**April 5th, 2021**

**Susan Eickhoff, Forest Supervisor**
**Ashley National Forest**
**355 North Vernal Ave.**
**Vernal, UT 84078**

**Re: Comments - Ashley Forest Wide Range Improvement Project EA**

**Sent VIA email to: comments-intermtn-ashley@fs.fed.us, sandra.remund-kaminski@usda.gov, and garry.brown@usda.gov**

Dear Supervisor Eickhoff,

Yellowstone to Uinta Connection, Alliance for the Wild Rockies, Native Ecosystems Council and Western Watersheds Project are submitting the following comments for the Ashley Forest Wide Range Improvement Project Environmental Assessment (Project). The Project should be withdrawn for the reasons provided in these comments.

Yellowstone to Uinta Connection (Y2U) is a 501c3 public interest organization whose staff and members have and will continue to work to protect the integrity of habitat for fish and wildlife as well as recreate in this region. We are concerned about the loss of integrity of the Regionally Significant Wildlife Corridor (Corridor) that connects the Greater Yellowstone Ecosystem and Northern Rockies to the Uinta Wilderness and Southern Rockies. The Yellowstone to Uinta Connection organization was given this name to bring attention to this Corridor and we use this name in reference to both the organization and Corridor as it provides context and public awareness to the location and its importance. Yellowstone to Uinta Connection is headquartered in Paris, Idaho with a satellite office in Bondurant, Wyoming.

Alliance for the Wild Rockies (AWR) is a 501c3 public interest organization whose mission is to secure the ecological integrity of the Wild Rockies Bioregion through citizen empowerment and the application of conservation biology, sustainable economic models, and environmental law. Alliance for the Wild Rockies is headquartered in Helena, Montana.

Native Ecosystems Council (NEC) is a 501c3 public interest organization whose staff reviews Forest Service National Environmental Policy Act (NEPA) assessments of Forest Service impacts on wildlife in the Northern Rockies. NEC is headquartered in Willow Creek, Montana.

Western Watersheds Project (WWP) is a non-profit conservation organization founded in 1993 with the mission of protecting and restoring western watersheds and wildlife through education, public policy initiatives, and legal advocacy. Headquartered in Hailey, Idaho, Western Watersheds Projects has over 11,000 members and supporters, field offices in Idaho, Nevada, Wyoming, and Arizona, as well as additional staff covering Washington, Oregon, California, Montana, Utah, Colorado, and New Mexico.

**1. The Environmental Assessment**

The Ashley National Forest has prepared an environmental assessment (EA) for the Forest Wide Range Improvement Project that will consist of 79 individual range improvement projects including construction of 8.7 miles of drift/boundary fences, 51 water systems (ponds, pipelines, troughs or burying existing pipelines), four exclosures, four corrals, four guzzlers, and four cattleguards.

The purpose of the project is to improve livestock management and distribution, minimize areas of livestock concentration, protect springs, streams, and meadows. Pipelines are to be buried for improving visuals in the areas affected. Adaptive management as described in the allotment management plans will be used in continuing allotment management to achieve desired conditions. These AMPs and their management provisions and outcomes are not disclosed or analyzed.

The need for the project "arose as grazing management issues were identified by monitoring condition and trend, conducting range improvement inspections, and through consultation with grazing permittees". The proposed developments would improve livestock distribution, assist in managing pasture rotations, allow for recovery of vegetation after grazing, and protect sensitive areas. (Scoping Letter p1).

The EA identifies nine Applicable Management Areas, 18 affected Watersheds and 25 grazing allotments including 471,719 acres within which the proposed 79 range improvements will be constructed. (EA p4, 7). It also identifies 1,728 existing range improvements within the affected allotments. (EA p7).

The EA describes the Purpose and Need "to improve livestock distribution, protect rangeland resources and establish study areas". The need was determined from allotment inspections and permittee expressed needs. An expressed need is to protect springs, streams and meadows through development, redesign, or realignment of range improvements, upgrade water systems and fences to maintain system viability and improve visuals. This proposal is in line with the adaptive management strategies identified in the AMPs (EA p5). No site-specific effects or data analysis was provided showing the outcome of AMPs, the existing range improvements, and the associated adaptive management.

The Aquatic Species Effects Analysis report described conditions including cattle trailing and crossing the stream, dispersed recreation and user created roads impacting vegetation and soil, stream channel incised and not connected to its floodplain, bank erosion, and debris flows. The Biological Evaluation for Terrestrial Wildlife noted that the proposed range projects will result in "allowing grazing in areas that were previously ungrazed or minimally grazed withing a given allotment." " These proposed projects may increase use of little used areas in an allotment due to distance from water, draw livestock away from natural riparian areas, and improve livestock distribution across the allotments." As noted above the scoping letter noted "condition and trend" as concerns leading to this proposal but did not quantify this.

The Biological Evaluation for Terrestrial Wildlife described the activities occurring in the project area that could lead to cumulative effects. These "include firewood gathering, grazing, roads, off-highway vehicle use, prospecting, oil & gas, mining, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, snowmobile use, prescribed and unplanned fire, timber harvest, and grazing. The public is left to wonder how this myriad of activities is impacting the Forest and the project area. Once again the EA and specialists' reports are virtually devoid of site-specific analysis.

In our review of the Specialists Reports and EA we found no analysis of the Management Areas, Watersheds, condition and trend of upland and riparian communities, streams and springs, and no population data or trend analysis for special status species. No species was found to be suffering damage from all the activities occurring in the project area. There was no analysis of Forest Service Manual and Handbook provisions or Forest Plan provisions except the brief mention that these exist. Applicable laws are mentioned but there is no detailed analysis of the specifics applicable to each species or ecosystem element being considered. We incorporate recent comments on the Southern Monroe EIS that analyzed Forest Service Manual and Handbook provisions.

Mitigation in the form of adaptive management contained in AMPs, design criteria or features, and BMPs are mentioned but there are no real specifics or analysis of the effectiveness of these. There is no presentation of Forest Plan standards or guidelines and monitoring to show that the intent of these is being carried out. For example, are there standards for utilization, stubble height, or trend? Are these monitored? What are the results? And how has adaptive management been used to ensure proper function of ecosystems?

We have reviewed and provided more detailed comments on the specialists reports at the end of these comments. After review of the EA and specialists' reports, it is our view that the analysis: (1) is arbitrary and capricious under the APA; (2) it does not meet the intent of NEPA for a hard look. cumulative effects analysis, and referencing material

not available to the public within the time allowed for comment; (3) it does not comply with NFMA for compliance with the Forest Plan, Handbook and Manual, or species viability; (4) it does not comply with the ESA for threatened and endangered species consultation; (5) does not show the project meets the intent of the Multiple Use Sustained Yield Act for balancing resource uses and not impairing productivity (also NFMA); (6) the 2015 Sage Grouse Record of Decision; and (7) the Migratory Bird Treaty Act, Executive Order, and MOU with Fish and Wildlife Service. Merely invoking these without analysis is insufficient.

We note especially regarding effects analysis on special status species, BAs, and BEs that the determinations contained in the EA and specialists' reports fall short of what is needed. For example, "may affect" is a low threshold and any possible effect, whether beneficial, benign, or adverse, or of an undetermined character, triggers the requirement for the Forest Service to obtain the concurrence of the Fish and Wildlife Service to avoid consultation. Thus, the appropriate conclusion when effects on a listed species are expected to be discountable, or insignificant, or beneficial, is "may affect, not likely to adversely affect". "No effect" is not the appropriate conclusion.[1]

If the biological assessment concludes that the proposed action "may affect" but will "not adversely affect" a threatened or endangered species, the action agency must consult informally with the appropriate expert agency. 50 C.F.R. §§ 402.14 (b)(1), 402.12(k)(1). If the action "is likely to adversely affect" a listed species, the action agency must formally consult with the expert agency, and the expert agency must provide the action agency with a Biological Opinion explaining how the proposed action will affect the species or its habitat. 16 U.S.C. § 1536(a)-(c); 50 C.F.R. § 402.14. Both the biological assessment and the biological opinion must use "the best scientific and commercial data available." 16 U.S.C. § 1536(c). The Biological Assessments and Evaluations provided for this project are deficient.

**2. Range Management and Plant Community Concerns**

The EA (p5) for this project pointed to allotment management plans that are in effect for the 25 allotments that are supposed to have adaptive management in effect. The Scoping Letter and EA admit to grazing management issues with condition and trend, range improvements, livestock concentrations, the need to protect springs, streams, and meadows. It appears from this, that the adaptive management/grazing management/range improvements in place have been ineffective and there is ecosystem degradation. The Forest Service, in collaboration with permittees wishes to install or modify 79 structures when there are already 1,728 structures present.

[1] Native Ecosystems Council v. Krueger, 946 F.Supp.2d 1060,1079 (D. Mont.2013).

The Forest Service must answer the question as to why the present management has failed by a detailed and quantitative assessment of all Forest data over time for each allotment, Management Area, Watershed, including:

- Analysis of condition and trend data for upland and riparian habitats
- Utilization in upland and riparian areas plus stubble height in riparian areas
- Characterization of stream habitat including width/depth ratios, pool/riffle, woody debris, bank alteration, streambank stability, spawning habitat sediment fines percentages, overhead canopy percentage, streambank overhanging vegetation percentage, undercut banks
- Current desirable forage production, livestock consumption rates, and evaluation of stocking rates in capable areas which are updated to reflect current Regional criteria
- Status of native bunchgrasses in uplands relative to their potential. This should be done in an Ecological Site Inventory that compares the potential plant community to that present today.
- Analysis of the 1,171 long term study plots established in aspen stands and impacts from the various activities monitored. This data was acknowledged in the EA for the Ashley NF Aspen Restoration Project.
- The effects of various management activities on aspen including livestock grazing, prescribed fire, salvage, logging, thinning, and livestock grazing in combination with these
- Location of all existing water developments and analysis of the proximity of water developments to aspen clones and status of aspen recruitment, age classes and understory herbaceous community status compared to potential
- Analysis of the location/proximity of existing water developments to riparian areas (streams, springs, wetlands) and the condition of each of these aquatic ecosystems, the levels of livestock use (utilization, bank alteration, stubble height, ground cover, stream bank stability)
- Analysis of each AMP, the adaptive management strategies and BMPs employed in the Adaptive Management Protocol as to why those have failed and why the Forest Service has not reduced stocking rates and implemented herding to account for the ecosystem degradation and drought that has become a normal feature.
- In the sections below we raise issues about lynx and wolverine habitat, ESA and Sensitive Species habitat, grazing management, stocking rates, water development impacts, cumulative effects, and the need for a Cumulative Effects Area (CEA) for analysis.

**3. Water Developments**

The EA (p19) notes that the effects of the project to livestock grazing, livestock management, vegetation and overall range management are positive. It states that the project complies with

the LRMP, AMPs, and MUSYA in that it does not alter the management in a way to prevent multiple use, production of products and services or other purposes. The project would "enhance rangeland vegetation". There is no analysis of the condition and trend of plant communities, the effects of water developments and the related livestock concentrations on the vegetation within an area of effect of the water developments or fences. While citing MUSYA, the EA fails to analyze how using range developments across the project area to maximize livestock use complies with the "balancing" provision of MUSYA and NFMA.

A review of the Forest Wide Range Improvement Project Effects Analysis found no reporting of data showing the extent of alteration of vegetation communities or soil damage relative to past water developments, fences, or other structures. The report states that ground cover was equal to or greater than 85% of potential for all plant communities grazed by livestock. It also noted trailing damage but did not say whether vegetation plots included or avoided trails and obvious bare areas. It noted that ground cover and species composition levels are meeting or exceeding standards in the AMPs without describing or analyzing those standards. (p8). The report also notes that vegetation composition surrounding existing water sources had greater than 60% of moderate to high value for watershed protection of the relative cover in all plant communities grazed by livestock (p8). This doesn't say anything about the plant species and whether they are invasive, or at what percent of potential composition and production they were. We rebut the premise in the report and find no evidence where livestock grazing "enhances" plant communities and soils surrounding water developments. In fact, livestock degrade ecosystems within the reach of water developments and in total. In a later section of these comments, we discuss this report and the bias of those involved, which our history indicates have little ability or intent to document ecosystem damage by livestock. Instead of flat statements such as "enhance", the analysis should have dealt with actual evidence, including conditions on the ground and presented the data and an analysis of the data.

The Forest Wide Range Improvement Project Hydrology Effects Analysis notes that "Some of the sites, mostly spring sources, have wetland characteristic (hydrophilic plants). By implementing design features (riparian fencing), no significant adverse impacts associated with the occupancy and modification of wetlands should occur." (p8). But, aren't most wetlands, riparian areas, springs, and streams unfenced, therefore subject to direct impacts by livestock? The Effects Analysis also states, "Design features and BMPs all contribute to the prevention of sediment delivery to streams and impacts to riparian areas, floodplains, or wetlands." (p2). "… allotment fences crossing stream channels may affect floodplains due to concentrating cattle trailing. By implementing design features (riparian fencing), no significant adverse impacts associated with the occupancy and modification of floodplains should occur." (p7). "Springs, floodplains, and wetlands should be protected with riparian fencing/enclosures.) (p8). Here, BMPs and design features explain away impacts and suggest these riparian areas should be protected from livestock with fences. But, there is no revelation of the miles and/or acres of unprotected springs, floodplains, and wetlands that exist in the project area, thus no analysis. In addition, project impacts are based on the actual construction footprint, not the area affected

by livestock that would use the so-called improvements, which stands to be all the project area of 471,719 acres including all of its wetlands, springs and streams.

The Hydrology Effects Analysis also discusses the Watershed Condition Classification (WCC) claiming that slightly more than half of the watersheds are functioning properly relative to water quantity (quality?) while the remaining half are functioning at risk or at impaired function with the concern centered on flow characteristics. Roughly 20 percent were considered functioning at risk or impaired function relative to water quality. There are no site specific or cumulative effects analysis. (p6). So, even with the highly suspect WCC, half of the watersheds are impaired by even that measure. Yet, throughout all the specialists' reports we reviewed, there is essentially no impact from all the activities across the project area, wildlife species are not impacted, streams are not impacted and so on. Municipal watersheds are dismissed. It is inconsistent and illogical that the watersheds are impaired but there is no effect to plant communities, soils, wetland and riparian areas, fish, and wildlife from past and proposed management. There is no action proposed to solve the current degradation from not only livestock grazing, but that of all the activities in the Forest and evidenced in the current supposed need for the Aspen Restoration Project and the Prescribed Fire Project currently under analysis.

We have repeatedly called for updating stocking rates of livestock, analyzing road and trail density and its impacts on wildlife, and providing rest from grazing so streams, plant communities and other affected areas can recover. Instead, this project has the intent to spread the damage rather than reduce it.

Holechek et al (2001)[2] indicated that, depending on topography, areas of severe degradation, or *"sacrifice areas"* occur around water sources including water developments which can extend from 1 mile to several miles from water sources. Holechek et al (2004)[3] noted the effects of water developments on forage production and native bunchgrasses, including that nearly 100% of forage is used around water developments and this decreases with increasing distance from water. In studies from New Mexico, under moderate grazing intensities, forage production was most severely reduced in the zone 0.5 miles from water. They noted that *"perhaps the greatest problem with additional water developments is degradation of rangeland in high ecological condition."* They noted further that *"Regrettably we have observed the degradation of many publicly owned, high condition rangelands when permanent water developments were installed."*

In a comprehensive study of the effect of water developments on plant communities in the Little Missouri National Grassland, Rinehart, and Zimmerman (2001)[4] analyzed the effects of water

[2] Holechek, Jerry L., Rex D. Pieper and Carlton H. Herbel. 2001.Range Management: Principles and Practices, Fourth Edition. Prentice-Hall, New Jersey. 587p

[3] Holechek, J.L., R.D. Pieper and C. Herbel. 2004. Range Management Principles and Practices – Fifth Edition. Pearson-Prentice-Hall, New Jersey. 607p

[4] Rinehart, S.M. and A.F. Zimmerman. 2001. The Bullseye Study: A Quantitative and Qualitative Assessment of Vegetation Community Characteristics Observed as a Function of Distance from Water on

developments for livestock on total species, native bunchgrasses, decreasers, increasers, perennials, native species, vegetation structure using Robel Pole, and grass production (Table 1). Clearly, impacts were observable over a large area, productivity and diversity were impaired

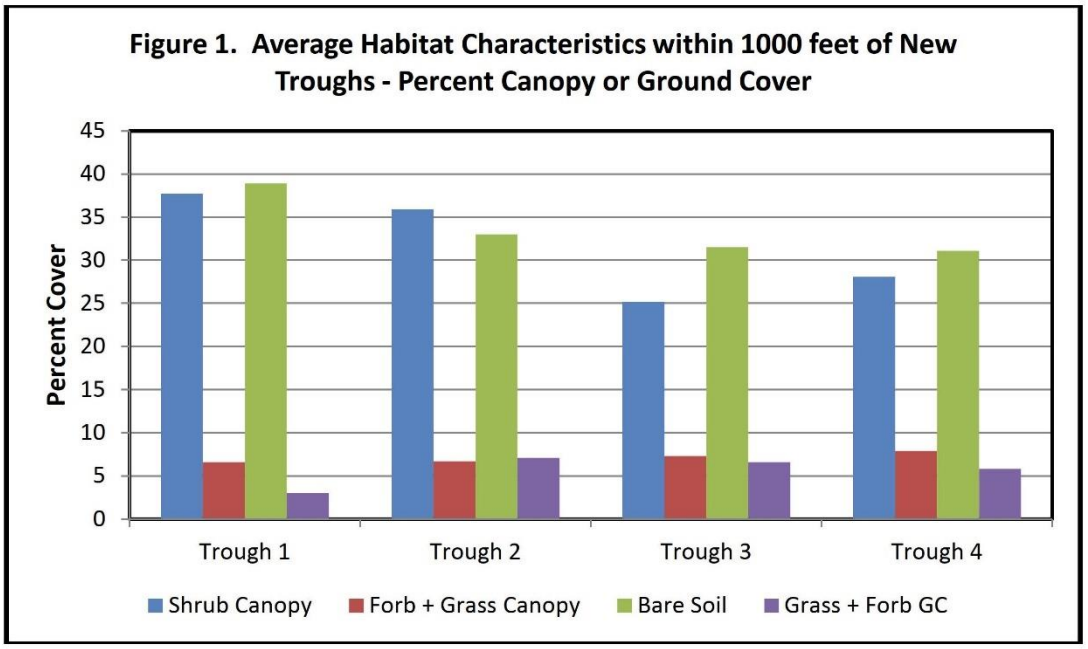
**Table 1. Plant Community Structure v. Distance from Water**

| | Distance from water, miles | | | | |
|---|---|---|---|---|---|
| Parameter | 1/8 | ¼ | ½ | ¾ | 1 |
| Total species (number) | 28 | 32 | 33 | 35 | 39 |
| Green needlegrass (canopy %) | 3 | 6 | 9 | 15 | 18 |
| Needle and Thread (canopy %) | 5 | 5 | 6 | 5 | 12 |
| Blue grama (increaser - canopy %) | 15 | 15 | 12 | 10 | 6 |
| Decreasers (frequency) | 4 | 4 | 6 | 6 | 7 |
| Perennials (frequency) | 21 | 25 | 26 | 27 | 30 |
| Natives (frequency) | 23 | 27 | 28 | 29 | 32 |
| Veg structure (Robel Pole visual obstruction reading) | 2 | 2 | 2 | 4 | 5 |
| Grass Production (lb/acre air dry) | 732 | 1156 | 1181 | 1431 | 2043 |

Measurement of habitat structure on 1000 foot transects leading away from four new water troughs in the Duck Creek allotment in Rich County, Utah three years after the installation of new upland troughs provided the canopy cover of shrubs, forbs, and grasses as well as the ground cover of forbs, grasses, and bare soil. These were compared to adjacent areas which had not been grazed by livestock for at least 30 years. The data is shown in **Figure 1** and is summarized in the following paragraph.

Shrub canopy ranged from 25.2 to 37.7%, forb + grass canopy ranged from 6.6 to 7.9%, bare soil ranged from 31.1 to 38.9% and grass + forb ground cover ranged from 3 to 7.1%. At a long term ungrazed location in the Highway 30 right of way measured in 2012, cover found was 45% shrub canopy, 36% grass + forb canopy, and bare soil was 14%. At the trough locations, grass + forb canopy > 7 inches was near zero, while at the ungrazed site above, grass + forb canopy > 7 inches was 14%. At a second big sagebrush site at a higher elevation in the Highway right of way, in October 2008, shrub canopy was 48%, grass + forb canopy was 60%, with 13% greater than 7" in height, and bare soil was 2%. Clearly, the presence of troughs has affected sage grouse cover, soil cover and habitat structure negatively and severely. The 1,000 foot transects did not reach the full extent of the influence of the troughs but provides validation for the information above indicating that damage from trough influence covers large areas and as, Holechek et al (2001) said, up to a mile from the water source.

the Little Missouri National Grassland, Western North Dakota. 34p. U.S. Forest Service Region I, Missoula, Montana.




A long-term study in the Duck Creek allotment showing upland and riparian utilization, riparian stubble height and stream bank alteration demonstrated that the addition of upland water did not reduce livestock utilization or bank alteration in the riparian areas, while upland use remained high and increased following the installation of the water troughs.[5]

In a study where most of the riparian zone was fenced to exclude livestock, cows, calves, and yearlings selected the riparian zone over the uplands during the summer grazing season. Later in the season, use reversed to favor upland vegetation. Slopes less than 35% were preferred. "Neither salt placement nor alternate water location away from the riparian zone influenced livestock distribution appreciably."[6]

An analysis of range development in East Africa showed that while much effort was expended to assist the Masai with rangeland improvement and developments, "in large measure the results have contributed to long-term deterioration of the range resources, culminating in a catastrophic famine in which most Masai livestock and many Masai died.[7] The history of attempts to develop Masailand provides a classical example of the consequences of rangeland

[5] Carter, J., Catlin, J., Hurwitz, N., Jones, A., and Ratner, J. 2017. Upland Water and Deferred Rotation Effects on Cattle Use in Riparian and Upland Areas. Rangelands 39:112-118.
[6] Bryant L.D. 1982. Response of livestock to riparian zone exclusion. Journal of Range Management 35(6):780 - 785).
[7] Talbot, L.M. 1972. Ecological Consequences of Rangeland Development in Masailand, East Africa In Taghi Farvar and John Milton , editors, The Careless Technology: Ecology and International Development ( Natural History Press, Garden City, New York , 1972)

development when basic ecological principles are overlooked or ineffectively applied." Talbot concluded that:

- Any form of development should be part of a comprehensive resource use program which takes into account the ecology of the people and the area.
- Development actions which remove environmental limitations on livestock numbers (i.e. veterinary activities, predator control, and above all, water development) should be undertaken only when effective substitute controls are assured.
- Without adequate, effective grazing control no range management activities can succeed in the long run.
- Stocking rates should be determined on the basis of range conditions and trend.
- Arid land use should be based on knowledge of the uncertainty and irregularity of precipitation and the likelihood of periodic droughts.
- Development requires that adequate ecological knowledge; appropriate research (which recognizes the periodic wet-dry climatic swings) should be part of any major development project.

A study of vegetation and soil cover was conducted in Grand Staircase Escalante National Monument using satellite imagery and ground truthing. A clear trend of increasing photosynthetic vegetation cover and decreasing bare soil emerged as a function of increasing distance from water.[8]

BLM, in an analysis of a grazing management program in 1978 made several observations regarding the effects of water developments that are relevant today.[9] They concluded that, while water developments may distribute cattle away from riparian areas, their effectiveness may not be significant depending on several factors. These were: (1) the close distance between existing waters and the riparian areas; (2) the attractiveness of the green riparian areas during the summer; (3) conversions or partial conversions to cattle which prefer the wet meadow vegetation; (4) the steep terrain located adjacent to riparian areas and the cattle's tendency to remain in the bottoms; (5) concentration of all the livestock into one-half to one-third of an allotment; and (6) limited reduction of grazing intensity.

A review of the impacts of water developments to wildlife and surrounding plant communities that contains numerous examples is provided.[10] The author's conclusions reflect some of our concerns regarding range management, water developments and outcomes.

> "It is unfortunate that while paper management plans often sound quite plausible- there are no guarantees that the management action will ever be properly implemented at the field

[8] Harris, A.T. and Asner, G.P. 2002. Grazing gradient detection with airborne imaging spectroscopy on a semi-arid rangeland. Journal of Arid Environments 55:391 - 404.
[9] BLM. 1978. Department of Interior Final Environmental Impact Statement Proposed Domestic Livestock Grazing Management Program for the Sandy Area. Wyoming State Office.
[10] Austin, M.L. 2003. Water Developments and Wildlife: Violating the Public Trust. Red Willow Research.

level, or that it will ever result in promised range "improvement." Respected range scientists have recommended many types of management actions over the years- generally designed to maximize livestock production without seriously decimating our rangeland resources. Yet agency management plans calling for water developments and other improvements don't reveal to the public the wide variety of cautions and use recommendations that professional range scientists have also made regarding stocking rates, distances to water, water for wildlife, escapes for wildlife, etc. Nor do management proposals or plans typically (if at all) attempt to identify or adequately analyze the impacts that may result from the construction or implementation of new range "improvements."

Water developments comprise a disproportionate number of the projects that are proposed to alleviate livestock over-use and other range problems- yet often result in transferring the same type of impacts to a new or perhaps previously un-impacted location. Rather than attempt to address stocking rates, suitability or capability issues, sustainability in arid landscapes, and other concerns as recommended by respected range scientists as well as increasingly by ecologists, agencies and permittees alike still rush to fund increased numbers of range "improvements." The conservation community increasingly views these actions as little more than desperate attempts to force rangelands to support uses and levels of uses that natural (and even seeded) habitats are incapable of supporting."

One of the major works that reviews all aspects of livestock grazing and its impacts and is well illustrated is Lynn Jacob's "Waste of the West"[11] This treatise on public lands ranching is available online. He summarizes the effects of water developments as follows:

"Cattle visit stock tanks often. Here they congregate and spend much time, especially during the hot part of the day, lounging about, scratching, chewing cud. Thus, the area immediately surrounding tanks (springs, creeks, etc.) is severely trampled, devoid of ground cover, splattered with urine and littered with excrement. These places are commonly and rightly termed *sacrifice areas*.

The boundaries of sacrifice areas are usually well-defined as the extent of bare dirt around tanks -- commonly a radius of a few dozen yards. As the distance from tanks increases, livestock damage generally decreases, but definite impacts, associated cattle trails especially, are often discernable a mile or more away. A study at the Jornada Experimental Range in New Mexico showed that on un-fenced range where stock tanks were spaced 7 to 11 miles apart, most vegetation was killed within 1 mile of tanks, about half was killed within 2 miles, and the impact was significant more than 4 miles away in all directions. In other words, almost the entire range was significantly affected."

[11] Jacobs, L. 1991. Waste of the West. https://wasteofthewest.info/

Based on these sources, it is apparent that an area of one mile radius (or more) is adversely affected by each water development. This constitutes an area of disturbance per water development of at least 2000 acres in which plant community structure attributes and productivity important to sage grouse and other wildlife species are degraded. This damage from existing and proposed water developments must be evaluated. In addition, disturbance due to livestock grazing and trampling around salt areas, roads and fences must be analyzed. The Forest Wide Range Improvement Project Effects Analysis states that the action of installing new or burying existing pipeline and disturbance from equipment would have an expected temporary impact on vegetation of 61 acres (16-foot path of 31.4 miles of pipeline) and that the expected permanent impact on vegetation would be 31 acres (8 foot path) (p. 7). How will this impact on current vegetation be quantified and what method(s) will the Forest Service use to monitor the regrowth? And what about the impacts to the several thousand acres affected by each water development?

