty	GV	17	12		-5
6	Red Meadow Moose	GV	36	25		-11
7	Hay Creek	GV	33	25		-8
8	Coal and South Coal	GV	23	15		-8
10	Werner Creek (amended 29%)	GV	43	29		-14
11	Lower Big Creek	GV	35	18		-17
12	Canyon McGinnis	GV/TL	34	19		-15
17	Peters Ridge	HH/SL	50	52		+2
19	Swan Lake	SL	56	39		-17
22	Lion Creek	SL	24	18		-6
23	Meadow Smith	SL	23	20	18	-3
24	Buck Holland	SL	25	24	24	-1
25	Crane Mountain	SL	51	31	24	-20
27	Piper Creek	SL	21	19		-2
28	Cold Jim	SL	21	18		-3
29	Hemlock Elk	SL	13	6		-7
30	Glacier Loon	SL	25	22		-3
31	Beaver Creek	SL	6	6		0
32	Doris Lost Johnny (amended 57)	HH	58	57		-1
33	Wounded Buck Clayton (amended 27)	HH	38	27		-11
35	Emery Firefighter	HH	32	19		-13
36	Riverside Paint	HH	23	18		-5
37	Jewel Basin Graves	HH	22	19		-3
38	Wheeler Quintonkon (amended 25)	HH/SB	28	25		-3
39	Logan Dry Park	HH/SB	33	30		-3
40	Lower Twin	SB	9	9		0
41	Twin Creek	SB	0	0		0
42	Moccasin Crystal	HH	7	8		+1
43	Stanton Paola	HH	12	8		-4
44	Dickey Java	HH	10	9		-1
45	Long Dirtyface	HH	0	0		0
46	Tranquil Geifer	HH	0	0		0
47	Skyland Challenge	HH	15	20		+5
48	Plume Mtn Lodgepole	HH/SB	0	0		0
49	Flotilla Capitol	HH/SB	0	0		0
50	Ball Branch	SB	41	7		-34
51	Kah Soldier	SB	39	19		-20
52	Spotted Bear Mtn	SB	20	19		-1
53	Big Bill Shelf	SB	12	11		-1
54	Jungle Addition	SB	38	19		-19
55	Bunker Creek	SB	12	5		-7
56	Gorge Creek	SB	0	0		0
57	Harrison Mid	SB	1	1		0

Shading



Subunits meet LMRP A19 objective of ≤19% Open Route Density.

Subunits meet amended LMRP A19 objective for Open Route Density.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Open Route Density within a subunit.

** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Open Route Density.
+	A positive number (+) indicates an increase in % Open Route Density.
	A blank cell indicates no change for that variable for that subunit.

Table 2b. Subunit % Open Route Density for BMU Subunits where NF ownership <75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
9	State Coal Cyclone	GV	39	29		-10
13	Cedar Teakettle	GV	32	25		-7
18	Noisy Red Owl	SL	26	20		-6
20	South Fork Lost Soup	SL	60	25		-35
21	Goat Creek	SL	27	23		-4
26	Porcupine Woodward	SL	48	28		-20
34	Coram Lake Five	HH	30	26		-4

Shading

 Subunits meet LMRP A19 objective of NO NET INCREASE due to Forest Service actions.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Open Route Density within a subunit.

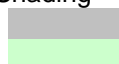
** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Open Route Density.
+	A positive number (+) indicates an increase in % Open Route Density.
	A blank cell indicates no change for that variable for that subunit.

Table 3a. Subunit % Total Route Density for BMU Subunits where NF ownership >75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
1	Frozen Lake	GV	6	4		-2
2	Ketchikan	GV	5	3		-2
3	Upper Trail	GV	5	4		-1
4	Lower Whale	GV	44	17		-27
5	Upper Whale Shorty	GV	13	11		-2
6	Red Meadow Moose	GV	25	18		-7
7	Hay Creek	GV	21	16		-5
8	Coal and South Coal	GV	37	24		-13
10	Werner Creek	GV	48	20		-28
11	Lower Big Creek	GV	39	19		-20
12	Canyon McGinnis (amended 33)	GV/TL	44	33		-11
17	Peters Ridge	HH/SL	25	25		0
19	Swan Lake	SL	33	26		-7
22	Lion Creek	SL	39	47		+8
23	Meadow Smith	SL	52	53	53	+1
24	Buck Holland	SL	44	41	41	-3
25	Crane Mountain	SL	75	59	27	-16
27	Piper Creek	SL	30	45	44	+15
28	Cold Jim	SL	56	55	54	-1
29	Hemlock Elk	SL	29	30	30	+1
30	Glacier Loon	SL	39	41	41	+2
31	Beaver Creek	SL	24	26	19	+2
32	Doris Lost Johnny	HH	31	23		-12
33	Wounded Buck Clayton (amended 30)	HH	49	30		-19
35	Emery Firefighter	HH	42	20	19	-22
36	Riverside Paint	HH	39	16		-23
37	Jewel Basin Graves	HH	26	19		-7
38	Wheeler Quintonkon	HH/SB	33	19		-14
39	Logan Dry Park	HH/SB	40	36		-4
40	Lower Twin	SB	2	2		0
41	Twin Creek	SB	0	0		0
42	Moccasin Crystal	HH	1	1		0
43	Stanton Paola	HH	3	3		0
44	Dickey Java	HH	1	0		-1
45	Long Dirtyface	HH	0	0		0
46	Tranquil Geifer	HH	2	2		0
47	Skyland Challenge	HH	18	17		-1
48	Plume Mtn Lodgepole	HH/SB	0	0		0
49	Flotilla Capitol	HH/SB	0	0		0
50	Ball Branch	SB	21	12		-9
51	Kah Soldier	SB	45	19		-26
52	Spotted Bear Mtn	SB	32	18		-14
53	Big Bill Shelf	SB	7	6		-1
54	Jungle Addition	SB	31	19		-12
55	Bunker Creek	SB	6	3		-3
56	Gorge Creek	SB	0	0		0
57	Harrison Mid	SB	0	0		0

Shading



Subunits meet LMRP A19 objective of ≤19% Total Route Density.