An evaluation of the effects of proximity of water sources to habitat condition was carried out in the Bear River Range in the Caribou Targhee National Forest in the early 2000's.[12] The Bear River Range in the Caribou-Targhee and Wasatch-Cache National Forests in SE Idaho and NE Utah is a critical part of the Yellowstone to Uintas Connection. It is the place where the last grizzly bear, Old Ephraim, was killed in 1923 near Logan, Utah. You will not find grizzly bears here today.[13] The Bear River Range portion of the Corridor also has huge problems with habitat fragmentation by roads and extractive uses. The Caribou National Forest Revised Forest Plan in its FEIS admitted that road densities are excessive in the Bear River Range, yet they do not address this problem, instead they expand roads with each additional project, while user-created roads and trails continue to proliferate. It is critical that the Ashley NF analyze habitat fragmentation in its NEPA process.

The Bear River Range was where we first became aware of the ecological damage inflicted by livestock (sheep and cattle) permitted to graze on our National Forests. The Forest Service deflects around the damage due to political pressure and inherent conflicts.[14] [15] They conflate livestock with elk and deer by using the term, "ungulates" to describe them while it is the cattle and sheep that are the major consumers of plants and browsers of aspen shoots. [16]

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[12] Chard, B., Chard, J., and J. Carter. 2002. Assessment of Habitat Conditions Bear River Range Caribou National Forest, Idaho. https://app.box.com/s/ad8412aa500005c761d6

[13] Arave, L. Old Ephraim: Utah's most legendary bear. Standard-Examiner. Ogden, Utah. July 16, 2015.

[14] Hudak, M. 2013. Western Turf Wars the Politics of Public Lands Ranching. Biome Books, Binghamton, New York. 416p

[15] Ketcham, C. 2019. This Land: How Cowboys, Capitalism, and Corruption are Ruining the American West. Viking Press, New York. 432 p.

[16] Ratner, J.R., E.M. Molvar, T.K. Meek, and J.G. Carter. 2019. What's eating the Pando Clone? Two weeks of cattle grazing decimates the understory of Pando and adjacent aspen groves. Hailey, ID: Western Watersheds Project, 33 pp.

**Figure 2. Aspen stands in the Bear River Range have lost their understory vegetation, soils are bare and weeds increasing in these cattle and sheep grazed aspen stands near water troughs. The stand in the lower photo is being lost with only a handful of trees left. It is in a riparian/meadow area. Photos by John Carter.**

**Figure 3. Aspen stand on Kiesha's Preserve in the Bear River Range, where livestock have been excluded. This stand has complete ground cover, a healthy herbaceous plant community and is regenerating after livestock were removed years earlier. Photo by John Carter.**

**Figure 4. Upper and right photos of a grazed riparian area in the Bear River Range - soils are barren, there is no stream shading from shrubs or trees, only weeds survive, and the streambed is covered in sediment. At left is a recovering riparian area on Kiesha's Preserve in the Bear River Range where livestock were removed years earlier. This stream has a complete cover of grasses and flowers, clean substrate and shading from trees and shrubs. Upper photos by Brandon Chard. Lower photo by John Carter.**

Streams with barren banks are polluted with E. coli, sediment, and manure. Aspen stands lack recruitment, their understories are reduced to bare dirt, and they eventually die off, or they are dominated by conifers as the grazing promotes accelerated conifer recruitment by eliminating the grasses, flowers and aspen that would provide ground cover and competition for conifer seedlings.

Beginning in the 1980's and in the years since, we have documented the problems in this mountain range and its habitat from livestock grazing and logging. In the 1990's the Forest Service was assessing conditions in Region 4 National Forests, which includes the Bear River Range and also the Ashley NF. At the time, they acknowledged that vegetation and habitat had suffered large departures from potential conditions for aspen, conifer, sagebrush/grasslands, riparian, and wetland areas. They found livestock grazing and past timber harvest were a fundamental cause leading to these departures, yet we saw no effort to address these causes as these practices have continued. As a result, we began to characterize and report on the impacts.[17]

Using the Forest Service characteristics that defined healthy vegetation communities such as forest structural stages and understory plant communities, in 2001 we assessed 310 locations in livestock-accessible areas in the Idaho portion of the Bear River Range. These were generally within one mile of water sources and in areas with less than 30% slope, considered "capable" for livestock. At each location we applied Forest Service criteria for Proper Functioning Condition (PFC) of the plant communities and habitats. Of these, only 53, or 17% were properly functioning, which does not mean they were at potential or not degraded to some extent, they meet minimal criteria for function as defined by the Forest Service.

**Table 2. Results of Bear River Range PFC Assessments**

| Habitat type | Number of locations | Number in PFC | Percent in PFC |
|---|---|---|---|
| Aspen forest | 71 | 17 | 24% |
| Conifer forest | 68 | 14 | 21% |
| Forb meadow | 44 | 2 | 4.5% |
| Sage – grass | 73 | 8 | 11% |
| Riparian | 54 | 12 | 22% |

[17] Chard, B., Chard, J., and J. Carter. 2002. Assessment of Habitat Conditions Bear River Range Caribou National Forest, Idaho. https://app.box.com/s/ad8412aa500005c761d6

We measured habitat structure and ground cover (vegetation, litter, rocks, mosses) at 55 locations in forest openings in sagebrush/grasslands and tall forb communities, finding that bare soil was dominant, averaging over 50%. Potential ground cover is over 90% and in most habitats near 100%. In the Utah portion of the Bear River Range, we conducted additional surveys over time. We compared ground cover in locations grazed by livestock and protected areas that were not grazed by livestock. Ground cover was less than 50% in those areas grazed by cattle or sheep. When we grouped the sites by management type, forested areas that were logged and grazed had only 60% ground cover, while forest openings in sagebrush/grassland were lowest at 40% ground cover. Ground cover in un-grazed controls was over 90%. In the logged and grazed areas, woody debris made up the difference. This loss of ground cover has implications for watersheds in that greater bare soil leads to accelerated erosion, loss of infiltration and ground water recharge, more rapid runoff and flooding, and stream flow depletion in summer. With these losses come reductions in stored carbon.

These allotments all contained large numbers of stock ponds and water troughs for livestock, a proposition the Forest Service promotes time after time as a solution to overgrazing, rather than reducing stocking rates. In one allotment alone, there were 130 stock ponds and water troughs, and these are the degraded conditions we found. These water developments for livestock did not improve conditions, but instead spread the degradation to areas that might have been spared as Holechek et al (2001) had indicated. We looked further at the impacts of these water sources by sampling areas at different distances from the water source, finding that sites closer to water were more heavily grazed (less ground cover) and had lower soil carbon, nitrogen and reduced litter depth when compared to sites with lesser or no grazing. The grazed sites also had lost most of the mycorrhizal fungi layer which is fundamental to nutrient cycling.[18] A current paper reports decreases in soil pore space, increased soil bulk density, altered invertebrate community, and C:N ratio degraded by livestock grazing and trampling.[19]

The previous summary shows that ecosystems are seriously degraded within a mile of water due to livestock concentrations. Ground cover declines, plant productivity declines, and habitats are degraded. The EA and Specialists' Reports do not address the effects on plant production that occurs within the zone of influence of water developments, fences, and salt or mineral supplement locations. Yet, they claim compliance with NFMA and MUSYA which definitively address the loss of productivity. EA states "Detrimental soil disturbance will mainly be short-term and related to installment of range improvements. Long-term disturbance to soil resources will be areas where utilization by livestock is concentrated and on-going, and microsites where machine use displaced soil." (p.18). The area of disturbance is not

[18] Carter, J., Chard, B., and J. Chard. 2011. Moderating livestock grazing effects on plant productivity, nitrogen, and carbon storage. In Monaco, T.A. et al. comps. 2011. Proceedings – Threats to Shrubland Ecosystem Integrity; 2010 May 18-20; Logan, UT. Natural Resources and Environmental Issues, Volume XVII. S.J. and Jessie E. Quinney Natural Resources Research Library, Logan Utah, USA.

[19] Proesmans et al. 2022. Long-term cattle grazing shifts the ecological state of forest soils. Ecology and Evolution https://doi.org/10.1002/ece3.8786.

characterized. The EA and Range Improvement Project Effects Analysis claim watersheds are not impaired, yet the Hydrology Report shows that at least half are impaired, but in no case do these reports actually provide analysis of the plants, soils and habitats (species, cover, productivity) within the one-mile zone of influence defined by the studies we have cited herein.

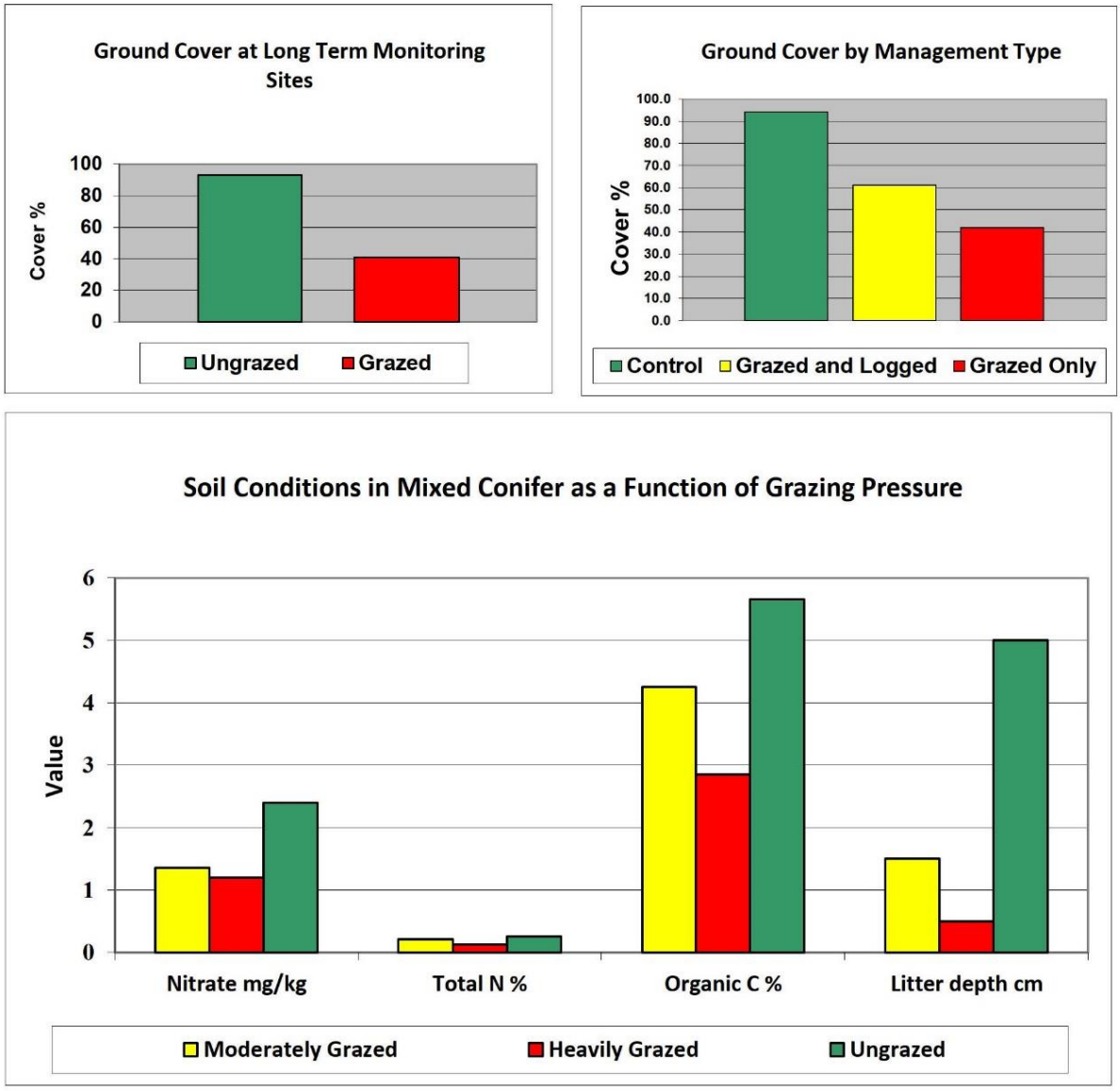


**Figure 5. Bear River Range - Ground Cover and Soil Properties at Grazed and Ungrazed Sites.**

The Forest Wide Range Improvement Project Effects Analysis states that the proposed project is designed to improve livestock distribution and management. Effects to livestock grazing, livestock management, and overall range management are expected to be positive (p. 2). The reliance on project design, Adaptive Management and BMPs without specific targets and

quantitative monitoring with defined response actions is a flawed approach that assumes they work. There are no reliable data provided showing that these are effective in protecting aquatic, or other resources.

The reliance on BMPs or adaptive management, design criteria, or condition based management are flawed because it is assumed they work. We see little evidence the effectiveness of these is monitored by actual data collection. In our work in the Caribou National Forest, in the Pocatello allotment with over 100 water developments, streams remained polluted with E. coli, nutrients and sediment from livestock grazing, aspen recruitment was eliminated, stream banks were sheared and eroding from livestock trampling.[20] [21] [22] This was documented by Idaho DEQ for decades and yet, management has allowed it to continue. Ziemer and Lisle (1993)[23] indicated that there are no reliable data showing that BMPs are cumulatively effective in protecting aquatic resources. Espinosa et al. (1997)[24] provided evidence from case histories in Idaho that BMPs thoroughly failed to cumulatively protect salmonid habitats and streams from severe damage from roads and logging. In analyses of case histories of resource degradation by stereotypical land management (logging, grazing, mining, roads) several researchers have concluded that BMP's increased watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMP's (Stanford and Ward, 1993[25], Rhodes et al., 1994[26] Espinosa et al., 1997). Stanford and Ward (1992) termed this phenomenon the *"illusion of technique."*

**4. The Forest Plan**

The following points are from the 1986 Ashley National Forest Plan. Page numbers for the excerpts are provided in parentheses. Our comments regarding each are highlighted. This does not mean other Forest Plan requirements are not applicable. Each of these comments

[20] Carter, J. 2014. Comments - DEIS for Pocatello, Midnight, and Michaud Range Allotment Management Plan. https://app.box.com/s/lsc4cjahowhh87pewqq4

[21] Carter, J. 2013. E. coli Survey Mink Creek and Gibson Jack Creek Caribou National Forest. https://app.box.com/s/881b0bw9osu1xgyqz3dq

[22] Ertz, N. 2017. Continuing Water Quality Issues in Pocatello Allotments. https://app.box.com/s/w2yj9l2wfye1th5qkjoydxqk5m6212kh

[23] Ziemer, R.R., and T.E. Lisle. 1993. Evaluating sediment production by activities related to forest uses--A Northwest Perspective. Proceedings: Technical Workshop on Sediments, Feb. 1992, Corvallis, Oregon. pp. 71-74.

[24] Espinosa, F.A., Rhodes, J.J. and D.A. McCullough. 1997. The failure of existing plans to protect salmon habitat on the Clearwater National Forest in Idaho. J. Env. Management 49(2):205-230.

[25] Stanford, J.A., and J.V. Ward., 1992. Management of aquatic resources in large catchments: Recognizing interactions between ecosystem connectivity and environmental disturbance. Watershed Management: Balancing Sustainability and Environmental Change, pp. 91-124, Springer Verlag, New York.

[26] Rhodes, J.J., Espinosa, F.A., and C. Huntington. 1994. Watershed and Aquatic Habitat Response to the 95-96 Storm and Flood in the Tucannon Basin, Washington and the Lochsa Basin, Idaho. Final Report to Bonneville Power Administration, Portland, Or.

should be addressed in an analysis of Direct, Indirect and Cumulative Effects for the Project area and a designated Cumulative Effects Area (CEA). All Forest Plan proposed monitoring should be analyzed as to whether it occurred, to what extent it occurred, what the results were, and how Ashley NF actions affected the results. This should be incorporated into the Project and CEA analysis. We note the EA for the proposed project has not designated a CEA, only the 25 allotments which include 471,719 acres are defined as the Project Area. Cumulative effects can also occur outside the project area for wildlife that range over wider areas such as lynx, wolverine, big game, sage grouse, Monarch butterflies, and others. In addition, watershed effects and alteration of stream flows are realized downstream. In this case, water pollution by nutrients, sediment and bacteria can flow downstream outside the project boundaries and create impacts miles downstream. The change in timing and flow rates from altered watershed condition and soil infiltration rates can change the hydrology downstream and impact species such as the T&E fish species in the Colorado River. Forest Plan statements are shown with bullet points.

- Projects are tiered to the Forest Plan EIS and the local project environmental analysis will use the data and evaluations in the Plan and EIS as its basis. (pI - 2).

The EA failed to provide this analysis and place it in the context of the Forest Plan and its EIS. The analysis should have presented the baseline as established in these documents, compare it to the current situation and explain any differences. For example, how many acres of aspen occur in the project area? What are the characteristics of these stands today? The Forest Plan in Table II-3 lists 66,351 acres of aspen with most in mature and old-growth stages that occur within the Ashley NF.

- Declining budgets have resulted in declines in facilities and will result in increases in soil and vegetation loss if increases in use continue. The trail system is in poor condition due to lack of maintenance. (pII-5). Cultural resource surveys have been conducted on 16,660 acres. (pII-6)

This statement from the Forest Plan establishes that degraded facilities, soils, and vegetation conditions were occurring at the time of the Forest Plan. Insufficient funding was described as a cause. It is important to analyze the current condition and report whether actions since the Plan adoption have reversed these trends and how the proposed Project relates to those trends. What is the current extent of cultural resources identified on the Forest? The Forest Plan indicated a small percentage of the Forest had been surveyed. The EA (p8) claims the cultural resources reviews and "design features" are "consistent" with NFMA and the Forest Plan. The EA (p15) also noted surveys of 543 acres were accomplished with 9 additional sites found and that a second survey of alternate routes would be conducted. The EA did not describe the sites. "Project design would avoid or mitigate any potential direct, indirect, or cumulative effects. The proposed action would result in zero historic properties being adversely affected. Section 106 Review has been completed and National Register eligible cultural sites are located within the project area. Modifications can avoid/protect cultural resources."

We are left wondering what cultural, archeological, and paleontological sites could or should occur in the Ashley NF, their history, their distribution across the Forest, how many acres have been surveyed, what effects have accrued to these because of all Forest activities listed above, for example, roads, trails, timber projects, livestock grazing and its infrastructure. One could project that if 9 sites were found in the 543-acre survey area, then the 417,719 acre project area could potentially contain 868 sites if the same proportion applies, which is of course a guess but at least presents an idea of the possibilities based on this one sample.

- There were no Research Natural Areas on the Forest, but potential areas were identified. (pII-6). The Wilderness inventory found 13 roadless areas totaling 715,405 acres across the Forest. (pII-7).

The EA (p7) notes that the projects are in special management areas, including IRAs and the Ashley Karst Recreation Area, but outside the High Uintas Wilderness. EA Table 11 notes that the project area falls within portions of 8 IRAs and that the project would "maintain or enhance Roadless Characteristics including soil, water, and air resources by improving livestock distribution and rangeland health." This statement pretty much exemplifies a total lack of analysis and is clearly a false claim with no basis in fact. None of the characteristics of the IRAs or the Karst area are described and there is no analysis of the current condition of these IRAs and how the activities in the Ashley NF have affected these characteristics. Roads, logging, illegal user created roads and trails, dispersed campsites, livestock grazing, trampling and infrastructure and other activities only degrade roadless characteristics. Plant communities and wildlife habitat (security) are a couple inherent characteristics. What is their current condition and degree of fragmentation? Productivity? What about the aesthetic characteristics that are degraded by livestock, manure, and flies? Water pollution in the streams, springs, and wetlands?

An update to the inventory and reporting on the fate of those 715,405 roadless acres should be provided. Were IRAs added or dropped? Where were these IRAs in 1986 as opposed to now? What is the extent of NRAs today? Do they represent reference landscapes and plant communities where human activities have not interfered with their structural and functional attributes? What are the management protocols, standards, and guidelines for any NRAs that have been established? What are their current conditions? How will this Project affect any current or potential IRAs occurring within the Project Area? The EA (p15) cites the 2001 Roadless Rule as applicable law, among several other laws. What are the provisions of the 2001 Roadless Rule that apply and how does the current state of these IRAs comply with that rule?

- There are a diversity of fish and wildlife on the Forest with special habitat needs and distinct habitats important to different groups. There are specific habitat requirements for most groups. Indicator species will be monitored due to sensitivity to management actions. Fire suppression has allowed plant communities to reach maturity with fuel buildup and conifer advances. (pII-8).

The habitat needs and extent of special status species (TES and MIS) should be delineated and mapped, showing the extent of current and potential habitat. Population trends for these should also be provided in the analysis to determine whether NFMA viability is being attained across the Forest and what the current population status is as compared to carrying capacity. Address capability and suitability for each species' habitats. In our notes on the specialists' reports at the end of these comments, we summarize the issues and lack of analysis of habitats and populations potentially affected. Suffice it to say, there is a lack of data and site-specific analysis, and the reports and EA deflect to regulations and design criteria without any assurance these have preserved species viability across the Forest. The lack of analysis and data makes the claims of "no effect" arbitrary and capricious. Reliance on BMPs and design criteria, or condition-based management are flawed and without specific monitoring and effectiveness determinations. Given the 1,728 range improvements, the numerous roads, trails, logging, livestock grazing and trampling, and other activities that have been occurring in the Forest, there has been ample opportunity for the Forest Service to monitor and analyze the effectiveness of its approach, produce that analysis and monitoring data in this NEPA process. It has not done so and has not taken the required hard look under NEPA.

- There are 455,285 acres of suitable acres within range allotments. (pII-9). The allotments are managed to capacity. The Forest has constructed many water developments and fences to improve livestock distribution and revegetated several thousand acres that could not be restored through grazing systems alone. (pII-10).

The EA (p7) describes 54,264 head months grazing the project area, but it does not disclose the number of capable and suitable acres occurring in the project area. This amounts to an approximate forage demand of (54,264 HM x 1,532 lbs forage per cow/calf = 83,132,448 lbs).[27] The capable acres on the allotments must be used to determine whether each allotment can support the numbers permitted and length of grazing season. When a sustainable utilization rate of 25% is applied, then the needed forage available would be four times the demand, or 332,529,792 lbs. This amounts to 704 lbs/acre of desirable forage across the entire project area and a much greater amount for the capable acres. This must be analyzed, while also updating the capable acreage to reflect current regional criteria (see in a later section). It is highly unlikely that after decades of livestock grazing these allotments and the degraded condition of watersheds described in the specialists' reports, that capacity exists to support the authorized or permitted numbers.

The current grazing allotments occurring within the Project area need to be mapped and disclosed relative to the locations of fences, water developments, riparian areas, and proximity to aspen. The suitability of these allotments was determined decades before the 1986 Forest Plan. An updated capability and stocking rate analysis reflecting current Forest Service regional criteria must be done so that stocking rates are brought into line with current carrying

[27] Carter,J. 2016. Updating the Animal Unit Month. https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk

capacity. See comments relating to livestock grazing in a later section. The impacts of these water developments on surrounding vegetation and soils needs to be analyzed and the results of the treatment of those several thousand acres of vegetation reported. What are the conditions today compared to the conditions that created the need for restoration? What are the conditions of aspen that have resulted from installing water developments and because of sheep bedding in aspen stands? Map the locations and provide data showing these changes. Identify whether these are in the Project Area.

- Table II-3 provides a summary of Timber types by acres on the ANF by age class that existed at the time of the Forest Plan. It also provides land classification and suitability for timber harvest. The Preferred Alternative provided planned timber sale quantities over the next three decades, with a long term sustained yield of 6.3 million MMCF. (pII-11).

The Forest Wide Range Improvement Silviculture Report states, "Currently, 5.1% of the management area is in old growth retention forest-wide (USDA 2004, USDA 2012, USDA 2021). No proposed range line features (fences) overlap old growth in retention, so no analysis of effects to old growth in retention is needed". In later sections of these comments, we discuss livestock grazing effects on aspen and conifer which degrade aspen by loss of recruitment, accelerated conifer invasion, alter understory composition, and degrade conifer by creating imbalances in structural stand stages. There is no analysis of current conditions of conifer and aspen in the project area and whether they are in DFC or meet old growth requirements. Use of the term, "management area" above is confusing, in that there are Forest Management Areas where DFCs should have been developed and described in the Forest Plan. What is the state of the Forest Management Area DFCs in the project area? What is the extent of past timber projects, vegetation treatments and their influence on the current vs potential forest condition? Forest cover types and their status relative to old growth, mature and younger age classes should be disclosed for the Project Area. How have these changed since the Forest Plan? What areas have been logged or treated in various ways and what are the results of those treatments? There is a failure to disclose condition and trend of the forest types, past and ongoing impacts resulting in current conditions. It is this lack of analysis and accountability that makes this condition based management unacceptable.

- The primary sources of water pollution on the Forest include grazing, logging, construction for the CUP, roads, and maintenance. (pII-14).

The Hydrology Effects Analysis, in relation to the Clean Water Act, states that none of the streams in the project area are listed by the State of Utah as sediment impaired. (p6). There was no mention of E.coli and nutrient pollution which are likely to be elevated, affect habitat and recreational use and are directly related to the presence of livestock.[28] With livestock grazing in the 25 allotments, it is certain that there are water quality issues, it is just that the Ashley NF

[28] Carter, J. 2012. Livestock and Water Quality. Yellowstone to Uintas Connection. https://app.box.com/s/d77e4fcf844ff0eabdf9

does not monitor for E.coli and nutrients, instead leaving this to the State of Utah. So, most of the Forest is not monitored which allows this pollution to go undocumented and used to claim there are no effects when there clearly are. Livestock effects on water quality are discussed in a later section of these comments.

The EA (p17) states, " Water quality (sediment) may currently be slightly impacted by current grazing practices, but the majority of the project areas are upland and are not directly connected to perennial stream channels. Project design, including design features, and best management practices will reduce or eliminate impacts to water quality. No adverse effects to water quality are expected as a result of implementation of this project." This statement avoids what is known about livestock effects to water quality and stream habitat which we discuss in later sections. The apparent absence of monitoring data is used to claim there are no water quality issues with over 54,000 head months of livestock defecating in and adjacent to all accessible streams, springs and wetlands which are preferred by cattle. This is in addition to their trampling and streambank damage, upland watershed impairment that leads to accelerated erosion and sediment deposition. The claim also ignores that streams have a direct connection to their watersheds and are affected by overland flow, groundwater depletion, or altered watershed function.

The EA relies on water quality data from 2017 as the most recent and only accounts for sediment. A quick search on the EPA's 'How's My Waterway' shows that their assessment of the quantity of waters listed as impaired are outdated. "According to the Watershed Condition Classification (WCC,) slightly more than half of the watersheds are functioning properly relative to the water quantity indicator. The remaining roughly half are evenly split between functioning at-risk or at impaired function, with the concern primarily centered on flow characteristics. Roughly 20 percent of the watersheds are listed as either functioning at risk or impaired function relative to the water quality indicator, due to un-listed and listed water quality segments (USDA 2017)". Hydrology Effects Analysis (p. 6).

"Any increases in sediment and impact to water quality as a result of project activities is expected to be temporary and undetectable." (Aquatic Species Effects Analysis p 4). This statement only refers to sediment from construction of project footprint, and not of livestock grazing over the thousands of acres affected. "Habitat surveys completed on Timber Creek during the summer of 2019 (post-fire) indicate good habitat conditions in the upper reaches of Timber Creek including low levels of surface fines and sediment within stream riffle gravel substrates. The lower reaches, downstream of Water Hollow to the northern Forest boundary, have been impacted by debris flows from the burned upland areas associated with the Dollar Ridge fire." (Aquatic Species Effects Analysis p6).

Provide an analysis of the current water quality status in the Project Area with a summary of data types collected for each affected stream, the results, and what actions were taken to bring exceedances in compliance with water quality criteria. Sediment loads affect spawning areas for cutthroat trout should have been monitored. Have spawning areas been monitored for

sediment fines? What are the results and what measures were taken to correct excessive fines in these areas?