Subunits meet amended LMRP A19 objective for Total Route Density.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Total Route Density within a subunit.


** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Total Route Density.
+	A positive number (+) indicates an increase in % Total Route Density.
	A blank cell indicates no change for that variable for that subunit.

Table 3b. Subunit % Total Route Density for BMU Subunits where NF ownership <75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
9	State Coal Cyclone	GV	29	25		-4
13	Cedar Teakettle	GV	30	28		-2
18	Noisy Red Owl	SL	18	17		-1
20	South Fork Lost Soup	SL	47	47		0
21	Goat Creek	SL	49	59		+10
26	Porcupine Woodward	SL	59	74	65	+15
34	Coram Lake Five	HH	49	46		-3

Shading

 Subunits meet LMRP A19 objective of NO NET INCREASE due to Forest Service actions.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Total Route Density within a subunit.

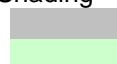
** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Total Route Density.
+	A positive number (+) indicates an increase in % Total Route Density.
	A blank cell indicates no change for that variable for that subunit.

Table 4a. Subunit % Security CORE for BMU Subunits where NF ownership >75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
1	Frozen Lake	GV	80	80		0
2	Ketchikan	GV	65	73		+8
3	Upper Trail	GV	84	88		+4
4	Lower Whale (amended 47)	GV	7	50		+43
5	Upper Whale Shorty	GV	80	86		+6
6	Red Meadow Moose	GV	47	68		+21
7	Hay Creek	GV	41	55		+14
8	Coal and South Coal	GV	59	73		+14
10	Werner Creek (amended 63)	GV	35	63		+28
11	Lower Big Creek	GV	38	71		+33
12	Canyon McGinnis (amended 53)	GV/TL	31	50		+19
17	Peters Ridge	HH/SL	30	34		+4
19	Swan Lake	SL	29	45		+16
22	Lion Creek	SL	55	41		-14
23	Meadow Smith	SL	42	41		-1
24	Buck Holland	SL	34	40		+6
25	Crane Mountain	SL	0	25	32	+25
27	Piper Creek	SL	57	55	55	-2
28	Cold Jim	SL	42	44	44	+2
29	Hemlock Elk	SL	66	64		-2
30	Glacier Loon	SL	40	48		+8
31	Beaver Creek	SL	67	66	71	-1
32	Doris Lost Johnny (amended 36)	HH	35	36		+1
33	Wounded Buck Clayton (amended 65)	HH	33	65		+32
35	Emery Firefighter	HH	38	58	68	+20
36	Riverside Paint	HH	58	71		+13
37	Jewel Basin Graves	HH	50	68		+18
38	Wheeler Quintonkon	HH/SB	49	68		+19
39	Logan Dry Park	HH/SB	50	51		+1
40	Lower Twin	SB	91	92		+1
41	Twin Creek	SB	97	100		+3
42	Moccasin Crystal	HH	80	81		+1
43	Stanton Paola	HH	75	81		+6
44	Dickey Java	HH	80	81		+1
45	Long Dirtyface	HH	95	100		+5
46	Tranquil Geifer	HH	75	85		+10
47	Skyland Challenge	HH	58	65		+7
48	Plume Mtn Lodgepole	HH/SB	79	97		+18
49	Flotilla Capitol	HH/SB	78	99		+21
50	Ball Branch	SB	50	84		+34
51	Kah Soldier	SB	43	68		+25
52	Spotted Bear Mtn	SB	49	68		+19
53	Big Bill Shelf	SB	70	80		+10
54	Jungle Addition	SB	53	68		+15
55	Bunker Creek	SB	69	92		+23
56	Gorge Creek	SB	87	90		+3
57	Harrison Mid	SB	91	95		+4

Shading



Subunits meet LMRP A19 objective of ≥68% Security CORE.

Subunits meet amended LMRP A19 objective for Security CORE.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Security CORE within a subunit.

** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Security CORE.
+	A positive number (no sign) indicates an increase in % Security CORE.
	A blank cell indicates no change for that variable for that subunit.

Table 4b. Subunit % Security CORE for BMU Subunits where NF ownership <75%.

#	BMU Subunit	RD	Jan 1995 existing	2016 existing	NEPA decision*	% Change 2016-1995**
9	State Coal Cyclone	GV	47	58		+11
13	Cedar Teakettle	GV	22	24		+2
18	Noisy Red Owl	SL	48	52		+4
20	South Fork Lost Soup	SL	6	37		+31
21	Goat Creek	SL	42	39		-3
26	Porcupine Woodward	SL	21	15		-6
34	Coram Lake Five	HH	19	14		-5

Shading

 Subunits meet LMRP A19 objective of NO NET DECREASE due to Forest Service actions.