It is stated that this this project will reduce sediment fines, but it doesn't address reducing livestock, which should have been analyzed in an alternative. The Aquatic Species Effects Analysis (p7) states, "By achieving this with the proposed range improvements, the result will actually lead or trend to improved aquatic habitat conditions in the short, mid, and long-range time frame. This is accomplished specifically by relocating water for permitted livestock away from the streambanks where grazing can have negative impacts from overgrazing or trampling of streambanks. Proposed fences can also direct livestock away from sensitive riparian areas. Water pipelines provide for a more efficient and timely delivery of water to desired destinations which could also lead to better instream conditions. Cattleguards control livestock movement and in combination with unit/allotment fences keep livestock where they should be at various times during the grazing season."

We have cited references herein showing that cattle prefer areas near streams and in lower gradient areas, i.e. valleys through which streams flow. These areas have water, shade and are generally high in forage production. The references we provide such as Carter et al 2017 show that upland water and grazing systems do not reduce cattle effects in riparian areas. In addition, we have been observing cattle trespass in the Burnt Fork area for years with cattle coming from the Ashley NF. This is discussed in another section.

- Soils with seasonally or permanently high-water table occur on the Forest. They contain some of the more productive timber stands. These soils need to be recognized as a special situation in road construction, timber sale layout, and any other management practice that involves disturbance to the area. (pII-20).

These soils should be mapped and their extent in the Project Area compared to the locations of the proposed project elements and the extent of expanded livestock concentrations. These areas should be avoided, and a site-specific plan developed to ensure they are.

- Fire management policy requires suppression of wildfires. (pII-22).

An analysis of the occurrence of wildfire history, acres and forest types burned should be analyzed and mapped. Annual trends should be provided. Maps of prior burned areas need to be developed and overlain with the proposed project to ascertain what, if any effects resulted with emphasis on aspen stands. Aspen recruitment in those burned stands should be analyzed and this should be used to determine if management, including livestock grazing has adversely affected recruitment and age class distribution in these affected stands.

- Research needs were identified, including: (1) determination of habitat types, land productivity, and the influence of land management on this productivity; (2) determine the effect of management activities on soil characteristics and vegetative productivity; (3)

determine factors limiting vegetative productivity in high meadows; (4) determine limits of acceptable change in heavily used recreation areas in the High Uinta Mountains Wilderness; (5) set up needed control areas thru evaluation and designation of Research Natural Areas. (pII-28).

The EA should have summarized the research as it is essential to know the elements described to determine the effects of management. Provide analysis of the outcomes of this research, an identification of control areas and exclosures and how current conditions compare to these reference areas. Discuss this research and discuss its applicability to the proposed Project.

- Road closures for protection of wildlife and watershed resources will be determined on a case-by-case basis during project level planning. (pIII-2).

In other sections of these comments, we discuss road density issues concerning wildlife. Identify roads that have been or are planned to be closed in the Project Area and CEA to decrease habitat fragmentation and increase habitat capability for special status species and their connections to other habitats. What are the road and trail density in the project area? This should include all classes of road and trail and include illegal, user created roads and trails. Report on road closures, road effects to security habitat, special status species habitat, migration corridors and show proximity to streams to evaluate sediment delivery to streams.

- Indicator species will be monitored to assure habitat diversity is maintained. Maintenance of critical habitat for all species will be given high priority. (pIII-3).

Provide analysis of this monitoring data, a definition of what is considered "critical habitat" and the status of this "critical habitat" as to its capability for the species of interest. Map these habitats and show the distribution of past and proposed "range improvements", summarize all monitoring data and evaluate the effectiveness of these "improvements" to habitat for all special status species. Also overlay roads, trails, timber harvest, prescribed fire, wildfire, vegetation treatment and analyze the effect of these features to habitat connectivity and habitat capability for each special status species. Our comments regarding the special status species are provided at the end of these comments and address each BA and BE.

- Recreation demand is expected to be met for five decades, while wilderness will be at capacity in decade two. (p(III-3). Use of Tread Lightly and ORV closures should continue. (pIII-4).

The Roadless Briefing Paper (p3) describes the project footprint as "approximately 171 acres of temporary disturbance and permanently occupying 121 acres". The Recreation Effects Analysis (p9), “The physical footprint of the FWRIP sites are spatially limited to a negligible portion of the overall recreation area, less than 1%, with minimal impacts to ROS natural setting, visitor experience, and visitor activities.” These analyses do not address the continued impacts on hunting, hiking, and aesthetics by the expanded livestock presence and competition with

wildlife, manure spread across the landscape, and aesthetic degradation. The construction footprint for the proposed range improvements is only part of the equation. Livestock increasing across thousands of acres because of these planned developments is also an impact, but not analyzed. An analysis of total road and trail density by Management Area, Watershed, IRA, and Allotment needs to be completed. Suitable distance buffers to account for noise and disturbance should be incorporated to evaluate fragmentation of habitats, LAUs, IRAs, Wilderness so the disturbance is quantified by area affected.

Because of the limited extent of wilderness and the large size of the IRAs included in this Project, an analysis should report the status of the unroaded portions of these to reveal whether they have retained roadless character. Included in this analysis should be all roads, trails, motorized access routes to maintain fences, water developments. Roads and trails that are user created should also be included. Map and analyze the road density at the time of the Forest Plan and the current density of all classes of road and trail, as described. Have these proliferated? Have illegal or user created ones been closed and reclaimed? What has been the outcome of this program on wildlife security habitat?

- The Forest has been divided into 14 management zones. (pIV-2ff).

Mapping technology has improved since the time of the Forest Plan. It is impossible to compare the Project Area, individual IRAs, and treatment areas with the management zones, allotment boundaries and what goals, objectives, standards, desired conditions exist. A mapping analysis should be done to make these comparisons and then analyze each set of prescriptions applicable to each, how the past range improvements, the current proposal, and other activities such as roads, trails, timber harvest have affected and comply with objectives, desired conditions etc. Classifications such as RNA candidates, proposed wilderness, IRAs, wildlife habitat emphasis are important to explore as to the extent of these areas that have been identified and how their prescriptions have been effective in achieving habitat goals.

- Goals, objectives, standards, and guidelines by management zone. (pIV-14ff). Roads and trails obliterated to meet objectives. (pIV-15).

Define all management zones for the Project area and map those. Analyze the applicability of the goals, objectives, standards, and guidelines for the project area. Report on the trends in habitat and other uses and whether the applicable standards and guidelines have been met. For example, have roads and trails been obliterated to meet objectives? If so, where and to what extent? What is the extent of open roads and trails, temporary roads, administrative roads, illegal or user created roads and trails? Forest monitoring should have generated this data and the public should see it.

- Manage fish and wildlife habitat to maintain diversity and productivity. Develop and implement habitat management plans that will include key ecosystems and maintain habitat for supporting TES plant and animal species and MIS. (pIV-28). Standards and guidelines

call for: providing habitat capable of supporting a minimum of 5,600 elk and 43,700 deer; evaluate and update aspen management plans every five years; maintain wildlife cover within 100 feet of forest openings; maintain down woody material and snags for wildlife as specified; complete management plans for riparian, aspen and old-growth; identify and manage habitats capable of supporting self-sustaining trout populations; identify and map elk calving areas, deer and antelope fawning areas, sage grouse strutting and nesting areas for assessing cumulative impact; designate and protect old growth areas for dependent species; old-growth should be a minimum of 160 contiguous acres and have old-growth characteristics. (pIV-28 to IV-29).

Since the proposed project and most other projects we review recently rely on "design criteria" or BMPs, it is critical that the Ashley NF address what the Forest Plan is requiring here. What is the status of each of the efforts described? What is the condition of each attribute described? How has management affected current conditions? The analysis for the Project Area and CEA should identify and map these habitats and disclose their current capability and condition for the special status species. Describe all plans and reports generated pursuant to this section and the results of those plans and reports and how they reflect on conditions in the Project Area and CEA and apply specifically to the individual allotments, how the 1,728 existing range improvements and their associated livestock grazing, timber harvest, wildfire, prescribed fire, aspen treatments have affected these attributes. None of this is provided in the specialists' reports or the EA.

- Develop the species/habitat relationships of fish and wildlife. Standards and guidelines include: complete inventory of MIS to determine their occurrence, abundance, distribution, habitat requirements, and population trends; establish and maintain thermal and security habitat needs to meet Forest's big game and MIS habitat objectives; manage Bear Top Mountain giving preference to bighorn sheep; maintain all streams for a biotic condition index (BDI) of 75 or above and a habitat condition index (HCI) of 42 or above; complete aquatic inventories of all streams. (pIV-29 to IV-30).

None of this is presented in the analysis provided in the EA or specialists reports. We have provided comments on the specialists' reports at the end of these comments. There are no maps, data, population or habitat trends and relationships. None of this is provided on a site-specific basis, whether it's by Management Area, Watershed, or Allotment etc. Analyze whether these have been done, map the habitats, report on their condition and the population trends. Compare these to the Project Area and CEA and within each affected allotment.

- Manage the habitat of all TES plant and animal species to maintain or enhance their status. Standards and guidelines include: resource management activities will be allowed if they do not adversely affect any TES species; complete inventory of sensitive plant and animal species on the Forest to determine their occurrence, abundance, distribution, habitat requirements, and distribution. (pIV-30 to IV-31).

If this has been done, it is not reported or analyzed in the EA or specialists' reports. Report on these requirements as to their status and provide an analysis showing the inventories, occurrence, abundance, distribution, habitats required. These should be mapped showing the habitats and occurrence for each species. Report on their population trends and current habitat capability. It is important to identify why the habitat for Canada lynx and wolverine are considered marginal or non-existent across the Project Area by comparing current and potential (absent disturbance) habitat conditions to their needs. We have commented on the special status species at the end of this set of comments, pointing out the failures of the EA and specialists' reports to address habitats and populations on any site-specific basis. While the Aquatic Species BA/BE cites the Forest Service Manual relating to viability, there is no site specific analysis or population trend data to show their true status, where habitat has already been compromised or the current conditions of all habitats. Are LAUs intact, fragmented? To what extent and by what actions?

- Achieve satisfactory ecological condition on all rangelands. Maintain or obtain plant diversity to meet NFMA. Maintain or improve all range in a fair or better condition class. Prepare and implement an allotment management plan for each allotment. (pIV-32).

The terms, "satisfactory ecological condition, fair or better condition class" need to be defined with measurable parameters. This should be carried forward in the EA. As we pointed out earlier, the Scoping Letter for this proposal stated that "condition and trend" were factors leading to the need for the project. Yet, with AMPs apparently in place for each of the 25 allotments in the project area, there are no details provided as to the requirements of these, and no summary or analysis of monitoring data for each. Report on the requirements of these AMPs, current range condition, and trend data (upland and riparian) for all allotments in the Project Area and CEA. We have commented on the failures of the EA and specialists' reports to quantify range conditions, plant diversity, ecological status relative to potential and updating stocking rates to current forage consumption rates, update capability determinations to reflect current forage production on capable lands and provide analysis of monitoring data for utilization, stubble height, trend, and stream habitats. We note that "fair" condition is 26 - 50% of potential, or a degraded state. (See Dyksterhuis reference).

- Optimize wood fiber production to meet public demands consistent with other resource objectives and environmental constraints. Standards and guidelines include maintenance of wildlife habitat and maintain down materials of 2 to 4 tons per acre for wildlife habitat or 30% of slash from clearcuts. (pIV-34 to IV-36).

As for other management objectives, analyze compliance with each standard and guideline for the proposed Project.

- Soil, water and air standards and guidelines include: complete order three soil survey for the Forest; obtain at least 80% of original ground cover within 5 years of project completion; stabilize road corridors and control road use to reduce soil erosion. (pIV-39).

Has the soil survey been completed? Report monitoring results for past projects in the Project Area and CEA showing the attainment of the ground cover requirement. This should be done for each allotment. Map the soils in the Project Area and CEA and for each affected area show the soils affected and the soil survey requirements applicable to uses for each soil type.

EA (p18) claims that the project will maintain or improve soil quality but provides no quantitative methods to demonstrate that such is the case from past management actions, while claiming limited impacts only to the physical area of construction disturbance. " Impacts from construction and the use of range developments will be limited areas of soil compaction, soil displacement, and accelerated soil erosion. Detrimental soil disturbance will mainly be short-term and related to installment of range improvements. Long-term disturbance to soil resources will be areas where utilization by livestock is concentrated and on-going, and microsites where machine use displaced soil. The quality of soil resources is expected to improve from the proposed range improvements that are planned to protect springs, streams, and meadows, and to better distribute and control livestock movements in the allotments."

The EA does not address the widespread impacts of livestock that will be using these proposed developments, each water development potentially affecting thousands of acres. Impacts are not "limited" but are widespread.

- Other Management Principles and Guidelines. Project analysis - Economic analysis and the evaluation of the cumulative effects of project activities will be considered in all resource management decisions. (pIV-56).

The current NEPA analysis is inadequate in addressing direct, indirect, and cumulative effects.

**5. The Proposed Project Flies in the Face of National Climate Policy**

A word search of the EA did not find "climate" referenced in the entire document. The closest that the EA comes to admitting drought or climate change: " Due to personal convenience for permittees, precipitation changes and other unforeseen issues such as wildfire, annual variations and adaptations occur as conditions change." (p 5). Provide data showing how stocking rates, authorizations, and seasons have been altered to account for drought.

The effects of livestock grazing in combination with other activities occurring in the Ashley NF to greenhouse gas emissions and loss of carbon storage must be analyzed. The Forest Plan and its FEIS are decades-old and do not effectively address or provide DFC, Prescriptions, Standards and Guidelines addressing climate change. This is an interwoven topic encompassing all aspects of Forest management including, but not limited to, forested habitat manipulations such as logging and prescribed fire, vegetation treatments, livestock grazing, recreation, roads, ohv trails, oil and gas production and exploration, and other activities. To be proposing a Project that is directly related to climate is premature without updated guidance or

analysis. This Project should be withdrawn until such time as the climate issues and requirements are codified in a revised Forest Plan, or an objective analysis is conducted in a full EIS for this project in combination with other current proposals for Prescribed Fire and Aspen Restoration.

On January 27, 2021, President Biden signed the Executive Order on Tackling the Climate Crisis at Home and Abroad. One aspect of that Order directed the Interior Department to formulate steps to achieve the President's commitment to conserve at least 30% of our lands and waters by 2030. The Interior Department issued a press release describing this process in more detail and referenced a U.S. Geological Survey (USGS) report that only 12% of lands in the continental U.S. are permanently protected.[29] The USGS protected area database is available online.[30] Even those lands given the highest status of current protection such as wilderness areas and national parks are still subject to activities that degrade them from being truly protected. For example, livestock grazing continues in over a quarter of the 52 million acres of wilderness areas in the lower forty-eight states in the U.S.[31] In Yellowstone National Park, each day during winter, hundreds of snowmobiles pollute and cause disturbance.[32]

Our National Forests, Bureau of Land Management (BLM) managed lands, and State managed lands are further down the list and remain far from protected, being in the third of four levels of protection, the fourth level being no protection at all. According to the January 27, 2021, Executive Order, the Secretary of the Interior shall submit a report within 90 days proposing guidelines for determining whether lands and waters qualify for conservation. **The USGS report stresses analyzing and setting aside migration corridors for species (both plants and animals) to prevent their extinction from the effects of climate change.**

In 2010, the Forest Service produced a National Roadmap for Responding to Climate Change.[33] This roadmap provides guidance to the agency to: (1) **Assess vulnerability of species and ecosystems to climate change**, (2) **Restore resilience**, (3) **Promote carbon sequestration**, and (4) **Connect habitats, restore important corridors for fish and wildlife, decrease fragmentation and remove impediments to species migration**. These guidelines are suited to the current goals of the Executive Order and should be foundational in any proposals, analyses, or decisions by the Ashley NF, including this Project. We have included a map of the Regionally Significant Wildlife Corridor[34] within which the Ashley NF lies. (Figure 6).

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[29] U.S. Department of Interior. 2021. Fact Sheet: President Biden to Take Action to Uphold Commitment to Restore Balance on Public Lands and Waters, Invest in Clean Energy Future. January 27, 2021.
[30] U.S. Geological Survey. 2021. GAP Analysis Project PAD - US Data Overview.
[31] Wilderness Watch. 2019. The Cattle Compromise: Livestock Grazing's Damaging Effect on Wilderness and the Way Toward a Livestock - Free Wilderness System. Missoula, MT.
[32] U.S. Department of Interior. 2021. Visiting Yellowstone in Winter. National Park Service. https://www.nps.gov/yell/planyourvisit/visiting-yellowstone-in-winter.htm
[33] USDA Forest Service. 2010. National Roadmap for Responding to Climate Change.
[34] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5076928.pdf

For this Project, the Ashley NF should undertake mapping of the core and connection areas for each special status species (Threatened, Endangered, Proposed for listing, Sensitive Species, Management Indicator Species) of plant and animal. Current habitat conditions of those areas for the species in question need to be compared to their needs with an analysis of past actions that have fragmented or reduced the capability of these areas. Examples would be timber harvest, road and trail density, livestock grazing and the relation of these to impaired condition such as sediment content of trout spawning areas, aspen recruitment and age class distribution in forested stands, vigor and species composition of riparian and upland plant communities, habitats for amphibians, sage grouse, security cover for deer, elk, moose, bears, and others.

In the FEIS for its 2003 Revised Forest Plan, the Caribou NF suggested the following approach to analysis of connectivity for wildlife to include:[35]

- Assess historic patterns in vegetation and relative connectivity,
- Assess current patterns in vegetation and relative connectivity, including the impacts of human disturbance or physical barriers,
- Compare historic and current patterns of relative connectivity to determine if animal movement opportunities have been significantly interrupted.
- Consider ecologically based measures to restore historic animal movement, referring to Table 1 provided therein.

As advocates for restoring wildlife corridors and wildlife habitats, we have continued to insist that the Forest Service analyze these corridors, their associated habitats, and their ability to function for the species of interest, whether it be deer, elk, Canada lynx, wolverine, sage grouse, or other special status species. This entails use of the quantitative, science-based habitat criteria required for these species and comparing this to the current and potential habitat conditions in the corridor or lands of interest. Then, the agency must adjust management to meet these conditions, such as reducing road density, timber projects, livestock grazing and other actions that fragment and degrade these habitats.

To date, the Forest Service has ignored our request as pipelines, mines, timber and "forest health" or "restoration" projects continue to expand their footprint, while roads, noise and activity from off road vehicles are pervasive. In the West, livestock grazing is adversely affecting most of our National Forest and BLM managed lands. These are all cumulative effects that must be analyzed in combination for this Project.

In 16 western states in the US, 165 million acres on Bureau of Land Management-managed land (94%) and 103 million acres of Forest Service-managed land are grazed by livestock. Seventy percent of the western US is grazed by livestock. This includes BLM and Forest Service managed areas as well as wildlife refuges, wilderness areas, national monuments, and national

[35] USDA Forest Service. 2003. Final Environmental Impact Statement for the Caribou National Forest Revised Forest Plan.

parks. These grazed lands have suffered severe impacts leading to loss of biodiversity, lowered population numbers of species, disrupted ecosystem function, and altered terrestrial and aquatic habitats.[36] The resulting simplified plant communities with the associated loss of vegetation mosaics negatively affect pollinators, birds, small mammals, amphibians, wild ungulates, and other native wildlife, as well as rare species such as Western sage-grouse.[37]

A meta-analysis of 109 global studies that looked at the response of animals or plants to livestock grazing relative to livestock exclusion showed that "Across all animals, livestock exclusion increased abundance and diversity, but these effects were greatest for trophic levels directly dependent on plants, such as herbivores and pollinators.[38] Other studies have documented increased riparian songbird abundance after livestock exclusion.[39] [40] Overall biodiversity increased under long term rest from livestock grazing.[41] [42]

**A goal of the January 27, 2021, Executive Order is to determine the characteristics of "protected" or "conserved" lands for the purpose of reducing or reversing carbon loss for mitigating climate change, providing species protections for biodiversity, and restoring biological corridors.** Corridors are essential to effect climate-induced animal or plant migration. It is important to eliminate from consideration those lands that are grazed by livestock due to their negative effects on these goals.

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[36] Fleischner, T. 1994. Ecological costs of livestock grazing in western North America. Conservation Biology 8(3):629-644.

[37] Beschta, R.L., D.L. Donahue,.A. DellaSala, J.J. Rhodes, J.R. Karr, M.H. O'Brien, T.L. Fleischner, and C.D. Williams. 2012. Adapting to climate change on western public lands: addressing the ecological effects of domestic, wild, and feral ungulates. Environmental Management DOI 10.1007/s00267-012-9964-9. 18p.

[38] Filazzola,A., Brwn, C., Dettlaff, M.A., Batbaatar, A., Grenke,J.,Bao, T., Heida, I.P., and Cahill, J.F. 2020. The effects of livestock grazing on biodivesity are multi-trophic: a meta-analysis. Ecology Letters 23:1298 - 1309. doi: 10.1111/ele.13527

[39] Dobkin, D. S., A. C. Rich, and W. H. Pyle. 1998. Habitat and avifaunal recovery from livestock grazing in a riparian meadow system of the northwestern Great Basin. Conservation Biology 12: 209-221.

[40] Earnst, S.L., Ballard, J.A., Dobkin, D.S., 2005, Riparian songbird abundance a decade after cattle removal on Hart Mountain and Sheldon National Wildlife Refuges In: Ralph, C.J., Rich, T. [eds.], Proceedings of the Third International Partners in Flight Conference; Albany, CA, USA. US Department of Agriculture. Forest Service, General Technical Report PSW-GTR-191. p. 550-558.

[41] Bock, C.E., J.H. Bock, W.R. Penney, and V.M. Hawthorne. 1984. Responses of birds, rodents, and vegetation to livestock exclosure in a semidesert grassland site. Journal of Range Management 37:239-242

[42] Brady, W.W., M.R. Stromberg, E.F. Aldon, C.D. Bonham, and S.H. Henry. 1989. Response of a semidesert grassland to 16 years of rest from grazing. Journal of Range Management 42:284-288.

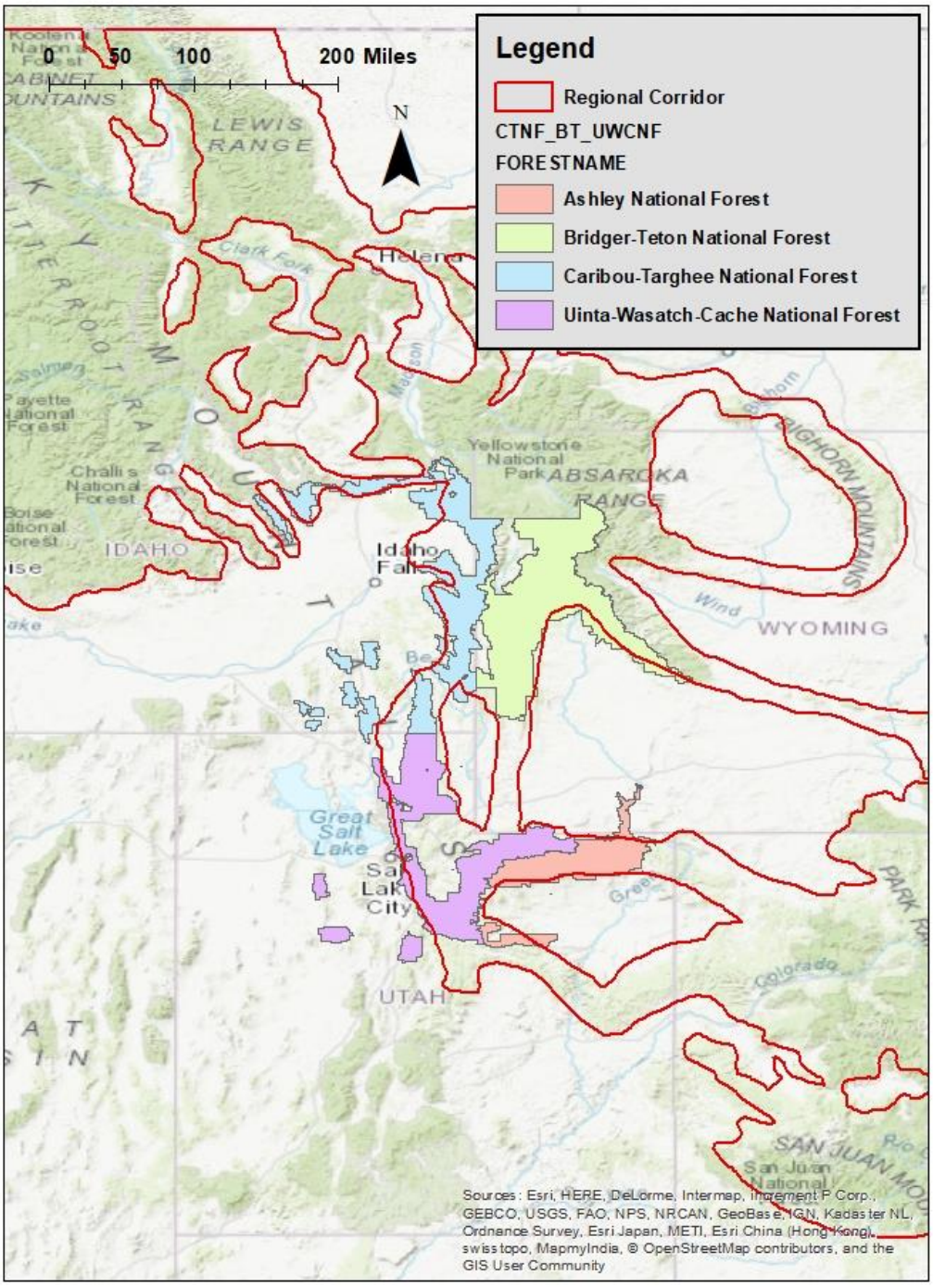


**Figure 6. Regionally Significant Wildlife Corridor connecting the GYE to the Northern Rockies and to the Uinta Mountains and Southern Rockies.**

The Intergovernmental Panel on Climate Change (IPCC) released its special report on climate change in August 2019.[43] That report noted that, "**reducing deforestation and forest degradation rates represents one of the most effective and robust options for climate change mitigation, with large mitigation benefits globally**." The Food and Agriculture Organization (FAO) estimated total global emissions of greenhouse gases (GHG) from livestock are 7.1 Gigatons of CO2 equivalent, or 14.5% of all human related GHG emissions. An estimated 44% of these emissions are methane, 29% Nitrous Oxide, and 27% carbon dioxide. This is 5% of global anthropogenic CO2 emissions, 44% of methane emissions, and 53% of nitrous oxide emissions.[44] In a prior study, FAO estimated the GHG emissions from livestock production was more than that of all transportation and industry sources. [45]

Three times as much carbon resides in soil organic matter as in the atmosphere, while grasslands and shrublands have been estimated to store 30 percent of the world's soil carbon with additional amounts stored in the associated vegetation. [46] [47] Long term intensive agriculture can significantly deplete soil organic carbon and past livestock grazing in the United States has led to such losses. [48] [49] [50] The United Nations Convention to Combat Desertification has estimated that 73 percent of livestock-grazed lands worldwide have suffered soil degradation.[51]

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[43] IPCC. 2019. Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems. https://www.ipcc.ch/report/srccl/. Accessed 11/23/2019.

[44] Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. & Tempio, G. 2013. Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome. http://www.fao.org/news/story/en/item/197623/icode/ Accessed 03/28/2021.

[45] Steinfeld H., Gerber, P., Wassentaar, T., Castel, V., Rosales, M. & de Haan, C. 2006. Livestock's long shadow. Rome, Italy. Food and Agriculture Organization of the United Nations. 407 p.

[46] Almaras, R. R., H. H. Schomberg, and C. L. Douglas. 2000. Soil organic carbon sequestration potential of adopting conservation tillage in U.S. croplands. Journal of Soil and Water Conservation 55:365-373.

[47] Grace, J., San Jose, J., Meir, P., Miranda, H. and Montes, R. 2006. Productivity and carbon fluxes of tropical savannas. Journal of Biogeography 33: 387–400.

[48] Benbi, D. K. and J. S. Brar. 2009. A 25-year record of carbon sequestration and soil properties in intensive agriculture. Agronomy for Sustainable Development 29:257-265.