* Numbers in the NEPA decision column show where the forest has made NEPA decisions that changed or will change Security CORE within a subunit.

** Percent Change number shows the difference between Jan 1995 existing to 2013 existing.

-	A negative number (-) indicates a decrease in % Security CORE.
+	A positive number (no sign) indicates an increase in % Security CORE.
	A blank cell indicates no change for that variable for that subunit.

Figure 1. Histogram of Existing 2016 OPEN Route Density for BMU Subunits where NF Ownership >75%. Standard is $\leq 19\%$ >1.0 mi/mi², unless amended (lighter shaded bars).

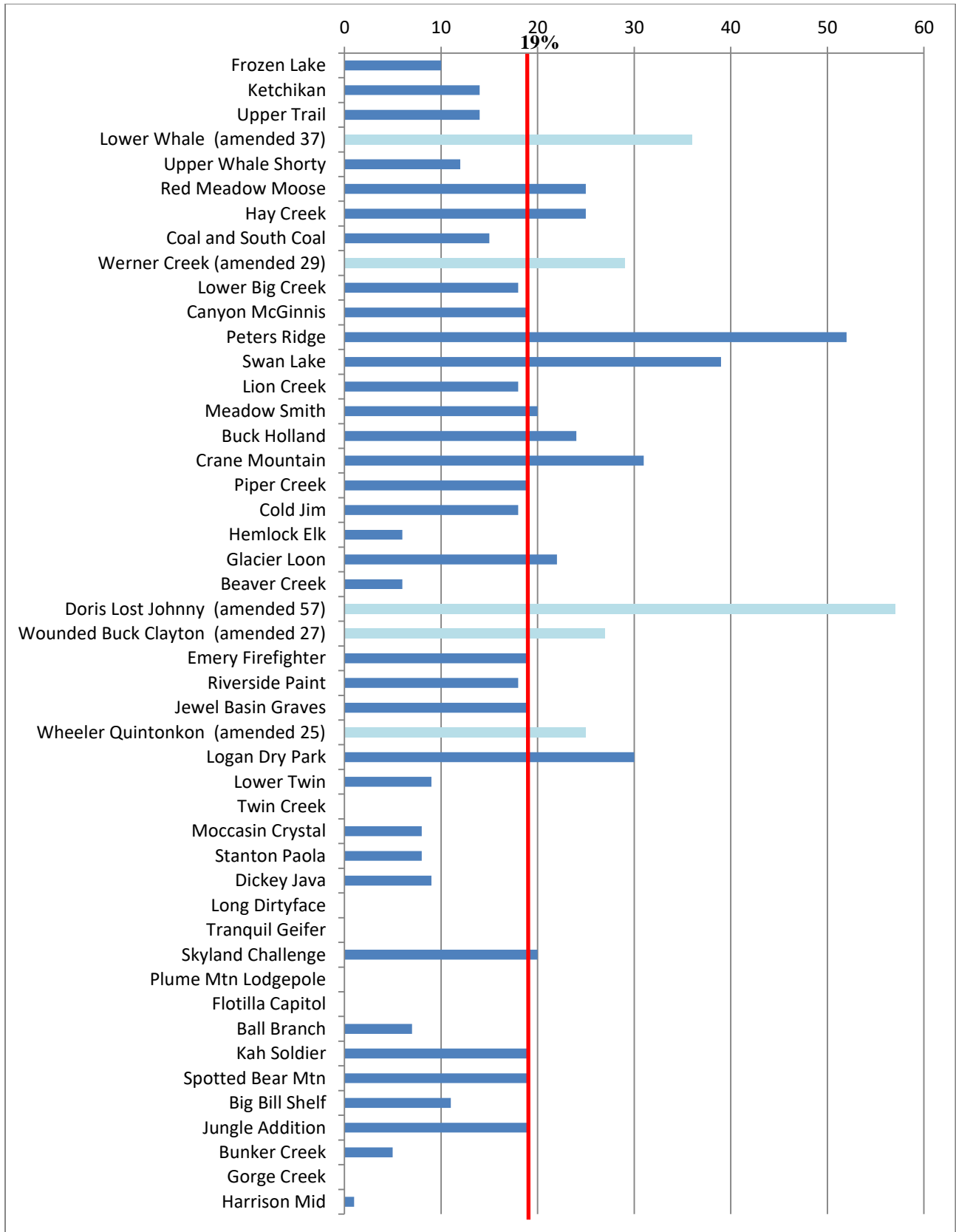


Figure 2. Histogram of Existing 2016 TOTAL Route Density for BMU Subunits where NF Ownership >75%. Standard is $\leq 19\%$ >2.0 mi/mi², unless amended (lighter shaded bars).