[49] Follett, R. F., J. M. Kimble, and R. Lal [eds.]. 2001. The potential of U.S. grazing lands to sequester carbon and mitigate the greenhouse effect. Boca Raton, FL, USA: Lewis Publishers. 457p.

[50] Neely, C., S. Bunning, and A. Wilkes. 2009. Review of evidence on drylands pastoral systems and climate change: Implications and opportunities for mitigation and adaptation. Rome, Italy: Food and Agriculture Organization of the United Nations. Land and Water Discussion Paper 8. 48 p.

[51] Gabathuler E., H. Liniger, C. Hauert, and M. Giger. 2009. Benefits of sustainable land management. Bern, Switzerland: World Overview of Conservation Approaches and Technologies, Center for Development and Environment, University of Bern. 15 p.

Livestock grazing was found to significantly reduce carbon storage on Australian grazed lands while destocking currently grazed shrublands resulted in net carbon storage. [52] Livestock-grazed sites in Canyonlands National Park, Utah had 20% less plant cover and 100% less soil carbon and nitrogen than areas grazed only by native herbivores.[53] In a study of livestock grazing effects in the Wasatch Cache National Forest in NE Utah, there were declines in soil carbon and nitrogen in livestock grazed areas compared to ungrazed areas. As grazing intensity increased, ground cover, plant litter, soil organic carbon and nitrogen decreased. [54] Analysis of livestock grazing in the High Uinta Mountains Wilderness demonstrated that the Forest Service grossly overstocked this 160,410-acre area by including areas that are not capable for grazing livestock, such as steep slopes, forested areas, and highly erodible soils. When current forage production, current forage consumption rates for livestock and a science-based conservative utilization factor were used to determine the amount of forage that could be allocated to livestock, it was determined that the stocking rate should be reduced by over 90% to be sustainable.[55] Each time we do this calculation, we find major reductions in livestock are needed.

Livestock grazing on public lands exacerbates climate change by: (1) their significant effects as sources of greenhouse gases through enteric fermentation and manure deposition; (2) defoliation of native plants, trampling of vegetation and soils and shift landscapes from carbon sinks to sources; and (3) they exacerbate climate effects by creating warmer and drier conditions. [56] The more than 14 million AUMs of cattle grazing public lands each year result in greenhouse gas emissions of 12.4 Tg of carbon dioxide emissions. " Cessation of grazing would decrease greenhouse gas emissions, improve soil, and water resources, and would enhance/sustain native species biodiversity thus representing an important and cost-effective adaptive approach to climate change."

As noted above, the analysis of domestic sheep grazing in the High Uintas Wilderness revealed that the Ashley and UWCNFs failed to update stocking rates to current U.S. Forest Service Region 4 capability criteria, failed to use current forage production and livestock consumption

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[52] Daryanto, S. D.J. Eldridge, and H.L. Throop. 2013. Managing semi-arid woodlands for carbon storage: Grazing and shrub effects on above and belowground carbon. Agriculture, Ecosystems and Environment 169:1– 11.

[53] Fernandez, D.P., J.C. Neff and R.L. Reynolds. 2008. Biogeochemical and ecological impacts of livestock grazing in semi-arid southeastern Utah, USA. Journal of Arid Environments 72: 777–791.

[54] Carter, J., B.Chard and J.Chard. 2011. Moderating livestock grazing effects on plant productivity, carbon and nitrogen storage. In: Monaco, T.A. et al. [eds.]. Proceedings of the 17th Wildland Shrub Symposium: 18-20 May 2010: Logan, UT, USA. p191-205.

[55] Carter, J., Vasquez, E. and Jones, A. (2020) Spatial Analysis of Livestock Grazing and Forest Service Management in the High Uintas Wilderness, Utah. Journal of Geographic Information System, 12, 45-69. https://doi.org/10.4236/jgis.2020.122003

[56] Kauffman, J.B., Beschta, R.L., Lacy, P.M., and Liverman, M. 2022. Livestock use on public lands in the Western USA exacerbates climate change: Implications for climate change mitigation and adaptation. Environmental Management https://doi.org/10.1007/s00267-022-01633-8

rates to set stocking rates, and failed to use the best science regarding grazing systems, utilization levels, and rest. Forest Service monitoring was generally non-quantitative and in areas more resistant to impacts from livestock.[57]

In this Project, data should be collected in all habitat types and compared to potential plant communities and their production. Due to the grazing of domestic sheep, their bed ground locations need to be located and characterized with the current state of plant species, ground cover and aspen recruitment. Locations in proximity to water developments and salting locations need to be characterized. Cattle grazing is concentrated in areas near water and in low gradient areas, consequently, the conditions in these areas and especially where aspen stands are nearby need documentation and analysis. Livestock browsing is a major impact on aspen stands. The lack of this critical information will be a failure to take the requisite "hard look" under NEPA. We discuss many aspects of livestock grazing in the following sections. This science must be applied to this Project Area to lessen the effects of livestock grazing on ecosystem attributes, be sustainable and balanced under MUSYA.

**6. Determining Livestock Stocking Rate and Management**

While the EA and Range Project Effects Analysis note there are 25 allotments in the Project Area and that these have AMPs, there has been no analysis to show the applicable standards, guidelines, and stocking rates. There has been no analysis to show that stocking rates reflect current regional capability criteria, current livestock forage consumption rates, and current forage capacity in the capable acres. There is no reporting of applicable utilization standards. Grazing systems and pasture systems are not mapped or described. Locations of the current 1,728 range improvements are not mapped so their proximity to sensitive areas such as streams, springs, IRAs, LAUs, Management Areas, aspen, allotments, or watersheds remains undisclosed. This is needed so the public and managers can understand conditions and impacts.

The Ashley NF Forest Plan and FEIS are over 25 years old and apparently have not been updated to reflect current Forest Service Regional Criteria for determining lands capable for livestock grazing. The current soil survey, current plant community status, current livestock forage consumption rates, and desirable forage production are elements of such an analysis. Typically, the Forest Service allocates 26 lb/day of forage per AUM of livestock. Based on our review of records obtained through FOIA for the High Uintas Wilderness Domestic Sheep Analysis, there have apparently been no current surveys to determine the amount of desirable and intermediate forage production that is available today after decades of drought. Current management of livestock grazing in both the Ashley and Wasatch Cache NFs includes excessive utilization criteria, turn in during active plant growth and before seed ripening, lack of adequate rest to allow grazed plants to recover their vigor and therefore, their productivity;

[57] Conservation Community Comments on the DEIS for the High Uintas Wilderness Domestic Sheep Analysis Project. August 05, 2019. https://app.box.com/s/797x21rggtx1t6yayr0gi9kpbouis4sr

reliance on grazing systems rather than accurate determination of stocking rates; stocking rate reductions: and active, rather than passive, management.

All these factors combine to produce degraded conditions for the native plant communities, soils, and riparian areas. This Project cannot meet "hard look" requirements until all these factors are considered.

**(1) Capability**

The concept of "capability" for livestock grazing is a core concept directed at limiting soil erosion and degradation of grazing allotment watersheds and plant communities by factoring out areas of steeper slopes, highly erodible soils, dense forest, and barren areas to reduce risk of soil erosion and degradation of plant communities.[58] It also is used to determine stocking rates based on forage consumption rates of livestock and allocates an appropriate proportion of the available, preferred or desirable forage species on the capable acres to livestock so that stocking rates are sustainable and reduce the risk of degradation. To our knowledge, the Ashley NF has not updated its capability and suitability determinations for livestock grazing since the 1960's. This past capability and suitability analysis must be compared to the current USFS Region 4 capability criteria and a revised analysis completed.

The current USFS Region 4 Criteria for range capability were described in a 1998 memorandum by the Forest Service[59]. These were:

- Areas with less than 45 percent slope for domestic sheep, 30% for cattle
- Areas producing or having the potential to produce an average of 200 lbs. or more of forage/acre on an air-dry basis over the planning period
- Areas without dense timber, rock, or other physical barriers
- Areas with naturally resilient soils (not unstable or highly erodible soils)
- Ground cover greater than 60%
- Areas within one mile of water or where the ability to provide water exists.

We have not seen any evidence that these criteria are fully addressed in any Region 4 Forest. For example, in its 2003 Forest Plan Revision, the Wasatch-Cache National Forest (WCNF) used only a subset of these criteria.[60] It evaluated the slope of the land using a digital elevation model to determine where the lands of less than or equal to 45 percent slope for grazing domestic sheep or 30% for cattle were located. Lacking current forage production data, the WCNF used a vegetation layer as a surrogate for forage production. While forage production

[58] USDA Forest Service. 1964. Forest Service Handbook – R4 Range Analysis Handbook.
[59] USDA. 1998. Rangeland capability and suitability determinations for forest plan revisions R-4 revised 2/20/98. Region 4 Forest Service, Ogden, Utah.
[60] USDA Forest Service. 2003. Final Environmental Impact Statement Wasatch-Cache National Forest Revised Forest Plan: Appendix B9. Salt Lake City, Utah.

had been determined in the 1960's and was their most recent data, it was not used. The WCNF FEIS described it thusly: *"The vegetation layer was used as a surrogate for minimum forage production. In general, coniferous-forested vegetation types (spruce, fir, pine, Douglas-fir), oak, and barren areas were said to not produce the minimum 200 lbs/acre of forage. All other types were included as potential forage-producing types."* This was not an actual determination of forage currently present.

Therefore, it is critical that a capability analysis of the allotments in this Project Area be updated to reflect the current Regional Criteria. It is also critical that field data collection be used to determine the current available desirable and intermediate forage for each Soil Map Unit or Ecological Site and the specialized or preferred types that livestock would use such as aspen stands. In our stocking rate analysis for the High Uintas Wilderness Domestic Sheep grazing project, we collected field data to determine forage production for each soil map unit in areas that were capable based on the physical factors contained in the Regional Criteria: slope, distance to water, not barren, rocky, highly erodible or forested.[61] Once we applied a sustainable proper use criterion of 30% utilization along with current forage consumption rates for the livestock and applied these to the capable acres and amount of usable forage, we determined that the stocking rates should be reduced by more than 90%. This is likely the case on the many allotments in the Project Area and CEA.

**(2) Forage Consumption Rates of Livestock**

The NRCS, in its National Range and Pasture Handbook, defines an Animal Unit (AU) as one mature cow of approximately 1,000 pounds and a calf as old as 6 months, or their equivalent, and states, "*An animal unit month (AUM) is the amount of forage required by an animal unit for one month*".[62] NRCS further defines the actual forage consumption as 26 pounds of oven-dry weight or 30 pounds of air-dry weight per day as *"the standard forage demand for a 1,000 pound cow (one animal unit)".* This is 2.6% of body weight for oven-dry weight and 3% of body weight for air-dry weight of forage. (Note that there is no forage allowance for the calf in this consumption rate. The same would be true for lambs, when considering sheep grazing. They still consume forage and it needs to be counted.)

We looked up current USDA statistics for live weights of cattle and sheep.[63] The average weight of adult cattle processed during April 2021 ranged from 1,203 lbs to 1,369 lbs with an overall average of 1,316 lbs. Calves ranged from 266 lbs to 366 lbs with an overall average of 300 lbs. Weights will increase throughout the grazing season, but for an average monthly forage

[61] Carter, J., Vasquez, E. and Jones, A. (2020) Spatial Analysis of Livestock Grazing and Forest Service Management in the High Uintas Wilderness, Utah. Journal of Geographic Information System, 12, 45-69. https://doi.org/10.4236/jgis.2020.122003

[62] USDA Natural Resources Conservation Service. 2003. National Range and Pasture Handbook Revision 1, Chapter 6. Grazing Lands Technology Institute.

[63] USDA National Agricultural Statistics Service. 2021. Livestock slaughter. https://www.nass.usda.gov/Publications/Todays_Reports/reports/lstk0521.pdf. Accessed on 5/21/2021.

consumption, we have used these average weights and 3% of body weight to obtain the monthly forage consumption as air-dry weight for an AUM for cattle. This is 48.5 lb air dry forage per day or 1,473 lb air dry forage/month per AUM for a cow/calf pair. Updating this factor alone would reduce the stocking rate by nearly half compared to the 26 lb/day we typically see.

Domestic sheep and lambs were reported as a group by USDA. The average live weights ranged from 95 to 126 lbs with an average of 114 lbs. Since permits can include ewes, rams and lambs, we calculate that a ewe and two lambs would consume 312 lbs per month and since an AUM includes 5 adult sheep (with lambs), the total consumption by sheep would be 1,564 lb air dry forage/month for an AUM. We note that the literature suggests mature sheep can be much larger than these numbers depending on species.

**(3) Utilization**

Allowable use or utilization criteria are typically 50% or more on public lands we have studied. This is double the appropriate rate based on actual evidence. The following summary of studies provides a historical perspective on the relationship between utilization and plant community production or range condition. Many studies are reviewed, demonstrating the overwhelming evidence for lower utilization rates than agencies use today. We have known for decades that 50% utilization is not proper, or sustainable, in arid areas such as the Ashley NF.

The effects of different livestock grazing intensities on forage plant production were studied in a ponderosa pine type in Colorado in the 1940's.[64] Livestock forage consumption at a rate of 57% resulted in forage production of double that at a rate of 71%. An area ungrazed by livestock for 7 years produced three times as much forage as the 71% use area. The authors concluded that, as grazing use increased, forage production decreased. During that same period, a classic paper on the use of quantitative ecology in range management presented examples of how stocking rates must be adjusted based on precipitation and range condition. This included a rating based on the departure from the potential plant community.[65]
A utilization range of 25 – 30 % use of all forage species by livestock was considered proper.[66] This level was recommended because routinely stocking at capacity would result in overgrazing in half the years and necessitate heavy use of supplemental feed. Even with this system, they recognized that complete de-stocking would be needed in 2 or 3 out of ten years due to drought or below normal precipitation. This is because plant production is related to precipitation and is lower during lower precipitation years, including drought. During these

[64] Schwan, H.E., Donald J. Hodges, and Clayton N. Weaver. 1949. Influence of grazing and mulch on forage growth. Journal of Range Management 2(3):142-148.

[65] Dyksterhuis, E. J. 1949. Condition and management of range land based on quantitative ecology. Journal of Range Management 2:104-115.

[66] Hutchings, S.S. and G. Stewart. 1953. Increasing forage yields and sheep production on Intermountain winter ranges. U.S. Department of Agriculture Circular 925. 63p.

lower precipitation years, not only is production lower, but the ability of plants to recover from grazing is lessened.

A USDA study on root growth stoppage from plant top removal provided quantitative measurements of plant re-growth under different amounts of removal.[67] Three mid-west perennial grasses were grown in a greenhouse in pots under ideal conditions of watering and fertilization. After sixty days of growth, these potted grasses were clipped once at intervals from 10% to 90% of the above ground biomass. Repeat clippings of the potted grasses were made every two days to return the plants to the same height as the original clipped percent. The experiment lasted thirty-three days at which time root growth of unclipped controls became inhibited by the size of the pot. The author concluded that under these ideal growing conditions, if these species of grasses had 40% or less of their aboveground biomass clipped either once or many times, then the net root mass was the same or more at the end of the experiment. This was used to assume that grazing during the entire growing season at 40% or less would sustain plants from one season to the next. However, the data showed that root production was reduced at clipping levels of 20%. This study has been used to justify the 50% or "take half/leave half" proposition that range managers have used for decades. But this does not apply to natural conditions found in arid systems as these grasses were grown in greenhouses under ideal conditions of water and nutrients, conditions that do not exist in the Ashley NF and especially under current drought conditions.

The effect of conservative (30 – 35%) vs. heavy (60 – 65%) grazing use on grasses and forbs by cattle was determined in a New Mexico study.[68] The study area consisted of two pastures that had experienced conservative use for over 10 years. In 1997, one pasture was changed to heavy use. Measurements at key locations in both pastures in the following year, while being rested, showed that heavy stocking rates resulted in significant declines in productivity in the following year. Perennial grass production was reduced by 57% and forbs by 41% in the heavily grazed pasture compared to the conservatively grazed pasture.

Long-term stocking rate studies from three different locations in Arizona, New Mexico and Utah documented similar patterns. In the Desert Experimental Range in Utah, a 13-year study with moderate (35%) and heavy (60%) use by sheep resulted in annual forage production of 198 lbs/acre and 72 lbs/acre. The authors recommended 25 – 30% use of all forage species.[69] A 37-year study at the Jornada Experimental range in New Mexico involving conservative (33%) and moderate (45%) use showed that the lower grazing intensity resulted in greater black grama (perennial grass) cover. Lowland areas with high clay content and periodic flooding grazed at

[67] Crider, Franklin J. 1955. Root-growth stoppage resulting from defoliation of grass. Technical Bulleting No. 1102. USDA Soil Conservation Service. 23p

[68] Galt, Dee, Greg Mendez, Jerry Holechek and Jamus Joseph. 1999. Heavy winter grazing reduces forage production: an observation. Rangelands 21(4):18-21.

[69] Holechek, Jerry L., Milton Thomas, Francisco Molinar and Dee Galt. 1999b. Stocking desert rangelands: what we've learned. Rangelands 21(6):8-12

moderate intensity had higher cover of Tobosa, a perennial grass, than heavily grazed areas. They recommended 30% be used as a stocking intensity with no more than 40% removed in any year. A 10-year study at the Chihuihuan Desert Rangeland Research Center looked at four grazing intensities of 25%, 35%, 50% and 60%. Light (25%) and moderate (35%) use produced 70% more forage than 50% use and more than double that achieved at 60% use. Here, the authors recommended conservative stocking at 30 – 35%.

A review of the "classic" range studies, which are the long-term stocking rate and grazing system studies that provided much of the scientific foundation for modern range management showed that light use is closer to sustainable use, while heavy use is not.[70] Definitions of "heavy", "moderate" and "light" grazing developed in 1961 were cited. Heavy grazing was defined as the degree of forage utilization that does not allow desirable forage species to maintain themselves. Moderate grazing was defined as the level at which palatable species can maintain themselves. Light grazing was defined as the degree of utilization at which palatable species maximize their herbage producing ability. When averaged across all the long-term studies for all regions, heavy grazing was 57% use of primary forage species, moderate use was 43% and light use was 32%. In arid regions, the research showed that moderate grazing use was 35 – 45%. When the average forage production change over time was compared with use, heavy stocking resulted in a 20% decline in production, moderate use experienced no change and light use resulted in an 8% increase. During drought, moderately stocked pastures produced 20% more forage than heavily stocked pastures, light grazing produced 49% more forage than heavy and 24% more than moderate stocking levels. Heavy stocking resulted in a downward trend and light stocking an upward trend in ecological condition. Moderate stocking showed a slight, but not significant increase in condition, resulting in depleted ranges being maintained in depleted condition.

The Holechek et al (2004) Range Management Principles & Practices book lists the percent use of key species for moderate grazing in different range types.[71] In sagebrush grassland and semi-desert grass and shrubland, this level of grazing is 30-40%. Recommended utilization rates are 20% for alpine ranges grazed during the growing season or in poor condition, while for ranges in good condition and grazed during the dormant season 30% is recommended. The table goes on to note that rangelands *"in poor condition or grazed during active growth should receive the lower utilization level."* This principle would apply to this Project Area because allotments are grazed during the growing season. Further they state that while 50% utilization may apply to humid grasslands, this level of utilization *"results in rangeland deterioration in the semi-arid grasslands, desert and coniferous forest rangelands."* They also recognized that trampling by livestock and consumption by rodents and other wildlife must be included as part of this utilization, otherwise, rangeland productivity would suffer even at these levels of use.

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[70] Holechek, Jerry L., Hilton Gomez, Francisco Molinar and Dee Galt. 1999. Grazing studies: What we've learned. Rangelands 21(2):12-16

[71] Holechek, Jerry L., Rex D. Pieper and Carlton H. Herbel. 2001. Range Management: Principles and Practices, Fourth Edition. Prentice-Hall, New Jersey. 587p.

Galt et al (2000) recommended that 25% of forage be allocated to livestock, 25% to wildlife and 50% to watershed protection.[72] They also note NRCS has adopted guidelines for reduction in capacity for distance to water and slope with areas more distant or upslope having reduced use and therefore reduced capacity.[73] These adjustments are necessary for this Project. Reynolds et al (1992)[74], recommended an average of 20% utilization of herbaceous forage species in goshawk home ranges, which are 6,000 acres. They also stressed the importance of maintaining mycorrhizal fungi function in these home ranges.

**(4) Rest**

Over-utilization and lack of required rest are common across BLM and Forest Service managed lands in the west. Agencies refer to deferment as "rest", but areas are still grazed each year. Forest Service researchers originally developed guidance for rest-rotation grazing based on intensive field studies.[75] They stated, *"While the idea of incorporating rest in grazing management is not new, the concept of longer rest periods than have heretofore been recommended, at least for mountain bunchgrass ranges, and of closer correlation of resting and grazing with plant growth requirements, is new."* Some points of interest from the study were that, even with the rest-rotation system, some areas were more heavily used than others, regrowth was minimal on clipped plants after the seed-in-milk phase and clipping during active growth reduced total herbage yield during that year. A single season of clipping reduced basal area of forbs and grasses the next year. Four consecutive seasons of clipping at the seed-in-milk phase reduced basal area of Idaho fescue 80%, bottlebrush squirreltail 62%, longspur lupine 91% and wooly Wyethia 16%. Four years' rest after four years' clipping resulted in little or no recovery of Idaho fescue, wooly Wyethia and longspur lupine. They also found that cool-season grasses such as Idaho fescue varied in production by a factor of three due to changes in annual precipitation, while the beginning of growth varied by up to a month with similar variations on time to flowering and seed ripening. Based on this research, the basic principle was to require adequate years of rest to allow the native plants to recover their vigor before again being grazed. They also recommended that it is important to include adequate monitoring of each grazed unit or pasture to determine if these rest periods are sufficient to maintain or restore production.

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[72] Galt, D., Molinar, F., Navarro, J., Joseph, J., and Holechek, J. 2000. Grazing capacity and stocking rate. Rangelands 22(6):7 - 11.

[73] USDA Natural Resources Conservation Service. 2003. National Range and Pasture Handbook Chapter 5 Management of Grazing Lands. Tables 3 - 12 and 3 - 13. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1043064.pdf Accessed on 6/15/2021.

[74] Reynolds, R.T., R.T. Graham, M.H. Reiser, R.L. Bassett, P.L. Kennedy, D.A. Boyce, Jr., G. Goodwin, R. Smith, and E.L. Fisher. 1992. Management Recommendations for the Northern Goshawk in the Southwestern United States. Gen. Tech. Rep. GTR-RM-217, Fort Collins, Colorado. U.S. Department of Agriculture, Rocky Mountain Forest and Range Experiment Station. 90p.

[75] Hormay, A. L. and M. W. Talbot. 1961. Rest-rotation Grazing – A New Management System for Perennial Bunchgrass Ranges. USDA Forest Service Production Research Report No. 51.

Native cool-season perennial bunchgrasses can be very sensitive to defoliation and growing season use. Regarding bluebunch wheatgrass, *"Effects of growing season defoliation injury are well documented: basal area, stem numbers and both root and forage yields are reduced, and mortality can be high. … Defoliation to very short stubble heights during the boot stage has been reported to essentially eliminate plants within as few as three years. … Vigor recovery has been found to require most of a decade, even with complete protection from grazing."* [76] The author went on to describe experiments in which a single clipping of the grass during the growing season resulted in 43% less herbage and 95% fewer flower stalks the following year than unclipped plants. Under a deferred system in eastern Oregon, it was reported that bluebunch wheatgrass could not be maintained at 30 – 40% use in the boot stage (early June). A one-time removal of 50% of the shoot system during active growth may require six years' rest even in an area with 17" precipitation. *"The belief that range improvement will occur after one or two years of rest following a single season of more than 'light' use during the growing season is erroneous."* Idaho fescue of moderately low vigor required 3 years of rest for recovery and plants of bluebunch wheatgrass and Idaho fescue in very low vigor may require 8 years and 6 years of rest, respectively, for recovery. [77]

Other studies concluded that no management system appears to be satisfactory if that system results in overgrazing during the growing season to defer or rest vegetation in other grazing periods. These concluded that the amount of deferment and rest provided by the three-pasture system was not sufficient to overcome the effects of periodic overuse. They recommended utilization levels that allow plants of desirable species to respond to proper management by adjusting stocking rates to forage production levels. [78, 79]

**(5) Grazing Systems**

In a review paper that considered grazing systems, grazing intensity, and season of use, it was determined that, *"financial returns from livestock production, trend in ecological condition, forage production, watershed status and soil stability are all closely associated with grazing intensity."* [80] Grazing systems such as rest-rotation had limited or no benefit in arid systems. Long-term studies in Arizona, after 12 years of rest-rotation management compared to continuous grazing, found neither forage plant densities nor forage plant production differed between the treatments. Grazing intensity employed was 30 – 35% use with occasional high use of 50% or more. *"Rest and deferment were not sufficient to overcome the effects of periodic heavy use on primary*

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[76] Anderson, Loren D. 1991. Bluebunch wheatgrass defoliation, effects, and recovery – A Review. BLM Technical Bulletin 91-2, Bureau of Land Management, Idaho State Office.

[77] Mueggler, W.F. 1975. Rate and pattern of vigor recovery in Idaho fescue and Bluebunch wheatgrass. Journal of Range Management 28(3):198-204.

[78] Eckert Jr., Richard E. and John S. Spencer. 1986. Vegetation response on allotments grazed under rest-rotation management. Journal of Range Management 39(2):166-174.

[79] Eckert Jr., Richard E. and John S. Spencer. 1987. Growth and reproduction of grasses heavily grazed under rest-rotation management. Journal of Range Management 40(2):156-159

[80] Holechek, Jerry L., Hilton de Souza Gomes, Francisco Molinar and Dee Galt. 1998. Grazing intensity: critique and approach. Rangelands 20(5):15-18

*forage plants when rest-rotation grazing was applied on big sagebrush range in northern Nevada."* In an Arizona study comparing winter-spring grazing with summer-fall rest to continuous grazing, the rotation scheme was inferior to the year-long system from the standpoint of perennial grass density and production. Perennial grass production was closely associated with the degree of use and was highest where grazing use was lowest. A Vale, Oregon study, lasting over 20 years compared moderate grazing intensity and rotational grazing. Rotational grazing showed no advantage over season-long grazing in improving range condition or forage production. *"The key factor in range improvement appeared to be the reductions in grazing intensities that were applied when the project was initiated... ."*

Relying on additional water developments, fences and grazing systems will not alleviate the problem. The use of range improvements and rotation systems is not sufficient to correct over-stocking. A review of results from 18 western grazing system studies found that adjustment of livestock numbers, or stocking intensity was more important than implementing grazing systems to improve herbage production.[81] The various claims made by advocates of short-duration or time-controlled grazing were not proven.[82] The most comprehensive review on this topic to date analyzed outcomes of over 30 separate studies that compared rotational grazing to continuous grazing.[83] Eighty-nine percent of the experiments analyzed reported no difference in plant production or standing crop between rotational and continuous grazing with similar stocking rates. Stocking rate emerged as the most consistent variable influencing vegetation response.

A discussion of rest-rotation is found in Clary and Webster's General Technical Report titled *"Managing Grazing of Riparian Areas in the Intermountain Region."*[84] They summarized studies showing significant increases in forage production occurred with decreased intensities of grazing. The report described the improvements found in reducing grazing from heavy, to moderate and then to light grazing. Grazing with utilization above 50% was described as heavy, moderate was 30 - 50% and <25-30% was called light grazing in most of these studies. The study concluded that *"managers should place more emphasis on proper stocking intensity and less on grazing system implementation. The concentrated use of grazing pastures is not compensated for during rest years if grazing use is heavy. In summary, although grazing systems have great intuitive appeal, they are apparently of less consequence than once thought. In fact, as long as good management is practiced so that there is control of livestock distribution and grazing intensity, the specific grazing system employed may not be significant."*

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[81] Van Poollen, H.W. and J. R. Lacey. 1979. Herbage response to grazing systems and stocking intensities. Journal of Range Management 32:250-253.