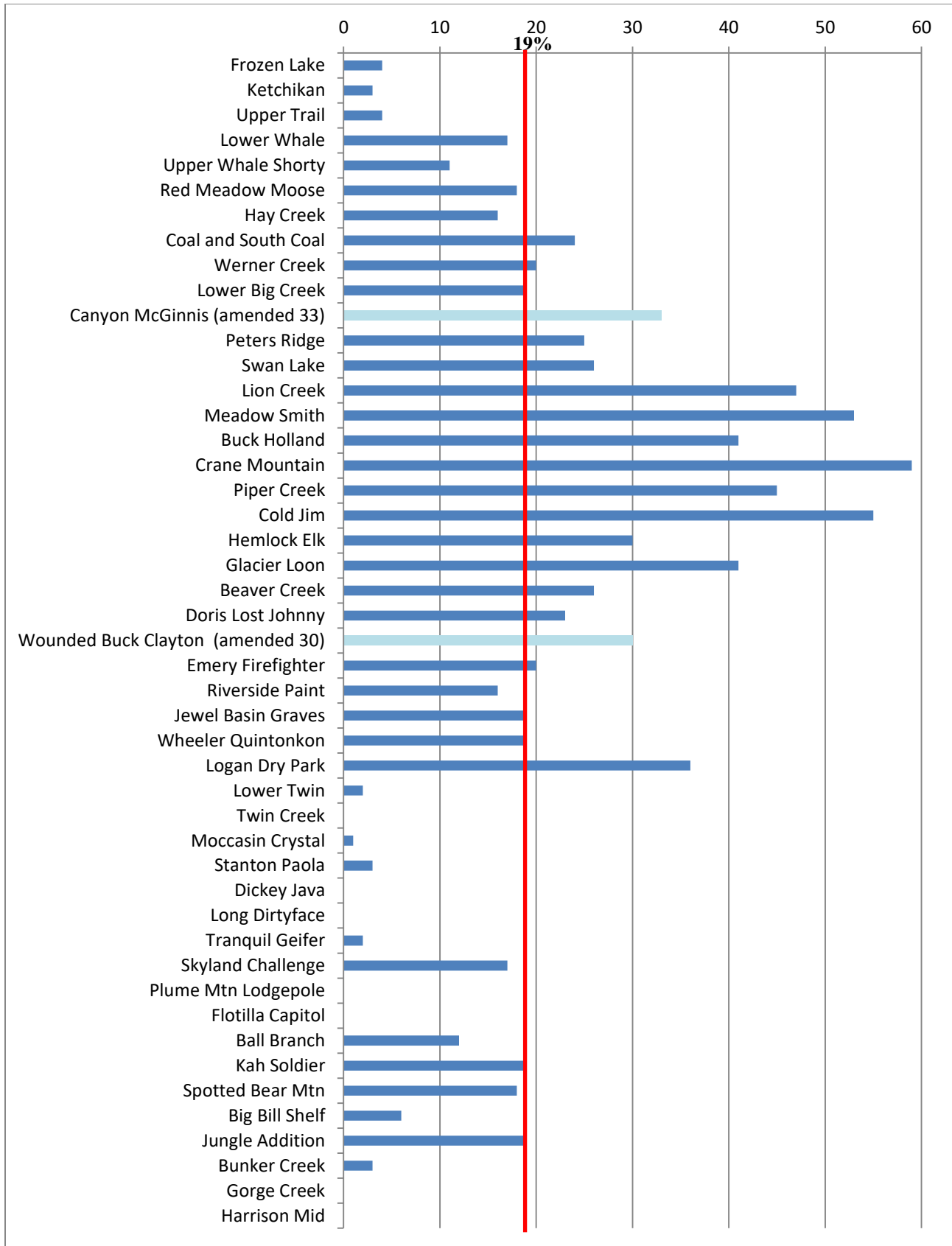
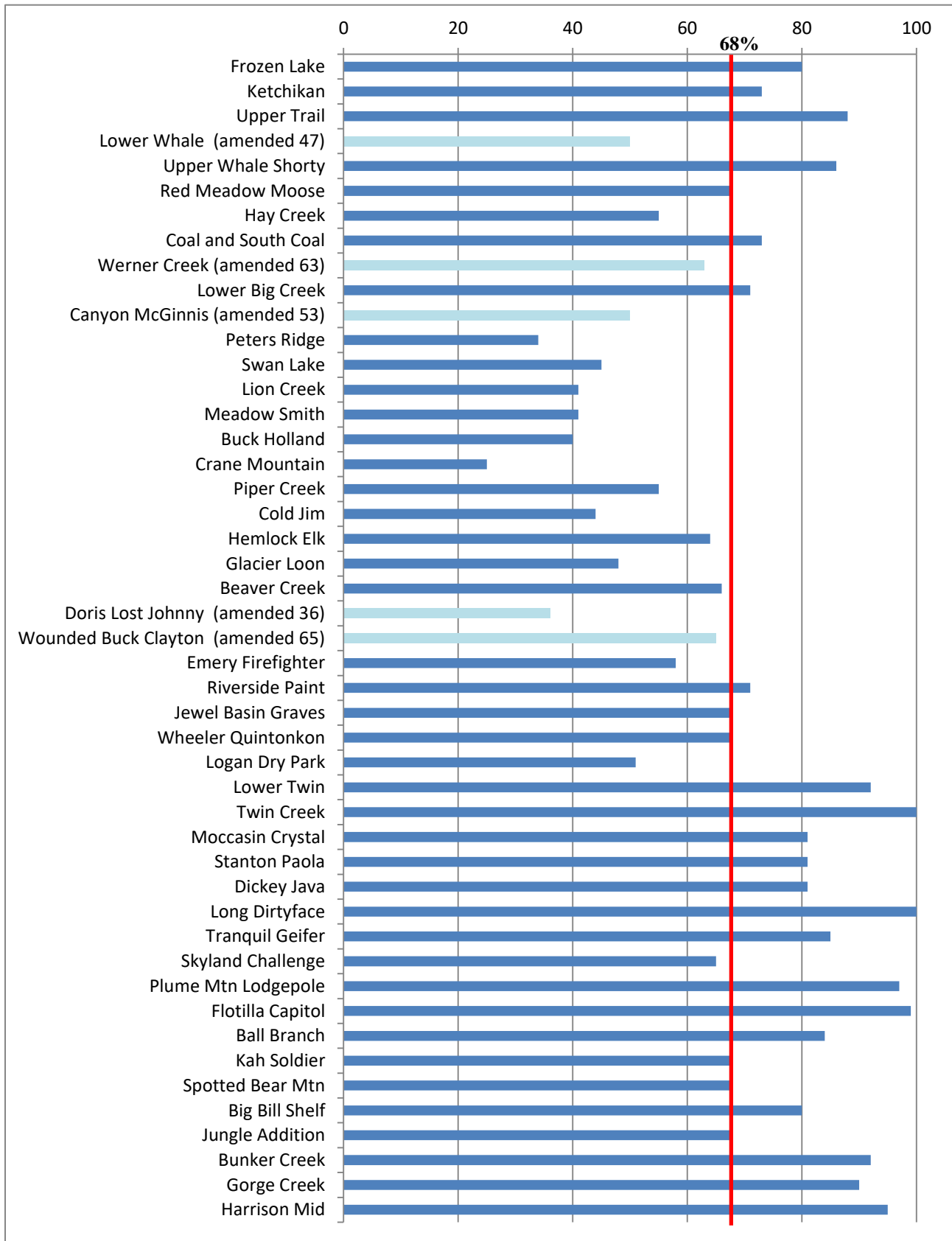


Figure 3. Histogram of Existing 2016 Security CORE for BMU Subunits where NF Ownership >75%. Standard is $\geq 68\%$ CORE, unless amended (lighter shaded bars).



Late Spring Over-Snow Vehicle Use

Amendment 24 outlined where and when over-snow vehicle use could occur during April and May on the Flathead National Forest. A-24 BO, Appendix A. Reporting: *Within the Canyon Creek, Sixmile, Skyline Challenge and Lost Johnny areas, as shown in Appendix WW maps, the Forest Service will calculate and report open road density in the Annual A-19 Monitoring Report as follows:*

1. Calculate and report Open Road Density (ORD) and Core area from the end of the legal snowmobiling season to the end of the non-denning season (12/1).
2. Calculate and report ORD from the end of the denning period (4/1) to the end of legal snowmobiling season (Canyon Creek area until 4/15, Sixmile area until 4/30, Skyland Challenge area until 5/15 and Lost Johnny area until 5/31).

For the two-month season of April-May, OPEN and TOTAL route density and Security CORE analyses were completed in the same manner as for the non-denning season, except for the following changes. For all federal agency, state agency, and Plum Creek Timber Company roads, road management was assigned as 1) open April-May, 2) open seasonally in April-May, or 3) closed in April-May and by what type of device. Wheeled motorized trail traffic was considered to not occur due to spring conditions except for the two low-elevation areas (Cedar Flats and Hungry Horse Track). The entire designated over-snow “play” areas were considered as >2.0 miles/square mile density for both OPEN and TOTAL route density. The 100-foot buffer on route corridors on Glacier View RD, and the three play areas were buffered 500 meters for Security CORE analyses. Results listed in Table 5 are only for those subunits affected by the designated late spring over-snow vehicle use areas and groomed routes.

Table 5. Late Spring OPEN and TOTAL Route Density and Security CORE percentages.

#	BMU Subunit	RD	OPEN Route Density		TOTAL route density		Security CORE	
			Late Spring	Non-denning	Late Spring	Non-denning	Late Spring	Non-denning
<i>Canyon Creek Area</i>								
10	Werner Creek (amended)	GV	18	29	23	20	61	63
11	Lower Big Creek	GV	15	18	same	19	70	71
12	Canyon McGinnis (amended)	GV/TL	24	19	34	33	41	50
13	Cedar Teakettle (<75% NFS land)	GV	15	25	same	27	24	24
<i>Lost Johnny Area</i>								
32	Doris Lost Johnny (amended)	HH	79	57	77	23	17	36
33	Wounded Buck Clayton (amended)	HH	51	27	62	30	34	65
17	Peters Ridge	HH/SL	14	52	18	25	66	34
<i>Sixmile Area</i>								
19	Swan Lake	SL	27	39	24	26	54	45
38	Wheeler Quintonkon (amended)	HH/SB	20	25	23	19	64	68
18	Noisy Red Owl (<75% NFS land)	SL	13	20	16	17	60	52
50	Ball Branch	SB	2	7	14	12	89	84
<i>Challenge/Skyland Area</i>								
47	Skyland Challenge	HH	51	20	50	17	31	65
46	Tranquil Geifer	HH	7	0	7	2	81	85

From the above table, where the OPEN and/or TOTAL route density decreased, those subunits either had 1) roads closed during April-May that were open in the summer, or 2) wheeled motorized trail traffic is assumed to not occur due to spring conditions. Where the OPEN and/or TOTAL route density increased, those subunits either 1) contained “play” areas with density assumed to be >2.0 mi/mi², or 2) had additional over-snow routes not present as open roads in other seasons. Where Security CORE increased, it was assumed wheeled motorized traffic was not occurring due to spring conditions, so those motorized trails were not buffered. Where Security CORE decreased, those subunits either 1) contained “play” areas, which were buffered 500m, and the area plus the buffer is not considered CORE, or 2) contained route corridors (100 feet on either side of route), which were buffered 500meters and the route corridor plus the buffer is not considered CORE.