[82] Holechek, Jerry L., Hilton Gomez, Francisco Molinar, Dee Galt and Raul Valdez. 2000. Short-duration grazing: The facts in 1999. Rangelands 22(1):18-22.

[83] Briske, D.D., Derner, J.D., Brown, J.R. et al., 2008. Rotational grazing on Rangelands: Reconciliation of perception and experimental evidence," Rangeland Ecology and Management, 61(1):3–17.

[84] Clary, Warren P and Bert F. Webster. 1989. Managing Grazing of Riparian Areas in the Intermountain Region. USDA Forest Service GTR-INT-263.

**(6) Riparian Grazing**

A Forest Service study determined the order in which cattle grazed areas; "*Ravine bottoms were usually grazed first. Next in order were openings in timber stands on gentle slopes, areas near water, areas along fences and ridgetops, salt grounds, accessible openings in timber stands on steeper slopes, areas under large trees, and finally areas covered by tree thickets.*" [85] In another study, *"cattle dispersion was constrained by the spatial distribution of water and slope. Across 3 seasons, 77% of observed use was within 366 meters of water. Approximately 65% of the land area was beyond 723 meters from water and sustained only 12% of observed use. Cattle concentrated use (79%) on slopes less than 7%. Consequently 35% of the area, on or surrounded by slopes > 10%, received only 7% of observed use. Loamy, grazable woodland and wetland sub-irrigated range sites were most preferred and accounted for over 65% of observed use while occupying less than 35% of the land area. Overall, coarse upland, very shallow and shallow loamy sites were not preferred"* [86]

Vigorous woody plant growth and at least 6 inches of residual herbaceous plant growth at the end of the growing/grazing season typified riparian areas in excellent, good, or rapidly improving condition. This corresponds to a riparian utilization rate of 24 – 32%. *"Most riparian grazing results suggest that the specific grazing system used is not of dominant importance, but good management is – with control of use in the riparian area a key item."* Degraded riparian areas may require complete rest to initiate the recovery process.[87]

W. S. Platts reviewed grazing systems and found that none were compatible with healthy aquatic ecosystems[88]. A study of long-term riparian exclosures found that, after 30 years of livestock exclusion, willow canopy cover was 8.5 times greater in livestock exclosures than in adjacent grazed riparian areas. [89] Grasses were 4 to 6 times greater in cover within the exclosure than outside. Mean peak standing crop of grasses within the exclosure was 2,410 Kg/Ha (1950 lb/acre), while outside in caged plots, mean peak standing crop was 1,217 Kg/Ha (1083 lb/acre).

Another study of upland and wet meadow communities that had livestock excluded for 9 – 18 years found major differences between the ungrazed communities and those continuing to be grazed. In each case, the area without grazing had greater belowground plant biomass, lower soil bulk density and higher soil pore space. In dry meadows the infiltration rate was 13 times greater than those dry meadows continuing to be grazed and in wet meadows, infiltration of

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[85] Hormay, op. cit.

[86] Pinchak, W.E., Smith, M.A., Hart, R.H., and Waggoner, J.W. 1991. Beef cattle distribution patterns on foothill range. Journal of Range Management, 44(3):267-275.

[87] Clary and Webster. Op cit.

[88] Platts, W.S. 1991. Livestock Grazing. In Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats. American Fisheries Society Special Publication 19:389-423.

[89] Schulz, Terri T and Wayne C. Leininger. 1990. Differences in riparian vegetation structure between grazed areas and exclosures. Journal of Range Management 43(4):295-299.

rested areas was 2.33 times greater.[90] A long-term study in Utah sage-steppe comparing results of implementing a deferred rotation grazing system and upland water troughs found that riparian use did not decrease after implementation of the new system and troughs.[91] Riparian use remained extreme at 90 - 100%, greenline stubble heights declined and bank alteration remained constant at 80% following implementation.

The implications of these studies relative to Forest Service NFMA requirements for sustainable use and preventing impairment of productivity are clear. Grazing systems do not compensate for over-stocking, light use is necessary to sustain productivity and long-term rest is essential to restore productivity following livestock grazing. Current livestock management practices in the Ashley NF are not compliant with the Multiple Use Sustained Yield Act and NFMA provisions for sustainability or balanced use.

**7. Livestock Effects to Water Quality**

The Hydrology Effects Analysis (p7) states, "the design of this project is such that minimal impacts to hydrologic resources are expected. Possible impacts to water quality, riparian areas and stream channels depend upon the extent and intensity of the ground disturbances. Effects on water quality may include increases in sedimentation and turbidity. Some of the riparian, wetland, and floodplain areas may be compacted and disturbed, but the effect should be minor. Design features and BMPs all contribute to the prevention of sediment delivery to streams and impacts to riparian areas, floodplains, or wetlands. The amount of actual sediment delivery is expected to be negligible."

The EA (p17) states, "Water quality (sediment) may currently be slightly impacted by current grazing practices, but the majority of the project areas are upland and are not directly connected to perennial stream channels. Project design, including design features, and best management practices will reduce or eliminate impacts to water quality. No adverse effects to water quality are expected as a result of implementation of this project." This statement reveals a lack of understanding that watersheds are connected to streams, that livestock are concentrating around all water sources and creating erosion, depositing manure and its associated nutrients. For example, we calculated the approximate forage demand by the 54,000 HM of livestock described in the project area at 83,132,448 lbs. If one approximates the deposition of manure by this number, this is 42,066 tons of manure (dry weight) deposited in the watersheds per summer. This will move downgradient in snowmelt or storm runoff to streams, or it can be deposited directly into the streams. This is not insignificant and has to be added to the sediment contribution from soil erosion and bank alteration.

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[90] Kauffman, J. Boone, Andrea S. Thorpe, and E. N. Jack Brookshire. 2004. Livestock exclusion and belowground ecosystem responses in riparian meadows of eastern Oregon. Ecological Applications 14(6):1671-1679.

[91] Carter, J., Catlin, J., Hurwitz, N., Jones, A., and Ratner, J. 2017. Upland water and deferred rotation effects on cattle use in riparian and upland areas. Rangelands 39(3-4):112-118. doi 10.1016/j.rala.2017.06.003

Then, the Aquatic Species Effects Analysis (p6) states, "Impacts to fish habitat in the area include trailing and crossing the stream channel by cattle, dispersed camping and associated user-created roads impacting vegetation and soil. Several stream crossings are sources of erosion and sediment delivery to the stream. … habitat surveys show several areas experiencing bank erosion and impacts from cattle and dispersed recreation". The Soils Resource Effects Analysis (p7). states, "Areas of on-going livestock utilization have the potential for erosion to persist since the soils will remain disturbed and effective ground cover is reduced or absent in those areas."

The FS recognizes that not only are soils eroded and bare but the project will have an impact that will likely linger from grazing. It does not address nutrient, E.coli, or sediment pollution from the thousands of livestock grazing, defecating, and trampling watersheds, streams, springs, and wetlands. It does not describe its monitoring program for water quality. We have commented on the lack of analysis of site-specific water quality monitoring data for the project area in other sections of these comments. The Ashley NF deflects to the State, ignores well known science regarding livestock effects to water quality and does no analysis in its EA and specialists' reports. We summarize relevant science herein to provide the obvious information to the Ashley NF so it can correct its omission and address water pollution by the livestock allowed to graze the project area. In addition, BMPs and design features are used to explain away any impacts. In another section of these comments we have addressed these principles and the lack of any documentation that effectiveness monitoring has been performed and what the results show. Watershed conditions cited in the Hydrologists' report clearly indicate they do not mitigate impacts from livestock grazing.

Of particular concern with growing recreational demand is the pollution of surface waters by livestock. E. coli are typical of fecal bacteria found in the digestive tracts of animals and humans and are used as indicators of fecal contamination. Their presence may also be indicative of contamination by other bacteria or protozoans that can cause illness resulting in diarrhea, nausea, and vomiting. They can cause eye, ear, nose, and throat infections, or even death such as that experienced in the Milwaukee cryptosporidium outbreak in 1993.[92] Cattle have been shown to produce 5.4 billion fecal coliform and 31 billion fecal streptococcus bacteria in their feces per day. Since cattle spend a significant portion of their time in or near streams, lakes, and wetland areas and average 12 defecations per day, they can contribute significant numbers of these organisms to surface waters.[93]

Recent research in areas used by cattle, recreationists, pack animals or wildlife is pertinent to this effort. Research conducted in wilderness areas in the Sierra Nevada mountains included

[92] Rock C, B Rivera. 2014. Water quality, e. coli and your health. University of Arizona College of Agriculture and Life Sciences. AZ1624.

[93] Howard G, Johnson S, Ponce S. 1983. Cattle grazing impact on surface water quality in a Colorado front range stream. J. Soil and Water Conservation. March-April 1983:124-128.

areas of high use by backpackers, high use by pack animals and cattle grazed watersheds. Fifteen areas used by backpackers yielded only one site containing E. coli and this site was significantly lower than those used by cattle or pack animals.[94] Five years of data collection from these sites found similar results, concluding, "*Surface water from watersheds below cattle areas and those used by pack animals is at high risk for containing coliform organisms. Water from Wild, Day Hike, or Backpack sites poses far less risk for contamination by coliforms"*.[95]

The costs of nutrients and bacteria from cattle grazing in the Sierra Nevada were characterized as, "*summer cattle grazing on federal lands affects the overall water quality yield from this essential watershed as cattle manure is washed into the lakes and streams or directly deposited into these bodies of water. This organic pollution introduces harmful microorganisms and also provides nutrients such as nitrogen and phosphorus which increase algae growth causing eutrophication of otherwise naturally oligotrophic mountain lakes and streams. Disinfection and filtration of this water by municipal water districts after it flows downstream will become increasingly costly. This will be compounded by increasing surface water temperatures and the potential for toxins release by cyanobacteria blooms*."[96]

Another study in the Sierra Nevada mountains sampled for coliform bacteria in one ungrazed site and four sites grazed by cattle. Before cattle entered the area, all sites were below criteria for coliforms and E.coli. After cattle entered the area, the ungrazed site remained low, while the grazed sites rapidly increased above criteria and remained there until after cattle left the area, then quickly declined.[97] The influence of differing climatic regimes on coliform bacteria in cattle grazed areas in the Sierra Nevada mountains showed, "*Water year 2009 had near normal precipitation; 2010 had late precipitation and snowmelt; and 2011 had 150% above normal precipitation" … "After the beginning of grazing, mean E. coli counts increased as follows: 2009 from 8 to 240 CFU/100mL, 2010 from 7 to 561 CFU/10mL; 2011 from 7 to 657 CFU/100mL ($p < 0.05$ all years).*"[98]

In a study of the effect of high precipitation years on benthic algae and coliform bacteria in areas grazed by cattle, areas used predominantly by pack animals, recreation areas used only by humans and remote wildlife areas in the Sierra Nevada mountains, mean benthic algae coverage was 29.5% in cattle grazed areas compared to 8.5% in pack animal areas, 3.7% in human use areas and 1.8% in wildlife only areas. E. coli attached to the benthic algae was 90% at

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[94] Derlet R, Carlson J. 2006. Coliform bacteria in Sierra Nevada wilderness lakes and streams: What is the impact of backpackers, pack animals, and cattle? Wilderness and Environmental Medicine 17:15-20.
[95] Derlet R, Ger K, Richards J, Carlson J. 2008. Risk factors for Coliform bacteria in backcountry lakes and streams in the Sierra Nevada mountains: a 5-year study. Wilderness and Environmental Medicine 19:82-90.
[96] Derlet R, Goldman C, Connor M. 2010. Reducing the impact of summer cattle grazing on water quality in the Sierra Nevada Mountains of California: a proposal. J. of Water and Health:08.2:326-333.
[97] Myers L, Kane D. 2011. The impact of summer cattle grazing on surface water quality in high elevation mountain meadows. Water Qual. Expo. Health 3:51–62.
[98] Myers L, Whited B. 2012. The impact of cattle grazing in high elevation Sierra Nevada mountain meadows over widely variable annual climatic conditions. Journal of Environmental Protection: (3): 823-837.

cattle grazed sites, 23% at pack animal sites, 0% at human and wildlife sites. E. coli was detected suspended in water at concentrations greater than 100 colony forming units/100 ml at 70% of cattle grazed sites and none at pack animal, human or wildlife sites.[99] While this study focused on E. coli impacts, it is worth noting that livestock have many negative effects on stream systems. They impair water quality and quantity by increasing nutrients and sediment. They alter channel morphology through hoof shear causing channel widening and reducing depth. They alter hydrology by destroying bank stabilizing vegetation, increase water temperature by loss of stream shading vegetation and cause loss of fish and wildlife populations as a result.[100]

Water quality monitoring data collected for streams potentially supporting cutthroat trout, tributaries to the Colorado River system and its Threatened and Endangered fish species needs to be analyzed and reported. The effects of diversions for livestock and irrigation on stream flows should all be analyzed for the Project Area and CEA. The cumulative effects of this Project and the associated livestock grazing and soil damage (erosion, bare soil, compaction) on watershed function and stream flows for TES species should be analyzed and reported.

**8. Livestock Grazing Effects on Aspen**

Neither the EA or specialists' reports describe the effects of livestock grazing and browsing on aspen and its herbaceous understory. We have commented on the need to address the proximity of water developments to aspen stands which increase livestock concentrations and destroy aspen recruitment. In addition, cattle use aspen for shade, sheep are bedded in and around aspen stands to the detriment of recruitment and the herbaceous understory which is important for wildlife security habitat, shade, and food. We have described the degradation we find in proximity to water sources, which reflects past Regional PFC assessments regarding aspen degradation and loss of aspen across the Region.

The Forest Service typically ignores livestock grazing effects on forest structure and understory conditions as related to potential that might be described in Natural Resource Conservation Service Ecological Site Descriptions or other scientific reports. Those ESDs acknowledge the role of livestock and other factors in state changes and degradation of natural conditions. Recent projects we have reviewed have failed to address this issue, but it is foundational in determining the ecological status of the Forest.

Browsing of aspen by livestock has been studied by Forest Service scientists such as Bartos, Mueggler, and Campbell using exclosures. They documented the use by livestock, deer and elk

[99] Derlet R, Richards J, Goldman C. 2012. Does above-normal precipitation reduce the Impact of mountain cattle grazing on watershed algae and bacteria? Water Qual Expo Health (4):105–112.
[100] Belsky A, Matzke A, Uselman S. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. J. Soil and Water Cons. 54(1):419-431.

showing the disproportionate influence of livestock.[101] Here, we review a historic study Charles Kay performed for BLM in Nevada.[102] Kay reported the results of a study of hundreds of aspen clones in the Shoshone, Simpson Park, Diamond, Desatoya and Roberts Mountains on BLM lands in central Nevada. Aspen in these areas were found to be in poor condition and many stands had not successfully regenerated in 100 years or more. No evidence of elk presence was found in or near any of the stands, so elk were not contributors to the problem. Forest succession was not a problem as conifer invasion had not taken place in the communities studied. Other than pinyon pine, conifers were absent from the study area. Kay observed that where aspen in central Nevada has been protected from grazing, aspen has maintained its position in the vegetation community and, in fact, has replaced sagebrush, contrary to the opinion of some that say sagebrush naturally replaces aspen. He cited exclosure studies that found aspen stands have expanded and eliminated sagebrush. Exclosure studies also suggested that climate has little impact on aspen in central Nevada. Aspen inside exclosures regenerated without fire or other disturbance while aspen in adjacent, unprotected areas did not. Numerous papers were cited that demonstrate that climatic variation does not account for observed declines in aspen.

Fire exclusion was also examined. It was noted that BLM has suppressed fires for a long period and the study areas contained little evidence of fires. In fact, only a few out of the hundreds of clones studied had experienced fire during the past 20 years. Aspen age data suggest that few aspen stands in central Nevada have burned during the past 100 years. Kay points out that while the burned stands did regenerate, in all cases where aspen were protected from livestock grazing, aspen regenerated. So, while fire may benefit the species, aspen declines cannot be attributed to absence of fire.

Exclosure data indicated that herbivory had a major influence on aspen stem dynamics and understory composition in central Nevada. Most herbivory was from livestock. Pellet counts were used and showed that 59.3% were from domestic sheep, 40.2% from cattle and 0.4% from deer. Exclosures that excluded cattle but not deer, including canyons closed to livestock, had aspen stands that all were regenerating. When fallen trees blocked livestock access, aspen were able to regenerate in the protected spaces. Reductions in livestock numbers also resulted in aspen regeneration. Distance to water and slope were also factors that related to aspen regeneration or the lack of regeneration. Cattle use was generally related to distance from water and slope. Steeper slopes or areas further from water received less use. Aspen stands further

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[101] Carter, J. 2012. Aspen - Review of Literature Regarding Vegetation Treatments, Conifer Invasion and Browsing. Yellowstone to Uintas Connection, Paris, ID. https://app.box.com/s/kbpatshjcnzj7sneghi5fxeyu53gmrp9

[102] Kay, Charles E. 2001. The Condition and Trend of Aspen Communities on BLM Administered Lands in Central Nevada – with Recommendations for Management. Final Report to Battle Mountain Field Office, Bureau of Land Management. Battle Mountain, Nevada. An updated (2003) version is available at: https://idahoforwildlife.com/Charles%20Kay/59-%20Aspen%20Management%20Guidelines%20for%20BLM%20Lands%20in%20North-Central%20Nevada.pdf

from water and on steeper slopes were in better condition than that nearer water or on more gentle slopes, again indicating that grazing by livestock was the operative factor causing declining health of aspen clones. While Kay cited other research indicating that wildlife have impacts on aspen regeneration, he states that in all cases where aspen is protected from livestock, it successfully regenerated and formed multi-aged stands without fire or other disturbance. He concluded by saying, *"The single stem-aged stands seen in central Nevada and found throughout the West are not a biological attribute of aspen, but a result of excessive ungulate herbivory. … In central Nevada, however, domestic livestock are the predominate ungulate herbivore."*

A recent study in Utah's famous Pando clone looked at the lack of recruitment of aspen. The study documented "4.5 times the amount of cattle use herbivory in two weeks than the mule deer use over six months. Forage utilization by mule deer prior to the onset of livestock grazing was unobservable, while forage utilization by livestock (plus mule deer) during the 2 weeks of cattle grazing consumed 70 to 90 percent of the understory vegetation's annual production."[103] This demonstrates that the effect of wildlife, in this case, deer, are negligible compared to domestic livestock.

Age structure of aspen was determined in the Hart Mountain National Antelope Refuge to determine the relationship to the presence of livestock and climate. A significant decline in aspen recruitment occurred in the late 1800s that coincided with the onset of high levels of livestock grazing. Livestock grazing was terminated in 1990 and aspen recruitment increased "by more than an order of magnitude". Climate variables were not a significant factor. "Where long-term declines in aspen are currently underway on grazed lands in the western US, land managers need to carefully consider the potential effects of livestock and alter, as needed, management of these ungulates to ensure retention of aspen woodlands and their ecosystem services."[104]

As we have noted, the effects of livestock grazing on the lack of regeneration of aspen and in the current state of aspen understory must be analyzed for the project area and the proximity to range improvements must be part of that analysis. This is necessary to meet the intent of NEPA to inform the public and take a "hard look" at Project effects and meet requirements of the NFMA sustainability provision.

**9. Livestock Grazing Effects on Conifer Forests**

Livestock negatively affect forest health. Typically, agency analyses and management have not considered the effects of livestock on forest health, including aspen and conifer forests

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[103] Ratner, J.R., E.M. Molvar, T.K. Meek, and J.G. Carter. 2019. What's eating the Pando Clone? Two weeks of cattle grazing decimates the understory of Pando and adjacent aspen groves. Hailey, ID: Western Watersheds Project, 33 pp. https://app.box.com/s/ysuufd9dl5dcaof8ija9f7xy67b8q8vj

[104] Beschta, R.L., Kauffman, J.B., Dobkin, D.S., and L.M. Ellsworth. 2014. Long-term livestock grazing alters aspen age structure in the northwestern Great Basin. Forest Ecology and Management. 329(30-36). http://dx.doi.org/10.1016/j.foreco.2014.06.017

regarding accelerating conifer succession in aspen and increasing the fire hazard in conifer forests. Livestock grazing plays a key role in removing herbaceous vegetation from the forest floor and disturbing the soil resulting in accelerated establishment of conifer seedlings. This results in thickets of saplings, a dense forest with a reduced herbaceous component, and increased risk of high-intensity fires[105]. Forest stands suffer *"retrogression"* and loss of grasses when grazed by cattle and big-game, but big-game grazing alone did not result in significant effects.[106]

Livestock grazing in Douglas-fir communities caused increased tree numbers, decreased production, cover and frequency of major palatable grasses, and altered dominance of shrub and forb species. Grazing resulted in increased accumulation of downed woody fuel in every size class, increased forest floor duff and decreased herbaceous fuels. The consequences were *"fuel distribution and composition were slightly less favorable to frequent surface fires, highly conducive to vertical spreading of fire and potentially more capable of major conflagrations."* These conditions make prescribed fire more likely to cause high-intensity fires.[107] It was predicted in 1972 that growing fuel accumulation would place forests at higher risk.[108]

A study of tree density and herbaceous understory vegetation on ungrazed Meeks Table and grazed Devils Table in Washington found that herbaceous vegetation was 183% to 254% greater on the ungrazed site with 850 pounds of air-dry herbage per acre compared to 240 pounds per acre in the grazed site. *"While the timbered overstories on the two Tables were similar, Meeks Table had only a very few small trees, but Devils Table had 3,291 small trees per acre."*[109] A study of grazed and ungrazed Ponderosa pine forests in Zion National Park found that grazing by livestock and associated reduction of the herbaceous ground layer promoted the establishment of less palatable tree and shrub seedlings.[110] Loss of soil nutrients from logging was lower than from grazing.[111] In studies of grazed and ungrazed woodlots, the highly compacted soils of the heavily grazed woodlot had lower moisture content and much lower infiltration rates than in

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[105] Belsky, A.J. and Dana M. Blumenthal. 1997. Effects of livestock grazing on stand dynamics and soils in upland forests of the interior West. Conservation Biology 11(2):315-327.
[106] Kreuger, William C. and A. H. Winward. 1974. Influence of cattle and big-game grazing on understory structure of a Douglas-fir Ponderosa Pine- Kentucky bluegrass community. Journal of Range Management 27(6):450-453.
[107] Zimmerman, G. Thomas and L.F. Neuenschwander. 1984. Livestock grazing influences on community structure, fire intensity and fire frequency within the Douglas-fir/Ninebark habitat type. Journal of Range Management 37(2):104-110.
[108] Dodge, Marvin. 1972. Forest fuel accumulation – a growing problem. Science 177:139-142.
[109] Rummell, Robert S. 1951. Some effects of livestock grazing on Ponderosa pine forest and range in central Washington. Ecology 32(4):594-607.
[110] Madany, Michael H. and Neil E. West. 1983. Livestock grazing-fire regime interactions within montane forests of Zion National Park, Utah. Ecology 64(4):661-667
[111] Smith, David M., Bruce C. Larson, Matthew J. Kelty and P. Mark S. Ashton. 1997. The Practice of Silviculture: Applied Forest Ecology. John Wiley & Sons, New York. 537p.

ungrazed soils.[112] Soil disturbance such as this has far-reaching consequences on forest health, including reduced production and increased susceptibility to insects and disease.

The Soil Resource Effects Analysis (p6) states, "The loss of soil structure reduces water infiltration and can increase rates of surface runoff and erosion. Biological impacts include higher soil temperatures, reduced and stunted plant roots, and loss of activity by soil microorganisms, including rates at which materials are decomposed and the mineralization of plant available nutrients (USDA NRCS 2001). Highly compacted soils are often lacking ground cover and vegetation….Compaction will persist as a long-term effect in microsite areas of continual livestock use, including corrals, trailing, and areas surrounding water sources." In our comments we have addressed provisions for northern goshawk regarding forest stand structure, mycorrhizal fungi, recommended average utilization in goshawk home range of 20%, and the stand structure needed. None of these have been analyzed in the EA or specialists' reports and the EA dismisses erosion and soil damage by not addressing the widespread effects of livestock on forest stands.

The current condition, composition and productivity of the conifer stands in the Project Area and CEA must be characterized and the effects of past timber projects and livestock grazing on forest stand structure, understory plant communities, the soil community, and woody residue revealed. Security cover must be identified and mapped, and the Project must be designed to retain and promote security cover. These elements need to be analyzed to meet the intent of NEPA and NFMA.

**10. Canada Lynx**

The EA (p9) states that the "Ashley National Forest is unoccupied by Canada lynx but potential lynx habitat does exist." "The project locations are considered peripheral habitat. These areas are considered to be incapable of supporting self sustaining populations of lynx." (EA p11). The Terrestrial Wildlife BA (p5) addresses lynx and acknowledges they have been identified in the Uinta Mountains and project sites will be located in peripheral habitat (p6). The analysis in the specialist report falls short by not evaluating "why" lynx are no longer occupying the Ashley NF or why the EA claims "these areas are considered to be incapable of supporting self-sustaining populations". Neither document describes the current condition of LAUs, whether they have been degraded by forest activities, and if so, how. There was no analysis of connectivity. Livestock consuming forage and altering snowshoe hare habitat while livestock are spread across the landscape in hare habitat was not addressed. There was no recognition that lynx use other prey in addition to snowshoe hares and whether habitat for animals such as red squirrels, grouse and others is altered and affecting those populations negatively, which then depletes the potential food base for lynx. The specialist report then claims "no effect" for lynx as well as Mexican spotted owl, yellow-billed cuckoo, and monarch butterfly.

[112] Barnes, Burton V., Donald R. Zak, Shirley R. Denton and Stephen H. Spurr. 1998. Forest Ecology. John Wiley & Sons, New York. 774p.

In its prior EA[113] for aspen restoration, the Ashley NF stated that: "The Canada lynx and wolverine are unlikely to be affected by the project because they are unlikely (to) occur on the Forest. Federally listed threatened or endangered aquatic species or designated critical habitat does not occur within the project area. Therefore, the proposed management actions would have 'no effect'." That EA Table 2 referred to the Wildlife BA (WBA)[114]. Table 3 of the WBA provided a brief narrative reporting that lynx are considered dispersers with no recent evidence of lynx occurring in the Uinta Mountains. While habitat is present the Ashley NF is considered unoccupied peripheral habitat. The Project is considered to have No Effect to lynx because:

- The project will not change vegetation types or remove snowshoe hare habitat.
- The project is unlikely to impede movement of lynx within and through the LAUs or impede the ability of a lynx to procure sufficient food.
- A lynx disturbed by human activity associated with the project may temporarily be displaced or habituate to the activity, neither of which is likely to alter the likelihood this individual would procure prey.

The Roadless Evaluation[115] for the aspen restoration project also described lynx habitat as marginal in the descriptions for each IRA to be affected by the Project. The analysis failed to take the "hard look" required by NEPA, failed to address the actual habitat parameters needed by lynx to occupy a place or to use connections to move from place to place. The three conclusions presented above that purport to explain why lynx will be unaffected are unsupported by the facts. First, the project is by design, planned to change vegetation types from aspen/conifer to aspen; and this removes snowshoe hare habitat. Second, there is no analysis showing the LAUs and their current and potential condition relative to the needs of lynx, nor are the treatments analyzed in the context of their position within LAUs or their effects to habitat. Third, the idea that displacement from this Project is temporary and would not affect the ability to find prey is not supported. There was no cumulative effects analysis to show all the past, present and planned activities affecting the Project Area, LAUs and the CEA and how those affect the ability of lynx to use or move through the area. The Ashley Forest Wide Range Improvement Project must not make these same unsupported claims, but instead do the comprehensive analysis of current habitat condition needed for lynx and its prey, how that habitat is affected by existing and the proposed systems, and what are the cumulative impacts of this project in combination with the Ashley Aspen Restoration Project and other activities in the Ashley NF.