Miles of Road Decommissioned

In 1995, total system road mileage on the Flathead National Forest was 3,842 miles. As the end of 2015 there were 3,569 miles. The information was not gathered at the end of 2016, and is estimated at 3,552 miles, assuming there were no re-alignments or new construction.

Table 6. Flathead National Forest Road Decommissioning Mileage Summaries Since 1995.

Year	Miles of Road	Cumulative
1995	69.97	
1996	40.38	110.35
1997	28.40	138.75
1998	18.36	157.11
1999	109.20	266.31
2000	37.24	303.55
2001	1.25	304.80
2002	56.54	361.34
2003	36.43	397.77
2004	41.52	439.29
2005	28.09	467.38
2006	46.67	514.05
2007	42.09	556.14
2008	48.44	604.58
2009	22.43	627.01
2010	54.84	681.85
2011	12.40	694.25
2012	13.03	707.28
2013	3.98	711.26
2014	13.46	724.72
2015	6.57	731.29
2016	16.80	748.09
Total	748.09	

Monitoring Closure Devices for Effectiveness

Sign-only closures are not included in Table 7 and any road closed by a sign device is considered an open road for route density analysis. Tables only include information on closure devices within the A19 analysis area. In Table 7, the column “# Requiring Inspection” does not include the number of devices behind that 1st device. Using data from Table 7, the first line is for Swan Lake, and lists 167 gates, of which 127 are requiring inspection. The difference is 25 gates that are either administrative gates or in locations that are restricted by a gate that is located closer to the beginning of the road. In Table 7, the column “# Ineffective” represents the number of devices that were ineffective upon inspection. Within the A19 analysis area, there were 627 closure devices inspected. Of these 627 devices, 17 (2.7%) devices were found to be ineffective upon inspection. Of the 17, nine (52.9%) were immediately corrected, one (5.9%) was repaired at a later time, and seven (41.2%) are currently ineffective.

Table 7. Summary of Closure Device Monitoring for 2016 for the A19 analysis area only.

District	Type	# of Devices	# Requiring Inspection	# Inspected	# Ineffective	% Inspected ¹	Of Inspected, % Ineffective ¹
Swan Lake	# of gate	167	127	127	3	100%	2%
Does not include Island Unit	# of barriers	501	207	206	4	100%	2%
	TOTAL	668	334	333	7	100%	2%
Spotted Bear	# of gate	34	27	27	1	100%	4%
	# of barriers	101	16	15	0	94%	0%
	TOTAL	135	43	42	1	98%	2%
Hungry Horse	# of gate	113	59	59	2	100%	3%
	# of barriers	240	79	79	5	100%	6%
	TOTAL	353	138	138	7	100%	5%
Glacier View	# of gate	65	44	43	1	98%	2%
	# of barriers	182	73	71	1	97%	1%
	TOTAL	247	117	114	2	97%	2%
FOREST	# of gate	379	257	256	7	100%	3%
Only includes analysis area for A19	# of barriers	1024	375	371	10	99%	3%
	TOTAL	1403	632	627	17	99%	3%

¹ – Percentages are rounded to nearest whole percent value. For example, on GVRD, the % Inspected for barriers is 97.26% (71/73), which is rounded to 97%.

In Table 8a (1995 through 2005) and Table 8b (2006 through 2016) **below**, the row “# Ineffective” may not be consistently tallied prior to 2005 and 2005 forward. In 2005 and 2006, if the device was ineffective upon inspection, the device was called ineffective. Prior to 2005, if the device was ineffective but fixed before the inspector left, the device was called effective. Therefore, prior to

2005, the total ineffective devices are those devices that the inspector was not able to fix before leaving.

Table 8a. Summary of Closure Device Monitoring, Entire Flathead National Forest from 1995 through 2005.

Description	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
# of Gates	536	537	550	550	539	nodata	nodata	531	532	537	536
# Requiring Inspection											425
# Inspected	319	314	252	451	nodata	386	nodata	294	152	166	425
# Not Inspected	217	223	298	99	nodata		nodata	237	380	371	0
# Ineffective	17	28	19	9	nodata	16	nodata	28	9	8	81
# of Barriers	792	848	897	818	786	nodata	nodata	915	927	997	886
# Requiring Inspection											585
# Inspected	229	77	142	524	nodata	449	nodata	156	43	36	571
# Not Inspected	563	771	755	294	nodata		nodata	759	884	961	14
# Ineffective	27	29	27	20	nodata	14	nodata	14	5	6	53
# of Signs	46	59	59	56	43	nodata	nodata	17	19	31	29
# Inspected	24	6	6	27	nodata	8	nodata	1	1	0	17
# Not Inspected	22	53	53	29	nodata		nodata	16	18	31	12
# Ineffective	46	59	59	56	nodata	8	nodata	17	19	31	29
Total # of Devices ¹	1328	1385	1447	1368	1325	nodata	nodata	1446	1459	1534	1422
Total # Req. Inspect. ¹											1010
Total # Inspected ¹	548	391	394	975	nodata	835	nodata	450	195	202	996
% Inspected ^{1 & 2}	41%	28%	27%	71%	nodata	nodata	nodata	31%	13%	13%	99%
Total # Not Inspected ^{1 & 2}	780	994	1053	393	nodata	nodata	nodata	996	1264	1332	426
# Ineffective ¹	44	57	46	29	nodata	30	nodata	42	14	14	134
Of Inspected, % Ineffective ¹	8%	15%	12%	3%	nodata	4%	nodata	9%	7%	7%	13%

¹ – Totals and overall calculations do not include sign closures. Under Amendment 19, the very nature of a sign makes it an ineffective closure device as it is not a physical barrier.