As regards lynx habitat and the claim this is unoccupied habitat, the Ashley NF must first analyze why there are no lynx occupying the Ashley NF. What are the actions by the Forest

[113] USDA. 2021. Ashely National Forest Aspen Restoration Environmental Assessment.
[114] Manders, P. 2019. Ashley National Forest Aspen Restoration Project (Wildlife Specialist Report).
[115] USDA. (undated). Roadless Evaluation for Ashley National Forest Aspen Restoration Project.

that have precluded resident lynx? The following discussion addresses these points in more detail.

The Forest Service has provided a map of historic lynx distribution showing areas, including the Ashley and UWCNFs that have historically been used by Canada lynx. (Figure 7).[116] This shows the occurrences between 1842 and 1998. The Northern Rockies Lynx Management Direction FEIS provides a map showing occupied and unoccupied areas at the time of publication in 2007. This map (Figure 8 indicates the Uinta Mountains, including the Ashley and UWCNFs are considered peripheral habitat for lynx.[117] The Biological Assessment for Canada lynx documents the importance of peripheral areas. [118]

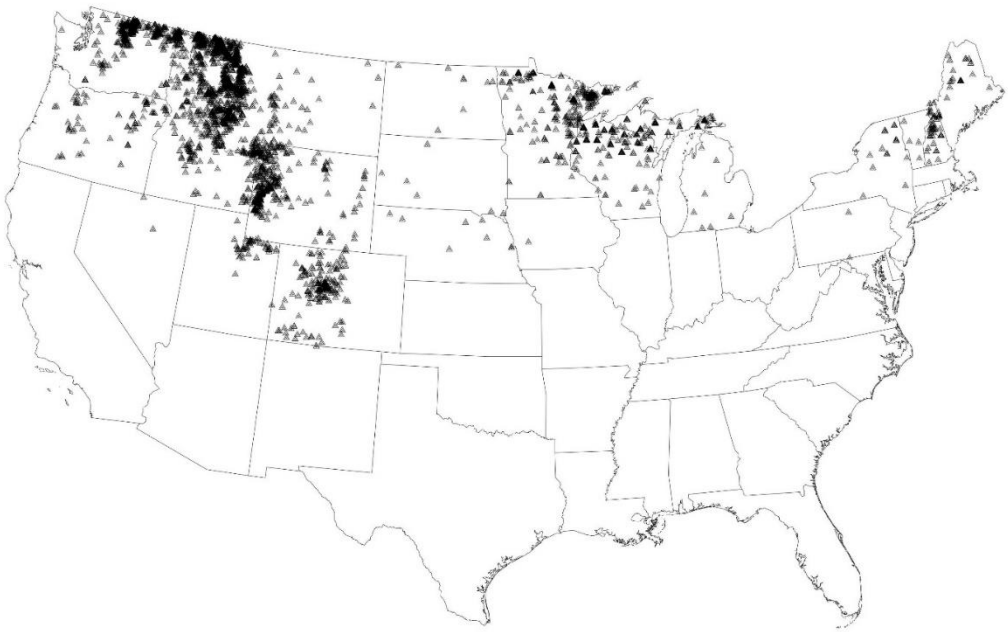

**Figure 7. Canada lynx occurrence 1842 to 1998**

**"Peripheral populations may contain valuable genetic, physiological or behavioral adaptations that are unique to their ecological success. Because suitable habitats in areas where populations act as metapopulations are spatially separated, the**

[116] Ruggiero, L. F., Aubry, K. B., Buskirk, S. W., Koehler, G. M., Krebs, C. J., McKelvey, K. S.; Squires, J. R. Ecology and conservation of lynx in the United States. General Technical Report RMRS-GTR-30WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. Available at: http://www.fs.fed.us/rm/pubs/rmrs_gtr030.html

[117] USDA Forest Service. 2007. Northern Rockies Lynx Management Direction Final Environmental Impact Statement.

[118] USDA Forest Service 1999. Biological Assessment of the Effects of National Forest Land and Resource Management Plans and Bureau of Land Management Land Use Plans on Canada Lynx. 149p.

**persistence of a metapopulation is dependent on the efficiency and success of dispersing animals in reaching isolated patches of suitable habitat. When patches are fragmented and connections between patches do not exist, recolonization becomes problematic and the metapopulation may be unable to persist, even though patches of suitable habitat remain (Meffe and Carroll 1997[119]). Additional fragmentation and isolation of suitable habitat occurring as a result of land management activities can not only affect small, isolated habitat patches supporting smaller populations but also large contiguous patches supporting higher population levels.**" These general principles of genetics and population viability should be applicable to ALL populations of animals as well as plants in these Forests.

[119] Meffe, G.K., and C.R. Carroll. 1997. Principles of conservation biology. Sinauer, Sunderland, Massachusetts 22 Ruggerio, L.F., Aubry, K.B., Buskirk, S.W., Koehler, G.M., Krebs, C.J., McKelvey, K.S., and J.R. Squires (Eds.), Ecology and Conservation of Lynx in the United States. University of Colorado Press, Boulder, CO.

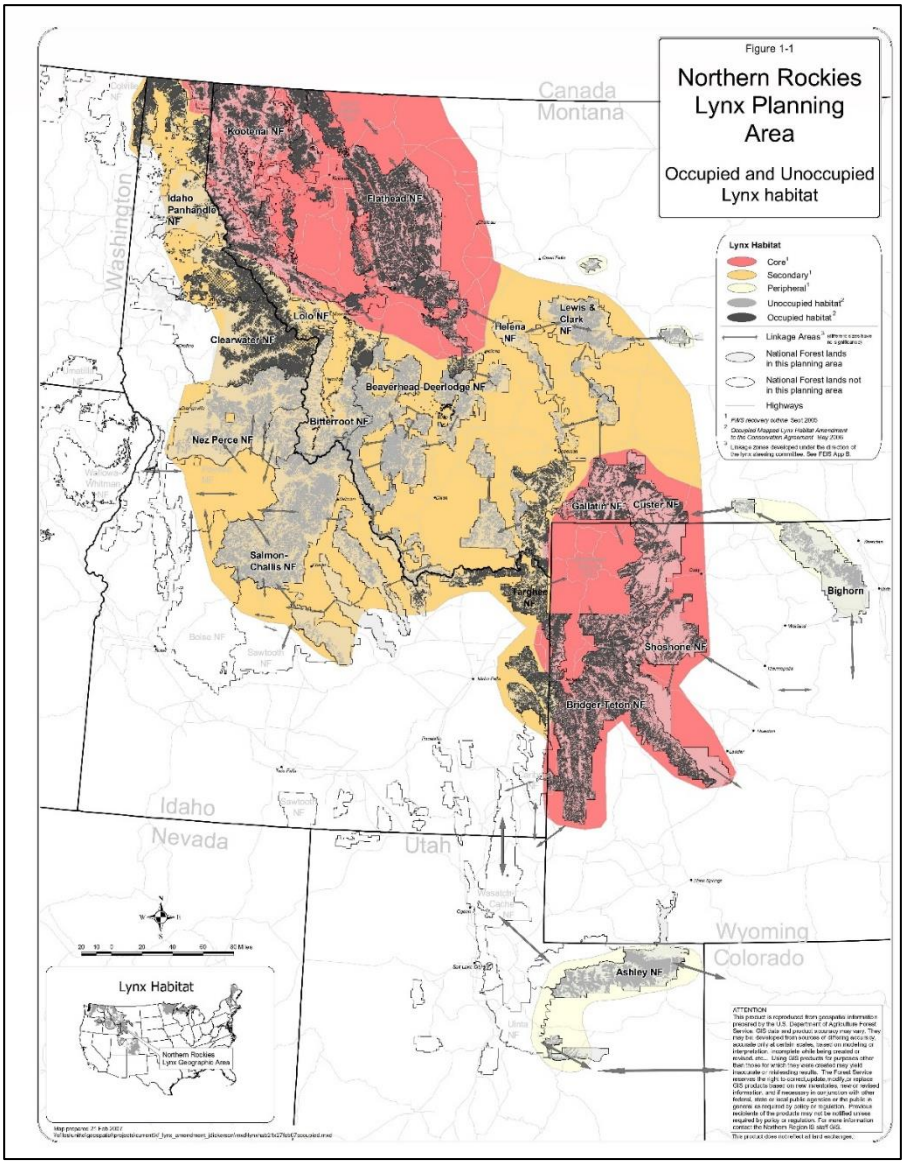


**Figure 8. Map showing Ashley and UWCNFs as Peripheral Habitat for Canada lynx.**

### (1) Canada lynx in the Uinta Mountains

While the Northern Rockies Lynx Management Direction ROD cited in the WBA does state that the Ashley NF is currently unoccupied habitat, there is no explanation as to why the Ashley NF is unoccupied.[120] While there does not appear to be a resident population of lynxes in Utah today, Utah nevertheless contains vast expanses of lynx habitat where lynxes were historically present.

[120] USDA Forest Service. 2007. Record of Decision, Northern Rockies lynx management direction. March 2007.

Having been previously extirpated from Colorado, the Canada lynx was reintroduced into the San Juan Mountains beginning in 1999. Lynxes have since proliferated and spread out over the landscape. Several lynxes have made forays into Utah, with the Uinta Mountains and surrounding forestlands being most visited.[121] In addition, the greater Yellowstone ecoregion, including the Salt River and Wyoming ranges, which are located just to the north of the Uinta Mountains, supports a naturally occurring Canada lynx population and is classified as critical habitat for the Canada lynx.[122] The Regional Corridor and linkages defined by the Forest Service are shown in Figure 12. This Figure shows the potential habitat in Colorado.[123] Critical habitat designated by the U.S. Fish and Wildlife Service is also shown.[124]

The Uinta Mountains are recognized as part of a regionally significant wildlife corridor.[125] (Figure 1). This corridor connects to the greater Yellowstone ecoregion through the Bear River Mountains of northern Utah and southern Idaho, and through the Crawford Mountains of southwest Wyoming. Figure 9 shows the lynx linkages determined by the Forest Service.[126]

Given that there are resident lynx populations in Colorado and Wyoming today and given that the Uinta Mountains are recognized as a regionally significant wildlife corridor, it is no surprise that lynxes still use the Uinta Mountains. Indeed, telemetry records confirm that there is a "hot spot" of lynx occurrences at the western end of the Uinta Mountains, where collared lynxes from Colorado remain for a time before moving on. As of 2009, at least 22 individuals had made at least 27 visits to the state of Utah, recorded by air telemetry and satellite.[127] The highest concentration of lynx locations in Utah, as identified by telemetry, is in the Uinta Mountains. "The use-density surface for lynx use in Utah indicates the primary area of use being located in the Uinta Mountains."[128]

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[121] Colorado Department of Wildlife Report, 2006-7, page 29.

[122] https://www.fws.gov/mountain-prairie/es/species/mammals/lynx/criticalhabitat_files/20081016_noa_yellowstone_map.pdf

[123] Ivan, J., Rice, M., Shenk, T., Theobald, D., and Odell, E. 2020. Predictive Map of Canada Lynx Habitat Use in Colorado. Colorado Parks and Wildlife, National Park Service, Colorado State University. The Report and shapefiles may be accessed at: https://cpw.state.co.us/Documents/Research/Mammals/Publications/CPWPredictiveLynxMapReport.pdf .

[124] USFWS. 2014. Canada Lynx Critical Habitat. Shapefiles located at: https://www.fws.gov/mountain-prairie/es/canadalynx.php Accessed 05/21/21.

[125] Wasatch-Cache National Forest March 2003 Revised Forest Plan 4-21.

[126] USDA Forest Service. 2003. Canada Lynx Linkage Areas for Northern Rockies Lynx Amendment Area. Map data from https://databasin.org/datasets/0659dded-ba41-4f0f-a38c-fa930ab1eb85/ Accessed on 5/20/2021.

[127] Colorado Department of Wildlife (CDOW) Report, 2006-7, Tables 4 and 6, pages 23 and 24.

[128] Ibid. page 10; see also Figure 2, page 29.

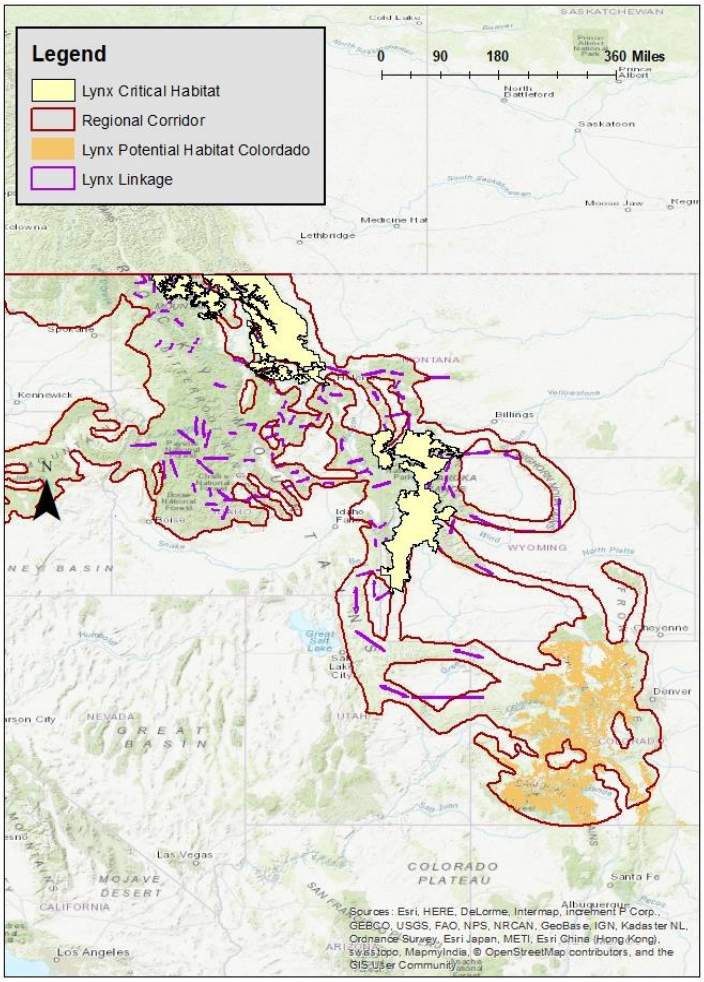


**Figure 9. Canada lynx critical habitat, linkages, and potential habitat in Colorado, all within the Regionally Significant Wildlife Corridor**

Sophisticated, peer-reviewed modeling identifies the Uinta Mountains as core lynx habitat.[129] The study used vegetation cover types, road densities and classified suitable vegetation types based on current science at the time. After all cells that surpassed both the vegetation suitability and road density suitability thresholds were identified, habitat patches were formed using ArcGIS. For the purposes of the model, the analysis considered large enough core patches for lynx to be those that are at least 1,600 km$^2$, the approximate area of eight average home range

[129] Bates, W. and Jones. A. 2007. Least-Cost Corridor Analysis for Evaluation of Lynx Habitat Connectivity in the Middle Rockies. Wild Utah Project, Salt Lake City, UT.

sizes for male lynx in the American Rockies (Ruggiero et al. 1999, Squires 2005, Shenk 2006, personal communication John Squires, personal communication Tanya Shenk).[130]

The authors further assumed that areas identified as core patches in their model would: (1) be of sufficient area to support more than two mated pairs of lynx to reside year round, for multiple years; (2) provide necessary land cover types for denning and hunting; (3) contain necessary prey to support lynx year-round; and (4) sufficient safety from human persecution. The model indicated that there are nine clusters of relatively well-connected blocks of suitable landscapes of sufficient size to be considered core lynx habitat. These habitat concentration areas included the High Uintas Wilderness (plus adjacent forested lands), a core patch in the Bear River Range, and many core patches near one another in both the west slope of the Colorado Rockies and the greater Yellowstone region."[131] (Figure 10).

All the habitat factors were then evaluated through a separate analysis to determine the suitability for lynx traveling throughout the study area. This provided a "least-cost" path for lynx traveling between core patches. It is shown in Figure 11.

Given that the Uinta Mountains are core lynx habitat and part of a regionally significant wildlife corridor, it is perhaps surprising that there does not appear to be a resident population of lynxes in the Uinta Mountains today.[132] Why would this be the case? Have researchers simply failed to detect them? Not likely. Lack of evidence of lynxes in this case is likely evidence of lack of lynxes. The most obvious and most probable explanation is that, following an initial extirpation due to trapping, hunting, poisoning, road and trail networks, logging and livestock grazing, natural recolonization of the Uinta Mountains by Canada lynx is prevented by ongoing anthropogenic disturbances. This Project would merely exacerbate ongoing degradation of lynx habitat.

[130] Op. cit. Bates and Jones.

[131] (Least-Cost Corridor Analysis for Evaluation of Lynx Habitat Connectivity in the Middle Rockies, by Allison Jones and Wendy Bates, 2010)

[132] Draft Environmental Impact Statement High Uintas Wilderness Domestic Sheep Analysis (DEIS), June 2019, page 27.

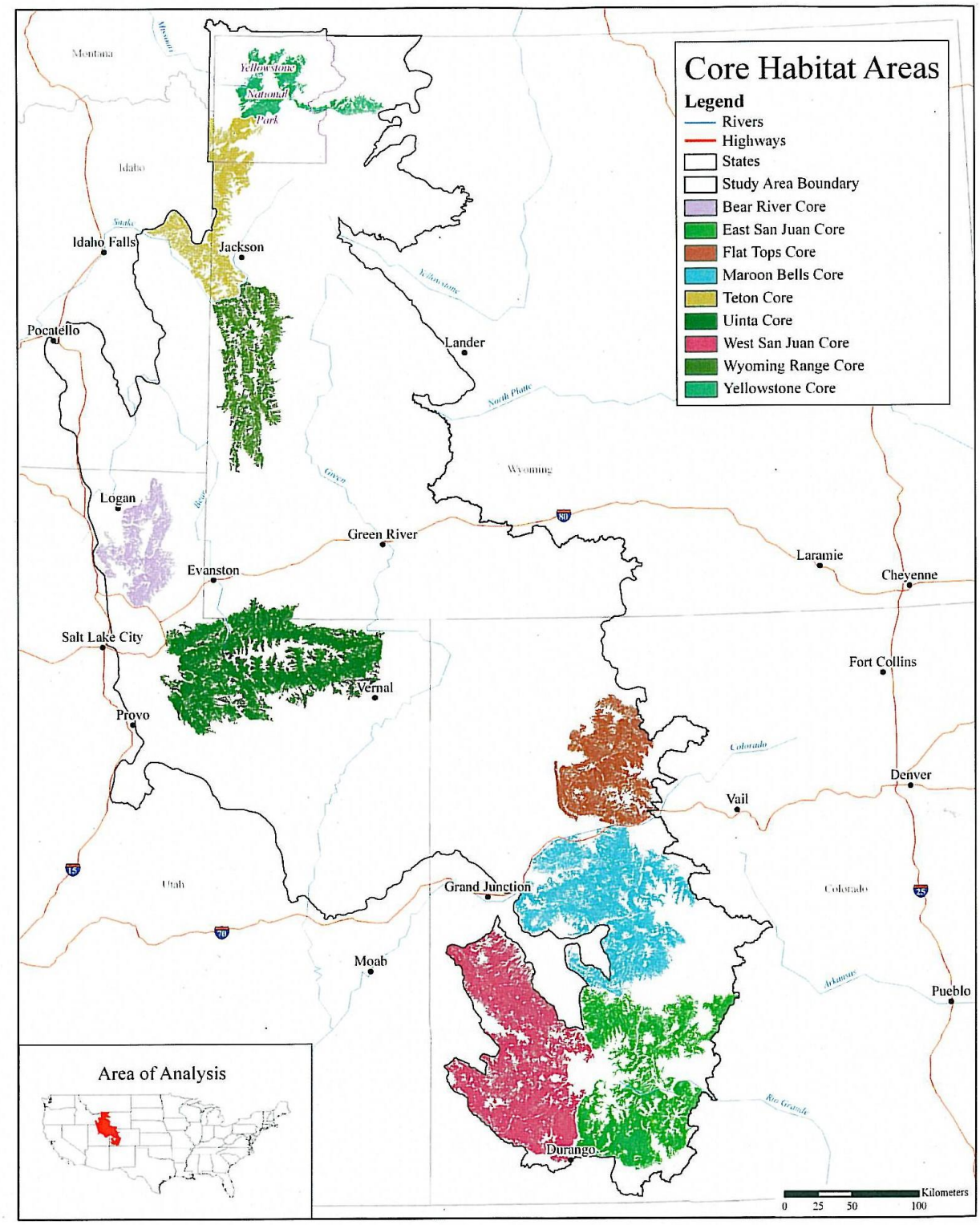


**Figure 10. Lynx Core Habitat Areas - Map Reproduced from Bates and Jones, 2007**

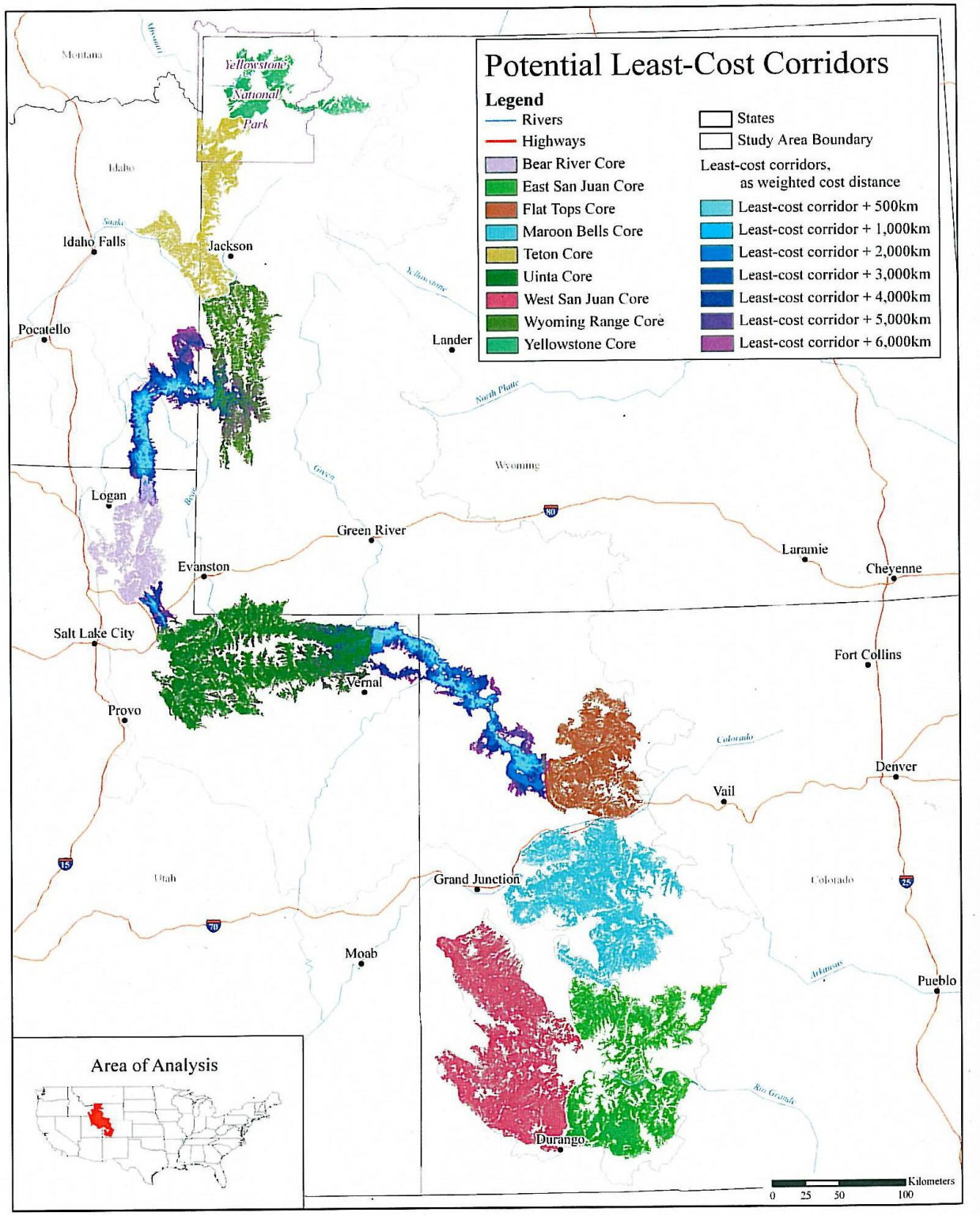


**Figure 11. Potential Least-Cost Corridors for Lynx as Weighted Cost Distance**

Based on lynx surveys conducted by state and federal agencies between 1999 and 2017, which found no solid evidence of lynx presence, the FS concludes that there is not a resident lynx population in the Uinta Mountains today. The FS further concludes that there never was a resident lynx population in the Uinta Mountains—only occasional transients. According to this hypothesis, the Uinta Mountains are not good lynx habitat, which explains why lynxes have not been detected and leads to the conclusion that the Uinta Mountains will probably never host a resident lynx population. Here is what the FS states in an earlier document: "We conclude that lynx that occur in Utah are dispersers rather than residents."[133] This is from a Wasatch-Cache National Forest FEIS for renewing domestic sheep grazing permits in the Uinta Mountains. The DEIS for that project also stated that there were only 10 verified records of lynx in Utah in the 20th century, most of them in or near the Uinta Mountains, and that four of the 10 verified lynx occurrences in the Uinta Mountains correlate to the cyclic [lynx] highs of the 1960s and 1970s.[134]

To conclude from this that there has never been a resident population of lynxes in the Uinta Mountains commits the fallacy of "begging the question" by presupposing what is to be proved. (For simplicity, we'll narrow "never" to "since 1800"). Obviously, the explanation for why there is not a resident population of lynxes in the Uinta Mountains today, and no detectable reproduction, could just as easily be that human uses of the forest have resulted in the extirpation of lynxes from the Uinta Mountains and are preventing their natural recovery.

There may have only been 10 verified records of lynx occurrence in the Uinta Mountains in the 20th century, but there have been an additional 17 reliable reports of lynx in Utah in the 20th century, based on physical remains (including photographs), visual sightings and track identifications, plus another 10 of unknown reliability.[135] The total number of records is 37. Most of these lynx occurrences were on the north slope of the Uinta Mountains, in or near the West Fork of Blacks Fork. Even if we discount the 10 reports of unknown reliability, we still have 17 reliable reports and 10 verified records of lynx, for a total of 27, most of which located the lynx in the Uinta Mountains! In other words, the historical evidence indicates a minimum of 10-37 lynxes in the Uinta Mountains over the last 103 years (not counting dispersers from Colorado). Thus, there can be little doubt that the actual number of "sightings" was greater than 10 - 30 would be much more probable.

Of interest is an account of Harold Wadley, who was a Forester working for the U.S. Forest Service in Idaho and in the Uinta Mountains. Harold worked in the Uinta Mountains in 1957 and 1958. He used dogs and traveled by snowshoe to track and tree lynx. His records show he treed 20 Canada lynx in those two years. Harold encountered Canada lynx along the entire north slope of the Uinta Mountains. He estimated that there were 15 Canada lynx on the north slope of the Uinta Mountains between the West Fork of the Bear River and the Little East Fork

[133] West Fork Blacks Fork Grazing FEIS (WFBF FEIS), 2006, page 48.
[134] DEIS page 129.
[135] Ruggiero, et al., Ecology and Conservation of Lynx in the United States, University Press of Colorado, (1999.) p. 210

of the Black Fork River. This essentially was the area within his ranger district.[136] Was his report even considered? Do we just discount this as unreliable? After all, Harold worked for the U.S. Forest Service.

At this point we should ask ourselves how many records—verified records, if you like—it would take to establish that there was a resident population of lynxes in the Uinta Mountains during some part of the 20th century. Does anyone have even the slightest clue? Of course not. And the reason is that there are no empirical data for establishing a baseline on which to base a prediction. Surely all we can reliably say is that the more records (verified + reliable), the higher the probability. Thus, this premise commits the fallacy of begging the question by presupposing what is to be proved.