² – From 2005 on, percentage is calculated using total number of devices requiring inspection

Table 8b. Summary of Closure Device Monitoring, Entire Flathead National Forest from 2006 through 2016.

Description	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
# of Gates	512	535	523	499	557	560	556	567	563	570	569
# Requiring Inspection	406	418	398	349	423	420	426	425	430	448	414
# Inspected	366	298	398	349	421	416	422	266	386	246	259
# Not Inspected	40	120	0	0	2	4	4	159	44	202	155
# Ineffective	86	50	45	23	39	17	21	24	28	28	7
# of Barriers	864	938	904	896	1032	1049	1175	1180	1188	1180	1181
# Requiring Inspection	576	637	544	536	635	665	684	753	763	753	455
# Inspected	469	431	544	536	631	632	664	643	709	344	372
# Not Inspected	107	206	0	0	4	33	20	110	54	409	83
# Ineffective	25	20	30	13	56	21	11	9	7	33	10
# of Signs	24	29	22	20	19	19	17	17	17	18	16
# Inspected	6	6	22	10	19	14	10	6	5	12	6
# Not Inspected	18	23	0	10	3	1	7	11	12	6	10
# Ineffective	24	5	22	6	16	13	13	14	13	12	1
Total # of Devices ¹	1376	1473	1427	1395	1589	1609	1731	1747	1751	1750	1750
Total # Req. Inspect. ¹	982	1055	942	885	1058	1085	1110	1178	1193	1201	869
Total # Inspected ¹	835	729	942	885	1052	1048	1086	909	1095	590	631
% Inspected ^{1&2}	85%	69%	100%	100%	99%	97%	98%	77%	92%	49%	73%
Total # Not Inspected ^{1&2}	541	326	0	0	6	37	24	269	98	611	238
# Ineffective ¹	111	70	75	36	95	38	32	33	35	61	17
Of Inspected, % Ineffective ¹	13%	10%	8%	4%	9%	4%	3%	4%	3%	10%	3%

¹ – Totals and overall calculations do not include sign closures. Under Amendment 19, the very nature of a sign makes it an ineffective closure device as it is not a physical barrier.

² – From 2005 on, percentage is calculated using total number of devices requiring inspection.

Administrative Use

Hungry Horse RD had 1 road where administrative use levels were exceeded four different weeks due to a national climate change project, timber work, and handicapped hunting uses. Spotted Bear RD had one road where administrative use levels were exceeded for one week due to MFWP grizzly bear trapping and recreation use. Swan Lake RD had one road where administrative use levels were exceeded for one week due to silvicultural activities. This also affected a road off the main road.

Table 9. Subunits containing roads, or affected by roads, that exceeded administrative use level.

RD	BMU Subunit	Project or Activity	OPEN Route Density		TOTAL Route Density		Security CORE	
			Exist	Admin	Exist	Admin	Exist	Admin
HH	Coram Lake Five	various	26	31	46	same	14	same
SB	Jungle Addition	MFWP and recreation	19	22	19	same	68	same
SL	Swan Lake	Silviculture	39	41	26	same	45	same

Responses to Terms and Conditions in A19 Revised Implementation Schedule (BO dated January 31, 2014)

1. Forest activities shall not result in a net increase in OMAD, TMAD, or net decrease in core habitat without additional consultation.

See respective resource management and post-fire project BO reports. From this report, see section titled “Changes from 2016 Report – Specific Subunits” starting on page 3.

2. The Forest shall proceed with reductions of access densities and increases of core as authorized and scheduled by project decisions with timetables. Access management direction shall be completed within the Firefighter Mountain/Paint Emery Resource projects by the end of 2015.

The Forest continues to make progress reducing access densities and increasing security core. The Chilly James project decommissioned approximately 14 miles of road. The Firefighter Mountain/Paint Emery Resource project bermed Road 1621 and completed access management work on 11042, 11042A, and temporary roads.

3. Proceed with reductions of access densities and increases in core as authorized by project decisions without time tables as funding allows.

There are no road management activities from projects without time tables planned for FY2017.

4. In subunits subject to additional administrative motorized use restrictions, all restricted roads shall continue to have an effective physical restriction. Effective physical restriction could be a gate, berm, or others needed to limit motorized use to appropriate levels. The use of a restriction device is needed only during the period or season the road is restricted.

This was addressed in the 2006 A19 report. The Forest’s “Red Lock” policy insures additional administrative motorized use restrictions from authorized and unauthorized Forest Service key holders. “Red Lock” policy affects the Coal and South Coal, Logan Dry Park, Peters Ridge, Crane Mountain, Swan Lake, and Beaver Creek subunits.

5. The first restriction device on any road shall be inspected annually and kept in good repair. Effectiveness of the barrier to prevent unauthorized access shall be determined and recorded. In the case of an ineffective device, an alternative device, technique, or repair shall be implemented, and implementation of the appropriate remedy shall be considered a priority in the Forest’s work scheduling. Human health and safety takes priority over this term and condition.

See Monitoring Closure Devices for Effectiveness section and Tables 7 and 8 in the 2016 A-19 report above.

6. The Forest shall continue to coordinate with the Service to further reduce, or eliminate, administrative use on any number of specific restricted roads within subunits to simulate a 19 percent or less TMAD in that subunit. Considerations will include existing TMAD, core levels, juxtaposition of restricted roads and core area (i.e. opportunity to increase amount of effective core habitat), and watershed issues, including the conservation of bull trout.

See Administrative Use section and Table 9 in the 2016 A-19 report section above.

7. The Service's February 1995 incidental take statement directed the Forest, under terms and conditions, to develop and implement a public information program on the positive effects of road closures for fish and wildlife, water quality, and other Forest resources. The Forest shall continue the implementation of this public information program focusing on both information that is available and relevant at a local, district level and on information pertinent to a broad-based Forest level approach. A clear and understandable explanation of the status of existing road densities and future road densities as directed by A19 shall be available to the public. The explanation shall include how road management actions benefit grizzly bears. The net reduction in OMAD, and the remaining opportunities for motorized public access, timber extraction, recreation, and other Forest uses should be emphasized.

A package of material the Forest uses for maps, brochures, handouts, etc. at our front offices for grizzly bear access management, sanitation and awareness was included in the 2004 A-19 report. Information is also included within contracts, provided to special-use permit holders, and fire crews, and found on our website, <http://www.fs.usda.gov/flathead>.

8. Roads facilitate human access and increase the possibility of grizzly bears encountering human-related attractants. Continue the implementation of appropriate food storage and handling program in the action area. Provide and make information available to Forest employees, contractors, and Forest users on the effects, consequences and ways to avoid grizzly bear conditioning to human-related foods.

- **The food storage order was expanded to include the entire forest in June 2011. Food storage information is also included within contracts, provided to special-use permit holders and fire crews, included with forest maps, and found on our website, <http://www.fs.usda.gov/flathead>.**
- **The forest continues to work with partners to support three seasonal "Bear Rangers", working on all five Ranger Districts to monitor camping areas and forest users for awareness and compliance with sanitation requirements, both inside and outside the NCDE.**
- **The Forest made numerous public presentations about bear sanitation in 2016, and interacted with well over 1,000 people. These ranged from individual encounters with campers at campgrounds, dispersed sites, and hunting camps; to elementary school classroom appearances to PowerPoint presentations at meetings; to working-in-bear-country and living-with-bears presentations (i.e. employee bear safety training, the Spring Bear Wake-up Social in Condon, and the Bear Fair in Ferndale). Bear-safety booths were staffed at the Family Forestry EXPO and local farmer's markets. Partners in these efforts included Swan Valley Connections; Interagency Grizzly Bear Committee; Montana Department of Natural Resources and Conservation; Montana Fish, Wildlife and Parks; and private grants.**
- **In partnership with the Swan Valley Connections, the Swan Valley Bear News was included in the Swan Valley Connections' autumn newsletter, with copies at <https://www.swanvalleyconnections.org/s/swan-valley-bear-resources-fall-2016.pdf>.**
- **Placement/replacement of Forest kiosk, bulletin boards, outhouses with bear aware/food storage signs.**

- As part of the Southwest Crown of the Continent Initiative, the USFS purchased 10 bear-resistant food storage lockers for Holland Lake and Swan Lake Campgrounds (5 at each, to be installed in 2017).
- Continued the pannier, bear kegs, and pulley system loaner program. In 2016, worked with Swan Valley Connections to purchase an additional 35 bear-resistant garbage containers for residents in the Swan Valley. At the end of 2016, 202 containers and 28 dumpsters were being used by community members or businesses as part of the program in the Swan Valley.
- In 2016, nearly 15,000 visitors toured the Summit Nature Center, which features grizzly bear messages.
- Other efforts continued outside the recovery zone. These include the maintenance of Upper Stillwater Lake Campground's food pole, bear-resistant coolers available for free check-out from campground concessionaires, and bear-resistant dumpsters throughout Tally Lake Campground with a concessionaire responsible for pick-up.
- Other material the Forest uses for maps, brochures, handouts, etc., for grizzly bear sanitation and awareness was included in the 2004 A-19 report. These were reviewed in 2016 and the use of many was discontinued because they were out-of-date. Initial progress was made at revising the Forest's food storage brochure.

9. The Forest shall notify the Service's Grizzly Bear Recovery Office in Missoula within 24 hours of discovery of a human-caused grizzly bear mortality on the Forest.

MFWP bear management specialists coordinate management actions with forest personnel as conflict or relocation occurs. Extensive protocol, information and reports by MFWP bear management specialists are required by and reported to the FWS grizzly bear coordinator on a case-by-case basis and within an annual report. Information on mortality is included in the MFWP annual NCDE grizzly bear monitoring team annual report. Grizzly bear mortality data for 2016 for inside and within 10 miles of the recovery zone had 18 mortalities caused by automobiles (3), management removals (6), augmentation (1), illegal (2), defense of life/property (1), orphaned cubs (2), mistaken ID (1), natural (1), and undetermined (1). Of the 18, nine mortalities were within or within 1 mile of the 54 A19 subunits on the Flathead NF, and these were reported as automobiles (1), management removals (4), augmentation (1), illegal (1), mistaken ID (1), and natural (1).

10. The Forest shall contact the Service by March 15 of each year, and notify the Service as to what access management changes will occur the following work season. This requirement could be met at the Forest and Service's annual meeting in January or February.

Access management work that was accomplished in 2017 will be described in the 2017 report.