The fact that four of the verified records of lynx occurrence correlate with cyclic highs in the lynx metapopulation does nothing to support the hypothesis that lynx in the Uinta Mountains were transient dispersers rather than members of a resident population. This premise also begs the question: First, the cyclic high explanation is inconsistent with the predominant snowshoe hare story: "The predominant snowshoe hare story in this century has been that snowshoe hares are strongly cyclic in the north but show reduced or no cycles in their southern distribution."[137] And second, the Uinta lynx population, assuming there was one, would most likely have also been undergoing a cyclic high, since cyclic highs occur throughout the metapopulation.[138]

Third, the fact that only four of 27-37 lynx occurrences—one in seven—correlated with a lynx population cyclic high is statistically irrelevant to the question of where those four lynxes came from. The conclusion insinuated by the FS is that they probably immigrated to the Uinta Mountains from a distant population when the habitat for that distant population became saturated—but, significantly, no evidence is given for this conclusion. It is to be expected that some of the records and reports would correlate with a lynx population cyclic high, since cyclic highs, which occur one or two years out of 10 or 11,[139] exhibit about the same frequency as the proportion of lynx records during the purported cyclic highs to the proportion of lynx records plus reliable reports (= 1 in 7).

[136] Lewis, L. and Wenger, C.R. 1998. Idaho's Canada Lynx: Pieces of the Puzzle. Idaho Bureau of Land Management Technical Bulletin No. 98 - 11 in cooperation with the U.S. Forest Service.
[137] Ruggiero, et al. p. 191.
[138] Ruggiero, et al. p. 438.
[139] Ruggiero, et al. p. 271,2.

**(2) What About Lynx Habitat?**

Neither the current EA for the Range Improvement Project, nor the Ashley Aspen Restoration EA, RE and WBA analyzed the current condition of habitat for Canada lynx to ascertain to what extent, if any, human activities have compromised that habitat and prevented occupancy or travel by lynx. While the NRLMD ROD dismisses the Ashley NF as unoccupied lynx habitat and provides various standards and guidelines for management, we have seen no analysis of the effectiveness of these. In addition, there have been many publications relating to lynx habitat conditions since the publication of that ROD in 2007. Now, a hard look needs to be taken by the Ashley NF and this Project Area as to the actual conditions existing from all past, present, and reasonably foreseeable future actions compared to habitat preferences of lynx. Each LAU, IRA and treatment area should be analyzed as to its habitat capability for lynx as an essential element of NFMA and NEPA. There is intent from legal precedent and the U.S. Fish and Wildlife Service.

For example, in its Rule designating critical habitat for Canada lynx in 2014, the USFWS noted: "This rule also rescinds the existing State boundary-based definition of the lynx DPS and replaces it with a definition that extends the Act's protections to lynx ''where found'' in the contiguous United States. This change ensures that lynx, which are known for their long-distance dispersal capability and tendency to occur in places well outside of typical habitats, receive the Act's protections **wherever they occur** in the contiguous United States."[140] Further, the USFWS in its Rule listing the lynx as Threatened said, " Because a substantial amount of lynx habitat in the contiguous United States occurs on federally managed lands, particularly in the West, **we conclude that the factor threatening lynx in the contiguous United States is the lack of guidance in existing Federal land management plans for conservation of lynx and lynx habitat.**"[141] (Emphasis added). However, as was noted in October of 2017 by the FWS in their Species Status Assessment of lynx in the contiguous U.S., there has to date been no actual verification that the NRLMD is conserving lynx.[142]

*Marble Mountain Audubon v. Rice*[143] interprets NEPA to require the Forest Service to consider biological corridors and to ensure their functionality. The standard for such a review is the same "hard look" NEPA requires of other environmental effects. This means those corridors <u>within</u> the analysis area and linkages with areas <u>adjacent to</u> the analysis area need to be examined, plus

[140] U.S. Fish and Wildlife Service. 2014. Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx and Revised Distinct Population Segment Boundary. Federal Register / Vol. 79, No. 177 / Friday, September 12, 2014

[141] U.S. Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx and Related Rule; Final Rule. Federal Register / Vol. 65, No. 58 / Friday, March 24, 2000

[142] U.S. Fish and Wildlife Service. 2017. Species Status Assessment for the Canada lynx (Lynx canadensis) Continuous United States Distinct Population Segment. Version 1.0, October, 2017. Lakewood, Colorado.

[143] No. 90-15389, D.C. No. CV89-170-EJG, Sept. 13, 1990

the value of the entire analysis area, as part of a larger corridor within or between ecosystems. Friends of the Bitterroot, Inc. v. USFS[144], and Oregon Natural Resources Council v. John Lowe[145] also highlight the importance of including corridors as an element of consideration for an agency decision. Therefore, the Forest Service is required to address how the grazing and other management activities in the Uinta Mountains affect the Uinta Core and Corridor that would normally function to promote genetic diversity and population stability of lynxes among far flung populations in the Rocky Mountains.

Regarding the NRLMD ROD and its standards and guidelines, there is no standard for levels of mature forest habitat within LAUs. While it states that habitat connectivity will be maintained, there is no definition of what constitutes connected habitat, even though this can be defined by current science. The NRLMD ROD does not clearly define what qualifies as unsuitable lynx habitat, which is limited to no more than 30% of an LAU (VEG S1) with no more than 15% unsuitable habitat created in 10 years (VEG S2). The ROD glossary at 14 defines stand initiation habitat as generally developed after a stand-replacing disturbance by fire or regeneration timber harvest; a new single-story layer of shrubs, tree seedlings and saplings establish and develop, reoccupying the site; trees that need full sun are likely to dominate these even-aged stands. The glossary at 12 also defines lynx habitat in an unsuitable condition as the stand initiation structural stage but notes that unsuitable habitat can also be created by shelterwood cuts and commercial thinning depending on the resulting stand composition and structure. The ROD at 9 defines lynx habitat in an unsuitable condition as those forests in a stand initiation structural stage that are too short to provide winter snowshoe hare habitat; these conditions are created by stand-replacing wildfires, prescribed burns that remove all vegetation, or regeneration timber harvest. The ROD at 10 states that the definition of VEG S2 was changed to clarify that it only applies to timber management practices that regenerate a forest, as clearcut, seed tree, shelterwood, and group selection. The VEG S2 standard applies to all timber management projects that regenerate forests, including clearcuts, seed tree, shelterwood and groups selective cuts. The NRLMD does not ensure persistence of lynx, since there are no restrictions on the amount of an LAU that can be converted to habitats that are avoided by lynx, and to habitats that reduce habitat connectivity via mature forests.

The 30% clearcut standard for lynx habitat in the NRLMD is based on outdated habitat recommendations published in 1989 by lynx experts, while other key recommendations were ignored. Although these recommendations noted that monitoring was required to determine if they would be effective, no such monitoring was ever done before they were partially included in the LCAS and subsequently the NRLMD. Currently, the current best science demonstrates that the 33% opening level allowed by these recommendations are invalid, while the unused recommendations of maintaining a high level of forest cover of 69% has been validated.

[144] 900 F. Supp. 1368, 1372 (D. Mont 1994)
[145] 109 F.3d 521, 526 (9th Cir. 1997)

The 1989 Brittell recommendations for lynx habitat defined a level of habitat connectivity for lynx, which included denning, travel, and stalking habitat as 66% of each square mile of lynx habitat, not an entire LAU of many square miles with no guidance as to where within that LAU habitat should be maintained.[146]

While clearcuts and sparse forests may receive some lynx use, their suitability for lynx is significantly reduced for a significant amount of time. It has been shown not only that clearcuts and sparse forest are strongly avoided by lynx but that restoration of lynx habitat use in these logging areas to 50% of previous use takes 20 years in forest thinnings, and 34-40 years for selection cuts and clearcuts. Also, all logging treatments are avoided by lynx for at least 10 years.[147] Predictors for lynx reproductive success within occupied female home ranges were the connectivity of mature forest, intermediate (10 - 15%) amounts of young regenerating forest, young regenerating forest patches with low perimeter - area ratios, and the adjacency of mature forest to young regenerating types. Female lynx home ranges with greater than 50% mature forest and 10 - 15% young regenerating forest appear to be the optimum.[148]

More recent work has characterized habitat quality of Canada lynx at their "range periphery".

> Our results indicated that the probability of a female producing kittens was most associated with the connectivity of mature, multistoried forests (composed of mostly spruce-fir). However, the variation among female lynx accounted for ≈62% of the total variation explained in litter production, suggesting substantial individual-level variation. Thus, managers can contribute to increased reproductive success of female Canada lynx by facilitating the development of mature forests but measuring that success will be difficult given the individual variation. In core areas of high quality females (i.e., produced kittens frequently), mature forest was 17% more abundant (i.e., ≈60% of the total core area), more connected, less clumpy, and exhibited 2.25-times larger patch sizes than the core areas of low quality females. At the home-range extent, patterns were less pronounced while the abundance of mature forests remained high (≈50%) for high quality females. Additionally, we demonstrated that the relative density of snowshoe hares was ≥2.8 times higher in advanced regenerating forests compared to all other structural classes, including mature forest. Advanced regenerating forests accounted for ≈18–19% of the core area and home range of high quality female lynx. Combined, our results suggest that a high quality

[146] Brittell, J.D., R.J. Poelker, S.J. Sweeney, G.M. Koehler. 1989. Native cats of Washington. Washington Department of Wildlife, Olympia.
[147] Holbrook, J.D., Squires, J.R., Bollenbacher, B., Graham, R., Olson, L.E., Hanvey, G., Jackson, S., Lawrence, R.L., 2018. Spatio-temporal responses of Canada lynx to silvicultural treatments within the Northern Rockies, U.S. For. Ecol. Manage. 422, 114–124.
[148] Kosterman, M.K. 2014. Correlates of Canada Lynx Reproductive Success in Northwestern Montana. Graduate Student Theses, Dissertations, & Professional Papers. 4363. https://scholarworks.umt.edu/etd/4363

> mosaic for female Canada lynx contains ≈50–60% mature forest and ≈18–19% advanced regenerating forest. Furthermore, we used Forest Inventory and Analysis data to characterize the approximate age distribution of advanced regeneration and mature forest, which was relevant for rotation schedules of forest silviculture. Results indicated that advanced regeneration was ≈20 to 80 years old while mature forest was ≈50 to ≥200 years old.[149]

In addition, lynx spend a significant amount of time at the interface between mature and advanced regeneration forest. This is likely because advanced regeneration forest provides the most hares, but mature forest habitat makes these hares more accessible. This indicates that advanced regeneration forest subsidizes the occurrence of hares in adjacent mature forest where they are more accessible to lynx.[150]

Some other characteristics of habitat were laid out in the Lynx Conservation Assessment and Strategy.[151] Most lynx observations in the Western US were in conifer within the 4,920 - 6,560 foot elevation zone and in the southern Rockies the 8,000 to 11,500 foot zone. Snowshoe hares comprise 35 - 97% of the diet with red squirrels of increased importance during hare declines. Hares feed on accessible twigs and stems in winter and forbs, grasses, and small shrubs in summer. Livestock compete directly with hares for forage due to high similarity in diets. Red squirrel populations are highest in dense closed canopy conifer forest with large amounts of woody debris. Lynx populations are higher in young un-thinned lodgepole pine stands than in thinned stands. Den sites need large woody debris, can be in older regenerating stands, or mature conifer or mixed conifer. Primary vegetation types are lodgepole, subalpine fir, and Engelmann spruce with Douglas fir, aspen and dense riparian willow stands among other types used. Home ranges vary between males and females and with hare density and can range from between 4 - 47 square miles in the U.S. Home ranges in Canada are larger.

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[149] Holbrook, J.D., Squires, J. R., Bollenbacher, B., Graham, R. O., Lucretia E., Hanvey, G., J, S., Lawrence, R.L., Savage, S. L. 2019. Management of forests and forest carnivores: Relating landscape mosaics to habitat quality of Canada lynx at their range periphery. Forest Ecology and Management. 437: 411-425. https://doi.org/10.1016/j.foreco.2019.01.011

[150] Holbrook, J.D., Squires, J.S., Olson, L.E., Lawrence, R.L., Savage, S., 2017. Multi-scale habitat relationships of snowshoe hares (Lepus americanus) in the mixed conifer landscape of the Northern Rockies, USA: cross-scale effects of horizontal cover with implications for forest management. Ecol. Evol. 7, 125–144.

[151] Ruediger, B., Claar, J., Gniadek, S., Holt, B., Lewis, L., Mighton, S., Naney, B., Patton, G., Rinaldi, T., Trick, J., Vandehey, A., Wahl, F., Warren, N., Wenger, D., and Williamson, A. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.

A map of the predicted distribution for Canada lynx in the 2050's based on modeled climatic conditions is provided in Figure 12.[152] This illustrates the critical importance of the Uinta Mountains to lynx and other species such as wolverine as climate causes shifts in habitat.


**Figure 12. Modeled Canada lynx habitat in 2050's**

[152] Hamilton, H. 2008. Predicted Distribution of Canada Lynx (Lynx canadensis) - A2 emissions scenario - 2050's. California Academy of Sciences 07.29.2008. Map data from https://databasin.org/galleries/1d3dd1c4-96fc-4c13-95ff-a2e03e6e6aca/ Accessed on 5/20/21.

**11. Wolverine**

"Absent from the action area or potentially present occasionally but having little or no likelihood of being negatively affected by the proposal." (EA p12). The Terrestrial BE (p8) states that they are absent from the project area. Here, we incorporate our comments from the Ashley Aspen Restoration Project EA as both projects occupy and overlap within the Ashley NF. The current EA and the Aspen EA neither explain "why" there are no wolverine residing in the Uinta Mountains. They don't look at habitat requirements of wolverine, map potential habitat, describe that habitat and whether it is degraded by Forest activities to the point wolverine cannon occupy this large, high elevation area which includes hundreds of thousands of acres of wilderness.

The Ashley Aspen Restoration EA (p9) states: "The Canada lynx and wolverine are unlikely to be affected by the project because they are unlikely (to) occur on the Forest. Federally listed threatened or endangered aquatic species or designated critical habitat does not occur within the project area. Therefore, the proposed management actions would have 'no effect'." EA Table 2 refers to the Wildlife BA (WBA). Table 4 of the WBA says the wolverine is not known on the Ashley NF although in 2014 a wolverine was documented on the north slope of the Uinta Mountains with possible tracks seen near Dutch John on the Flaming Gorge RD that same year. Bait stations placed in the Ashley NF between 2005 and 2009 detected no wolverines. Annual winter carnivore track surveys on the Ashley NF between 2009 and 2017 have detected no wolverines. This begs the question as to WHY no wolverines. This and the reasons for absence of lynx are never addressed by the agency. It is a marvelous deflection around the facts on the ground --- eliminate the habitat and lose the population, then use the lack of the species occurrence to claim there is "no effect" regardless of the magnitude of a proposed project.

The Ashley Aspen Restoration Project was determined to have "no impact" to wolverine populations because: "Even if an individual wolverine happened to wander on the Forest and thus 'exposed' to elements of the project, the effects to an individual wolverine are expected to be negligible based on the following: 1) the project will not change vegetation types or remove prey species habitat, thus wolverine habitat would not change to an unsuitable condition 2) the project is unlikely to impede movement of wolverine within and through the Forest, or impede the ability of a wolverine to procure sufficient food, often a limiting factor; and 3) a wolverine disturbed by human activity associated with the project may temporarily be displaced or may habituate to the activity, neither outcome of which is likely to alter the likelihood this individual would procure prey." (WBA p13).

The Roadless Evaluation also described wolverine habitat as marginal in the descriptions for each IRA to be affected by the Project. This analysis fails to take the "hard look" required by NEPA, fails to address the actual habitat parameters needed by wolverine to occupy a place or to use connections to move from place to place. The three conclusions presented above that purport to explain why wolverine will be unaffected are unsupported by the facts. First, the project is by design, planned to change vegetation types from aspen/conifer to aspen; and this

removes cover from these areas. Second, there is no analysis showing that habitat in the Ashley NF currently meets the requirements for wolverines. Have human activities so fragmented and disturbed these IRAs that potential wolverine habitat is eliminated, thus no wolverines? The current and potential condition relative to the needs of wolverines and the effects of the treatments should be analyzed to determine the capability of the habitat for wolverines based on their habitat preferences. Third, the idea that displacement from this Project is temporary and would not affect the ability to find prey is not supported. There is no cumulative effects analysis to show how all the past, present and planned activities plus these treatments affect the Project Area, IRAs, and the CEA and how those affect the ability of wolverines to use or move through the area. The following discussion addresses these points in more detail.

Recently, a US District Court ruling remanded the U. S. Fish and Wildlife Service (USFWS) withdrawal of its Proposed Rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act for further consideration.[153] The ruling reviewed the science relating to the selection of denning sites in combination with snow presence during the natal period and recent analyses of potential climate change effects to snow pack that indicate a severe reduction in snow cover during this century with negative implications to wolverine populations. This factor alone should place greater emphasis on habitat integrity and restoration for corridors and connectivity for both wolverine and lynx as these species overlap in habitat use and travel.

The ruling also emphasized that populations in the US, which exist as meta-populations **"require some level of regular or intermittent migration and gene flow among subpopulations, in which individual subpopulations support one-another by providing genetic and demographic enrichment through mutual exchange of individuals."** If connectivity is lost, **"an entire meta-population may be jeopardized due to subpopulations becoming unable to persist in the face of inbreeding or demographic and environmental stochasticity."**

The study by Copeland, 2010[154], cited in the ruling, analyzed spring snow cover to determine overlap with known den sites, finding 97.9% overlap. They concluded that if reductions in snow cover continue to occur, **"habitat conditions for the wolverine along the southern extent of its circumboreal range will likely be diminished through reductions in the size of habitat patches and an associated loss of connectivity, leading to a reduction of occupied habitat in a significant portion of the species range."** A second analysis by McKelvey, 2011[155] used Global

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[153] US District Court for the District of Montana, Missoula Division. April 4, 2016. Defenders of Wildlife v US DOI. CV 14-246-M-DLC

[154] Copeland, J. P.; McKelvey, K. S.; Aubry, K. B.; Landa, A.; Persson, J.; Inman, R. M.; Krebs, J.; Lofroth, E.; Golden, H.; Squires, J. R.; Magoun, A.; Schwartz, M. K.; Wilmot, J.; Copeland, C. L.; Yates, R. E.; Kojola, I.; and R. May. 2010. The bioclimatic envelope of the wolverine (Gulo gulo): do climatic constraints limit its geographic distribution? Canadian Journal of Zoology. 88: 233-246.

[155] McKelvey et al. 2011. Climate change predicted to shift wolverine distributions, connectivity, and dispersal corridors. Ecological Applications, 21(8), 2011, pp. 2882–2897.

Climate Models to predict the change in distribution of persistent spring snow cover so that "for conservation planning, predicting the future extent and distribution of persistent spring snow cover can help identify likely areas of range loss and persistence, and resulting patterns of connectivity." McKelvey concluded that they expect, **"the geographic extent and connective(ity) of suitable wolverine habitat in western North America to decline with continued global warming"** and that **"conservation efforts should focus on maintaining wolverine populations in the largest remaining areas of contiguous habitat and, to the extent possible, facilitating connectivity among habitat patches."**

In its Proposed Rule, the USFWS accepted these studies as the best available science with climate change as the driving factor. Other threats were considered of lower priority in comparison, "however, cumulatively they could become significant when working in concert with climate change if they further suppress an already stressed population." The USFWS noted harvest, demographic stochasticity, and loss of genetic diversity as these secondary factors but avoided mention of habitat integrity and fragmentation by roads, infrastructure and human activity, or loss of prey or food base due to depletion of herbaceous plant communities and cover by livestock grazing.

Robert Inman, PhD, a biologist, and the Director of the Greater Yellowstone Wolverine Program at the Hornocker Institute/Wildlife Society noted that the USFWS singled out a particular activity, fur trapping, that can cause mortality, while ignoring the full range of human activities such as roadkill, before records were kept. So delineating habitat based on these records can understate actual range for wolverines. He also provided evidence that wolverines can den in areas lacking the presumed snow cover, and those conditions suitable for competing for food are also a limiting factor. He further argues that road density was found to be a factor in an earlier telemetry-based habitat analysis, particularly at higher elevations. Wolverines were observed to avoid or alter their travel when encountering housing developments and traffic, infrastructure, and transportation that can affect mortality.[156] He also pointed out the extensive trapping that occurred in the US prior to records of wolverine and that they may well have been eliminated from suitable places before records were kept.

So, while the USFWS emphasizes the role of connectivity and genetic exchange in maintaining meta-populations and genetic diversity, it avoids the identification of the connections vital to maintenance and recovery of the species. See Figure 13 which is a map of the USFWS modeled wolverine habitat.[157] This map shows wolverine habitat areas in Montana, Idaho, Utah, and Wyoming but provides no indication of travel corridors that wolverine might use to connect these. This map shows the areas in Wyoming, Idaho, and Utah with sufficient snow cover.

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[156] Review of the United States Fish and Wildlife Service's Proposed Rule to List Wolverines as a Threatened Species in the Contiguous United States, May 2013. https://www.federalregister.gov/documents/2013/02/04/2013-01478/endangered-and-threatened-wildlife-and-plants-threatened-status-for-the-distinct-population-segment

[157] https://www.fws.gov/mountain-prairie/es/species/mammals/wolverine/02012013ModeledWolverineHabitatMap%20.jpg.pdf

Connecting these "dots" would likely lead to a connectivity pattern like that of Canada lynx. Note the Uinta Mountains are considered wolverine habitat.

The Idaho Management Plan for the Conservation of Wolverines identified the movement corridors shown in Figure 14.[158] These overlay with the Regionally Significant Wildlife Corridor and the Yellowstone to Uinta Connection shown above, principally emphasizing the corridor from SW Wyoming through SE Idaho and the Bear River Range south to the Uinta Mountains in Utah. Recent modeling of wolverine connectivity illustrates the close correlation with the Regionally Significant Wildlife Corridor (Figure 15).[159] Note how these mapped core and corridor connections overlap with those for lynx. Analyses and habitat-based prescriptions should be completed for wolverine as outlined for Canada lynx.

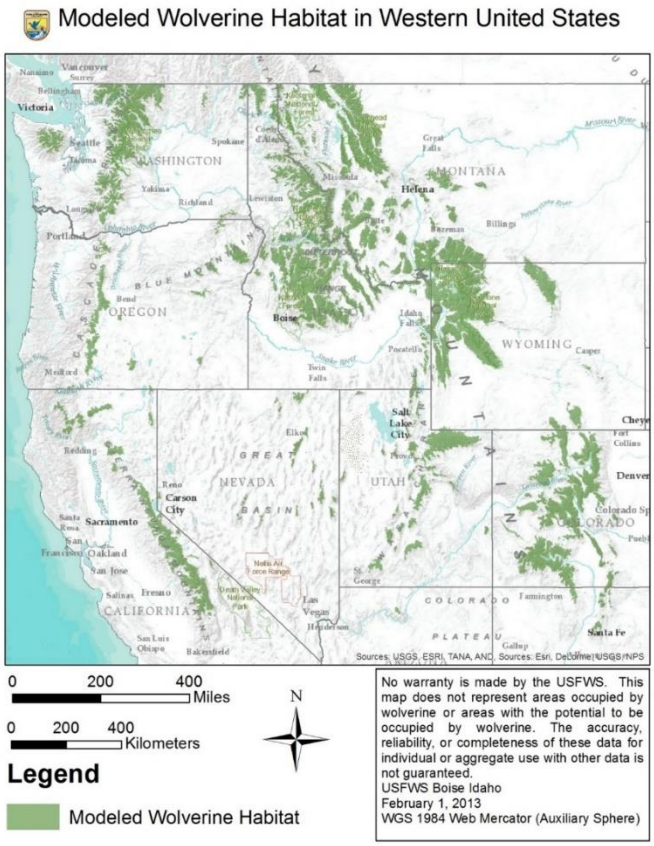


**Figure 13. Fish and Wildlife Service Modeled Wolverine Habitat**

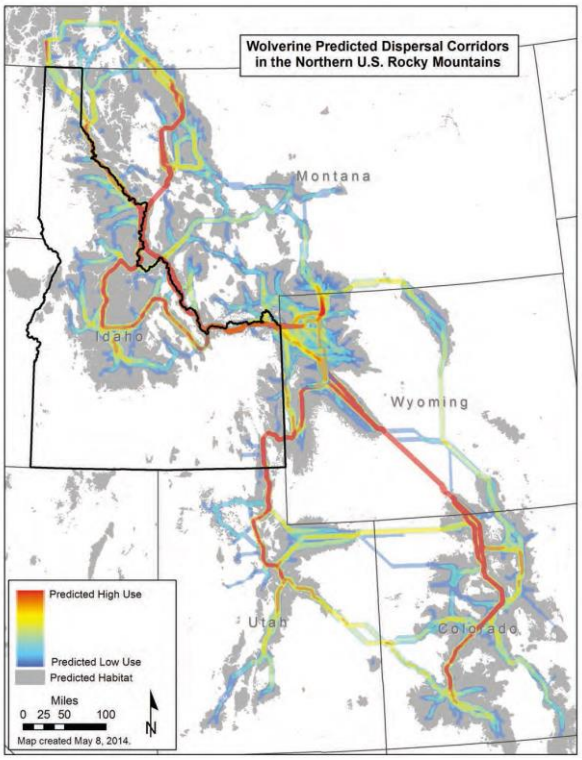


**Figure 14. Movement Corridors for Wolverine from the Idaho Management Plan**

[158] Idaho Department of Fish and Game. 2014. Management plan for the conservation of wolverines in Idaho. Idaho Department of Fish and Game, Boise, USA. https://idfg.idaho.gov/old-web/docs/wildlife/planWolverine.pdf

[159] Carroll, K.A., Hansen, A.J., Inman, R.M., Lawrence, R.L. and Hoegh, A.B., 2020. Testing landscape resistance layers and modelling connectivity for wolverines in the western United States. Global Ecology and Conservation. https://doi.org/10.1016/j.gecco.2020.e01125

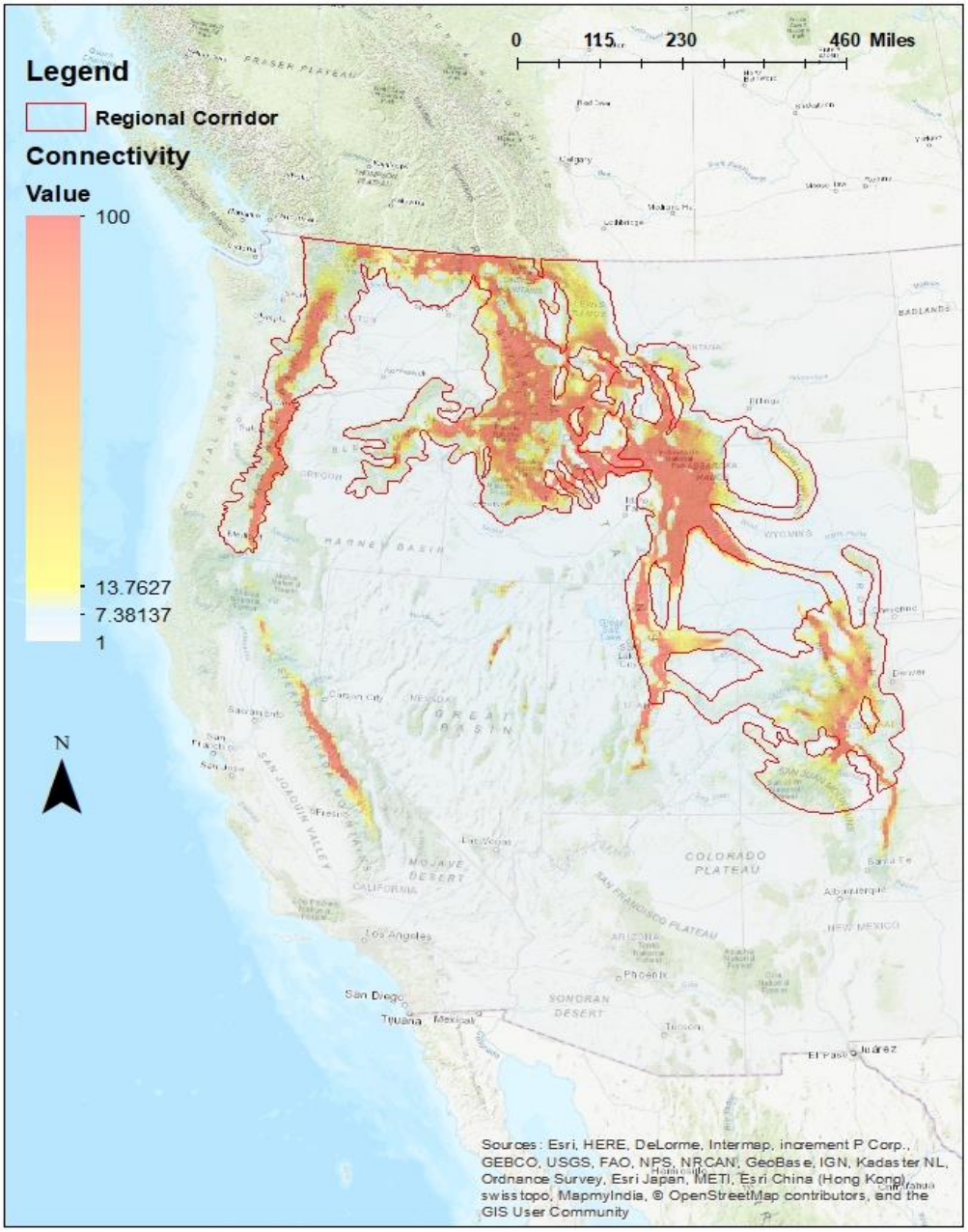


**Figure 15. Regionally Significant Wildlife Corridor**

**14. Monarch Butterfly**

The EA (p9) states that the "species lack suitable habitat within the project vicinity." The Terrestrial BA (p8) says they are "absent". In our notes on the Terrestrial Wildlife BA below, we address questions about butterfly habitat and the failure to fully describe their habitat, the habitat of milkweed and whether habitat or potential habitat does exist. After all, thousands of cattle and sheep are consuming flowers, modifying plant communities and habitats. This project will expand that grazing intensity. Notes from our comments on the Ashley Aspen project show that parts of the life cycle may occur on the Ashley NF and must be addressed.

The Ashley Aspen Restoration Project EA noted that Monarch Butterfly is a sensitive species and there is No Impact from that Project. The WBA noted they may occur on the Ashley NF during parts of the life cycle. On December 15, 2020, the U.S. Fish and Wildlife Service announced that listing the monarch as endangered or threatened under the ESA is warranted but precluded by higher priority listing actions. This indicates that any impacts to habitat remain an issue for analysis. The monarch is now a candidate under the ESA.[160] As such, consultation under Section 7 of the ESA is needed. The habitat associations and species of plants used by monarch butterflies need to be determined and their extent on the Ashley NF documented and mapped to evaluate past, present, and foreseeable activities and their impacts on its habitat and populations. The Range Project locations and a one-mile radius around each also should be evaluated for effects on the plant communities and water sources needed by the butterfly. Project and cumulative effects should be analyzed for the Project Area and a designated CEA.

**15. Whitebark Pine**

Whitebark pine is not mentioned in the EA and specialists' reports. The Ashley Aspen Restoration project EA did describe its presence. We incorporate our comments here.

The Ashley Aspen Restoration Project EA Table 1 (p21) mentioned Whitebark Pine in its Design Criteria as: " In areas with whitebark pine, take steps to improve the likelihood of survival. Where necessary, thin the stand prior to prescribed burning to prevent crown fire and assure that residual activity fuels and subsequent burning will not scorch whitebark pine crowns by more than 20-30%." We could find no other mention of whitebark pine in the NEPA documents for the Project. On December 2, 2020, the U.S. Fish and Wildlife Service released a proposed rule to list whitebark pine as a threatened species under the ESA. As such, it would seem informal consultation under Section 7 of the ESA is needed. Listing of whitebark pine was not

[160] U.S. Fish and Wildlife Service. 2020. Endangered and Threatened Wildlife and Plants: 12 - Month Finding for the Monarch Butterfly. Federal Register / Vol. 85, No. 243 / Thursday, December 17, 2020.

considered prudent at the time.[161] This does not mean the conditions affecting whitebark pine should not be analyzed. The extent of whitebark pine occurrence in the Ashley NF needs to be determined and mapped to evaluate past, present, and foreseeable activities impacts on its habitat and populations. The affected areas within one mile of each existing and proposed water development (pond, trough, pipeline routes) evaluated for the current location and extent of whitebark pine compared to the current habitat of whitebark pine. Are whitebark pine to be removed for pipelines and fences? Project and cumulative effects should be analyzed for each for the Project Area and a designated CEA.

**16. Other ESA and Sensitive Species**

In Table 5 of the EA (p11 - 13), the Ashley NF avoids actual analysis and dismisses impacts to sensitive species and their habitat. Examples of deflection around impacts include the following. The EA (p17) states that, "many areas where the projects are proposed contain limited, if any, hydrologic resources." "Water quality (sediment) may currently be slightly impacted by current grazing practices, but the majority of the project areas are upland and are not directly connected to perennial stream channels. Project design, including design features, and best management practices will reduce or eliminate impacts to water quality. No adverse effects to water quality are expected as a result of implementation of this project." (EA p17). This is such a misleading statement to deny that the projects in uplands have no impact on riparian areas or wetlands or to not recognize that livestock using these projects and the other 1,728 projects have no impacts to hydrologic resources. This essentially denies that watersheds are connected to the very streams that drain those watersheds.

The Aquatic Species Effects Analysis (p4) says that "Short-term soil disturbance in riparian areas is expected. Once these soils have stabilized and vegetation has become established, these range improvement activities are expected to have a beneficial effect and improve the capability of riparian areas to act as effective sediment buffering zones. Better distribution of livestock will result in riparian areas capable of being buffering zones to upslope activities. "The proposed action would result in short-term soil disturbance which could increase the amount of sediment reaching aquatic habitats. The proposed action is intended improve conditions in riparian areas and aquatic habitat across the project area once completed and conditions have stabilized. These activities are expected to result in beneficial indirect effects to aquatic species and habitat in the long-term by improving livestock distribution and minimizing concentrations while protecting riparian areas, streams, lakes, springs and meadows. We expect any increased sediment delivery to intermittent streams would likely be undetectable. Also, any increase would be short-term, not lasting more than three years following treatment within the drainage." (p7). We provide references showing that upland water does not relieve pressure on riparian areas as those are grazed until available forage is depleted and banks of streams trampled. Here, the

[161] U.S. Fish and Wildlife Service. 2020. Endangered and Threatened Wildlife and Plants: Threatened Species Status for Pinus albicaulis (Whitebark Pine) With Section 4d Rule. Federal Register Vol. 85, No. 232. Wednesday, December 2, 2020.

aquatic specialist provides no (zero) evidence that their statements of beneficial effects is true. The literature we provide shows there are NO beneficial effects of livestock grazing to ecosystems. Yet, throughout these documents, the Ashley NF sticks to self-serving myths, beliefs, and propaganda.

Finally, the Aquatic Species BA/BE (p13) states "Design Criteria and Best Management Practices (BMP) identified in the Hydrology Report would minimize potential increased sediment delivery to streams. Therefore, the activities of the proposed project are expected to have a "Beneficial Impact" on CRCT populations and their habitat within the project area….These activities are expected to result in beneficial indirect effects to aquatic species and habitat in the long-term by improving livestock distribution and minimizing concentrations while protecting riparian areas, streams, lakes, springs, and meadows. We expect any increased sediment delivery to intermittent streams would likely be undetectable. Also, any increase would be short-term, not lasting more than three years following treatment within the drainage."

Stating that these developments "protect" riparian areas is mind boggling because they do not exclude livestock from riparian areas or wetlands which they prefer. We discuss BMPs and design features below. These are condition-based management myths used to pretend that damage is not occurring. And, as we repeatedly mention, there is never any monitoring data provided to compare the baseline against the outcome after applying these measures.

In these comments we review aspects of specialists' reports regarding MIS, TES, none of which are determined to be affected by the proposed project. Cumulative effects from all past activities should have been superimposed over the current proposal, mapped and habitat conditions, both current and potential or historical presented. The endangered fish in the Colorado River may not occupy the project area, but the watershed and water quality effects of the cumulative actions and activities affect downstream habitat and must be analyzed. Instead, the EA deflects around any impacts other than the physical footprint of the actual construction, ignores the decades of grazing impacts across the Ashley NF and does no analysis. This is a gross failure under the CWA, NEPA, NFMA, ESA and APA. Below we incorporate our comments on the Ashley Aspen Restoration Project relating to special status species.

The Ashley Aspen Restoration Project EA Tables 2 and 3 listed plant and animal species that are listed under the ESA or are Sensitive Species. As such, their specific habitat requirements and the locations of that habitat need to be mapped and identified relative to the Project Area, the CEA and individual water development and pipeline areas. The potential and current capability of the habitats to support viable populations of these species must be determined along with their current population status across the ANF and UWCNF. Where conservation plans exist, the provisions of those conservation plans need to be evaluated and their effectiveness determined. For example, the NEPA documents for the Project enumerate the Conservation Strategy for Northern goshawk; conservation agreements for Colorado River cutthroat trout, Bonneville cutthroat trout and Columbia spotted frog. While design criteria are referenced as minimizing impacts to occupied or suitable habitat, there was no mapping of this

suitable habitat and no analysis of the outcomes of past projects that may have relied on these criteria or BMPs. There can be no assurance that a project such as this that relies on these mitigations without any site-specific analysis can accomplish the mitigation claimed. How can there be when no baseline data is collected against which the mitigation can be tested.

The Threatened or Endangered Colorado River fish species were not addressed other than mention they and their habitat do not occur in the Project Area. (EA Table 2, p10). What is not addressed is how this Project and other past projects in the Ashley NF have affected sediment loads and alterations of hydrology in the downstream areas where there is potential habitat for the species. Livestock grazing, roads and trails, timber projects, CUP and water diversions all affect watersheds, erosion and sedimentation, and changes in stream flows that affect these downstream habitats. This is a basic example of the need for a cumulative effects analysis.

Northern goshawk and the WBA notes that in 2000, the Ashley NF Plan was amended to incorporate guidelines from Reynolds 1992. But we don't see those recommendations specified. Reynolds specified six structural stages of forested habitats along with protections from grazing of livestock to include an average of no more than 20% utilization in goshawk home ranges and protection of mycorrhizal fungi. Earlier in these comments we referenced a study in the Wasatch Cache National Forest that showed livestock grazing reduced soil carbon and nitrogen, disrupted the fungi layer at the soil and litter interface.[162]

The Ashley Range Improvement Project EA (p11) states, "Minor vegetation changes, habitat fragmentation, and habitat alterations associated with the proposed projects should not adversely impact suitability of goshawk habitat within the proposed project areas. Design features/goshawk guidelines from the Goshawk Amendment would minimize or negate potential impacts to goshawk habitat."

The WBA for the Ashley Aspen Restoration Project noted that goshawk populations have been monitored on the ANF since 1999. It also noted that "Many of the known goshawk nest areas and PFA's on the Forest intersect with aspen stands that may be included for possible treatments under this project proposal. Goshawk habitat may be manipulated with this project, however following the goshawk guidelines (the best management practices/mitigations listed above in Table 2) will maintain goshawk habitat (including prey species habitat) and protect nesting goshawks." (p13). Where is the monitoring data and population trend, occupancy, and habitat capability analysis?

Once again, these home range, PFAs and Nesting Areas need to be mapped and the effects of the past and proposed actions analyzed. The population trends of goshawk should be analyzed along with the relationship to past actions such as timber harvest, prescribed fire, road occurrences and the Home Range, PFA and Nesting Areas that overlapped with each. The Project analysis for this project should also analyze for each aspen and aspen/conifer treatment

[162] Op. cit. Carter et al 2011.

area within one mile of each water development as to how the balance in the six forest stand structure criteria are affected, how canopy cover is affected, how understory vegetation will be affected, thereby affecting goshawk prey, and what this means regarding habitat capability for goshawks.

The Ashley Range Improvement EA (12) notes, "Proposed projects would remove a negligible amount of bighorn sheep habitat, would provide additional water sources for bighorn sheep in the arid environment, provide better distribution of livestock possibly resulting in better forage distribution for bighorn sheep, are small in footprint and are unlikely to displace bighorn sheep" Once again, this is a total failure to look at livestock interactions with bighorn sheep, forage competition, disease transmission, habitat loss, human activity, roads and other disturbing activities.

When we looked at the Ashley Aspen Restoration project we see another example of failure to analyze habitat related to bighorn sheep. The Ashley Aspen Restoration Project EA Table 3 (p11) noted that there is No Impact from the Project to bighorn sheep because there is no habitat for bighorn sheep present. The WBA (Table 4, p9) indicated they are present on the Ashley NF and provided a simplified listing of habitat characteristics. There is no separation of breeding, parturition or seasonal ranges and the characteristics of those habitats. Figure 16 provides a map of bighorn sheep range as mapped by state wildlife agencies. This shows they have habitat in the Ashley and UWCNFs. These need to be mapped and overlain with the Project Area, CEA, treatment areas and IRAs affected. Then the habitat characteristics needed by bighorns need to be determined for each area and a determination as to how the Project and increased competition from livestock using each water development will affect each. Cumulative effects from past actions such as timber harvest, prescribed fire, roads and trails that fragment habitat all need to be evaluated. In addition, the cumulative effects of domestic sheep grazing and transmittal of disease need be analyzed by comparing the suitable bighorn habitat with allotments where domestic sheep are grazed. Suitable buffering should be incorporated.

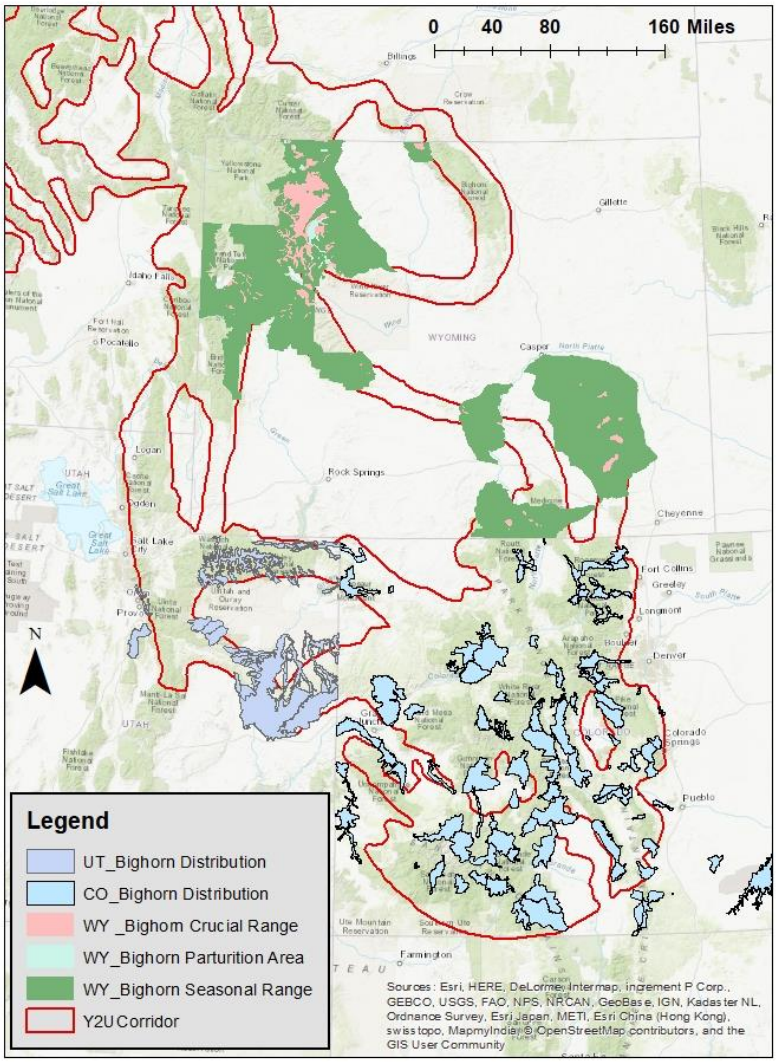


**Figure 16. Current Distribution of Bighorn Sheep Populations from State Wildlife Agency Data**

### 17. Reliance on Best Management Practices and Adaptive Management

Throughout these comments we have referenced the Ashley NF deflecting site-specific analysis to design criteria, adaptive management, and BMPs. This "condition-based management" approach has been used by the Forest Service extensively in timber related projects.[163] This process postpones site-specific analysis until project implementation, which excludes the public from "site-specific decisions, reduces transparency, and removes

[163] Cliburn et al. 2021. The U.S. Forest Service's Expanding Use of Condition-Based Management: Functional and Legal Problems from Short-Circuiting the Project-Planning and Environmental Impact Statement Process. American Bar Association.

incentives for the agency to avoid harming localized resources."

This Project will rely on Adaptive Management and BMPS. These are assumed to be effective and relied upon. As we pointed out earlier, these have apparently failed as the purpose and need for this project describe as a result of condition and trend, while providing no data or analysis specific to condition and trend. However, a fundamental aspect of NEPA is to take a "Hard Look" at current management, conditions, assumptions, and implementation. NEPA requires the Forest Service to account for the current degraded conditions it claims, such as conifer encroachment into aspen stands. But what is the mechanism of this conifer encroachment and lack of recruitment in aspen stands. Is it past fire suppression? Livestock grazing? Past vegetation management implemented by the Forest Service?

What is the history of this project area? What Forest actions or permitted activities play a role in the current state of aspen, wildlife habitat, watershed health and other ecosystem attributes? There should be an analysis of:

- Validity of assumptions from previous NEPA processes
- Accuracy of predictions from previous NEPA processes
- Adequacy of Forest Service implementation of previous decisions
- Effectiveness of actions taken in previous decisions, including an analysis of these design criteria and BMPs

The above items are critical for effective decisions and outcomes and for the public to be informed. Without this analysis the validity of the current assumptions cannot be determined. Without analyzing the accuracy and validity of the assumptions used in previous NEPA processes and projects, one has no way to judge the accuracy and effectiveness of the current analysis and proposals. The predictions made in previous NEPA processes also need to be disclosed and analyzed because if these were not accurate, and the agency is making similar decisions, then the process will lead to failure. For instance, if in previous processes the agency or permittee said they were going to perform a certain monitoring plan or implement a certain type of management, meet certain goals and objectives, and these were never effectively implemented, it is important for the reader and the decision maker to know. If there have been problems with implementation in the past, it is not logical to assume that implementation will now be appropriate. If prior projects have not been monitored to document and compare post project initiation conditions to baseline data, then there is no proof that models, design criteria or BMPs are accurate, effective, or can be relied upon. What commitments have been made in the Forest Plan and subsequent project plans? Have these been realized? In a prior section we outlined some of the commitments made in the Forest Plan and the need for an analysis of implementation and outcomes.

The reliance on Adaptive Management and BMPs without specific targets and quantitative monitoring with defined response actions is a flawed approach that assumes they work. There are no reliable data showing that these effective in protecting aquatic, or other

resources.[164]

Case histories from Idaho showed that BMP's thoroughly failed to cumulatively protect salmonid habitats and streams from severe damage from roads and logging.[165] In analyses of case histories of resource degradation by stereotypical land management (logging, grazing, mining, roads) several researchers have concluded that BMP's increased watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMP's.[166] [167] This phenomenon is called the *"illusion of technique."*[168]

**18. Forest Wide Range Improvement Project Effects Analysis**

A review of this Effects Analysis report [169] identifies major omissions leading to essentially an absence of any site-specific analysis of existing conditions and areas affected by implementing this project combined with other past, present, and foreseeable actions, thus there is no analysis of effects. This report is representative of the absence of relevant data and analysis we have experienced with the Ashley NF in the past. The specialists cited in this report appear to be unable to see any damage by livestock grazing in the Ashley NF. The Effects Analysis (p11) claims that "By following the range improvement construction standards and guidelines conflicts with other resources, such as wildlife and recreation, will be minimized." This omits consideration of the introduction of large concentrations of livestock into areas that might have higher ecological condition and support wildlife and watershed function. It does not explain how these conflicts will be "minimized". This is a deflection of actual analysis to the BMPs or practices without any evidence these have been monitored for effectiveness in the past. Where is the analysis?

The Effects Analysis (p1) claims that the Ashley NF "continuously monitors the condition of rangelands to maintain the grazing program and related resources". Yet, there is a near total absence of monitoring data in the report. What is this monitoring? Where has it been done? There is no trend or utilization data presented, no condition of plant communities in the project

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[164] Ziemer, R.R., and T.E. Lisle. 1993. Evaluating sediment production by activities related to forest uses--A Northwest Perspective. Proceedings: Technical Workshop on Sediments, Feb. 1992, Corvallis, Oregon. pp. 71-74.

[165] Espinosa, F.A., Rhodes, J.J. and D.A. McCullough. 1997. The failure of existing plans to protect salmon habitat on the Clearwater National Forest in Idaho. J. Env. Management 49(2):205-230.

[166] Stanford, J.A., and J.V. Ward., 1992. Management of aquatic resources in large catchments: Recognizing interactions between ecosystem connectivity and environmental disturbance. Watershed Management: Balancing Sustainability and Environmental Change, pp. 91-124, Springer Verlag, New York.

[167] Rhodes, J.J., Espinosa, F.A., and C. Huntington. 1994. Watershed and Aquatic Habitat Response to the 95-96 Storm and Flood in the Tucannon Basin, Washington and the Lochsa Basin, Idaho. Final Report to Bonneville Power Administration, Portland, Or.

[168] Stanford and Ward. Op. cit.

[169] Brown, G. 2022. Forest Wide Range Improvement Project Effects Analysis. Ashley National Forest 2/11/2022.

area relative to their potential. There is no analysis of the so-called range improvement locations and the vegetation communities affected. There is no "hard look".

The absence of monitoring and analysis to describe conditions in the 25 affected allotments, the different Management Areas, and Desired Future Conditions is major. After all, the Effects Analysis (p5) described that there are 1,728 existing range improvements in the 471,719 acres within the affected 25 allotments, including 308 miles of fence. Despite this, the need for the project is to "improve livestock management and distribution, protect rangeland resources and establish study areas". (Note there is no need to restore habitat, species diversity, productivity, connectivity for wildlife, eliminate livestock related water pollution, bank alteration, sediment impairment, soil compaction, and other aspects of the clearly degraded project area.) This was "identified from allotment inspections, range improvement inspections, and cooperation between the Forest Service and grazing permittees to identify management needs." There was no public involvement as provided for in the Forest Service Handbook. So, here you have huge numbers of "range improvements" and yet conditions appear to be degraded as expressed by the need to have more. If conditions are degraded, why are they not analyzed? If they are not degraded, then why are the additional miles of fence, ponds, pipelines, troughs, exclosures, and spring "developments" proposed? The logic does not compute. You can't claim conditions are just fine, then claim a need for more of these "improvements" to improve conditions. Or, if conditions are not documented, there is no basis in fact for the project.

The Effects Analysis (p5) claims there will be 175 temporary and 124 permanent acres of disturbance while ignoring the acres of potentially damaged soils, plants and watersheds affected by increased livestock presence over thousands of acres that may have experienced a lesser presence of livestock in the past. Citing Holechek (2011), the RS Report (p7) claims there will be an "increase in available forage for livestock due to improved livestock distribution across the allotment…and reduces concentrated grazing around water sources." Yet, that same Holechek textbook points out that, depending on topography, areas of severe degradation, or *"sacrifice areas"* occur around water sources including water developments[170]. These can extend from 1 mile to several miles from these sources and out further if stocking rates are too high. Based on this, a single water development can result in an area of soil compaction, erosion and severe loss of ground cover and vegetation for thousands of acres. This textbook on range management also indicates that installing water developments in locations that have had somewhat limited access to livestock in the past may increase ecological damage to areas that are important refuges for relict plant communities and wildlife that have not been previously displaced by livestock. The installation of these water developments, fences and intensified livestock concentrations in the allotments is by its very nature a significant impact and constitutes an irretrievable and irreversible commitment of resources. The effects of the increased livestock presence around these "improvements" are not analyzed in the direct, indirect, or cumulative effects. What plant communities will be affected? How? There is no

[170] Holechek, Jerry L., Rex D. Pieper and Carlton H. Herbel. 2001.Range Management: Principles and Practices, Fourth Edition. Prentice-Hall, New Jersey. 587p.

mapping of the extent of the plant communities, proximity to streams and their riparian areas, and no reporting of current conditions.

We have experienced the lack of accountability of Ashley NF livestock permittees in a decade-long effort to resolve the problem of cattle from the Ashley NF crossing over into the Burnt Fork drainage in the Uinta Wasatch Cache NF. Burnt Fork is a vacant allotment recovering from long term grazing impacts. After ten years of meetings, reports, hiking, and backpacking to inspect the vacant allotments on the North Slope, putting up trail cameras, documenting ear tags, brands and providing the information to both the Ashley and UWCNF, the situation has never been resolved. Our reports and information are available at https://app.box.com/s/s8oidutj67a57rz8vff6rjiwdvmil6gw . Based on our experience, the Ashley NF does not control the livestock it permits in spite of the massive number of so-called range improvements it constructs.

The Effects Analysis (p2) claims the proposed activities "would enhance rangeland vegetation" and "The LRMP goal for range is to achieve satisfactory ecological condition on all rangelands and maintain or obtain plant diversity to meet the requirements of National Forest Management Act". We are unfamiliar with any scientific research or from our own personal observations that livestock grazing has any benefits to soils, plant communities, water quality, springs, streams, or ecosystems. In our scoping comments we provided references showing that every aspect of ecosystems are degraded by livestock, and that wildlife are displaced or reduced by competition for forage and space. The burden is on the Ashley NF is to show with evidence that their claims are valid by providing quantitative data and analysis. Our experience is that the Ashley NF is biased and will not provide objective evaluations of the condition of these ecosystems.

For example, the author of the Range Specialist Report, Mr. Brown, authored a publication titled, "An Alpine Plant Community Classification for the Uinta Mountains, Utah" in 2006. A review of that document revealed significant omissions that were documented in a letter to the Region 4 asking it be withdrawn.[171] The objection to this report was that it accepted degraded conditions as a reference state for the alpine plant communities with many of the sites being in grazing allotments heavily grazed by livestock. Principal advisors to this publication were Sheryl Goodrich (Forest Ecologist), Allen Huber (Range Ecologist), and Richard Zobell (Rangeland Management Specialist). There were no botanists, soil scientists or other non-range-oriented scientists involved in the work. The report notes ground cover values as low as 50% soil cover are a reference state. Yet this data was collected in allotments where livestock grazing continues. As a retired soil scientist who worked in the Ashley NF said, ground cover values approach 100% with substantial cover or lichens and soil crusts following cessation of domestic sheep grazing. In our work in long vacant allotments in the WCNF and Ashley NF, we have seen this. If the Ashley NF is using a reference in grazed allotments where sites have

[171] Letter to Chris Iverson, Deputy Regional Forester, Intermountain Region authored by Dr. John Carter and dated February 18, 2015. https://app.box.com/s/iz2jlyjb6x2820rckyjssstv867ho3dx

50% soil cover then one could expect that any analysis for the Ashley Range Improvement Project would be biased and unable to detect or document impacts from livestock grazing.

The Range Specialist Report (Table 2) also cites monitoring data provided by Sheryl Goodrich and Allen Huber showing that water developments have minimal effect on surrounding soils and vegetation with ground cover greater than 85% of potential. The cited information claimed that vegetation composition surrounding existing water sources had greater than 60% of moderate to high value for watershed protection. First off, the Range Specialist Report does not describe what species, composition or other aspects of watershed protection are involved and how this 60% number was derived. Second, a review of the applicability of R4 watershed protection species done for two projects in Wyoming (attached) critiqued this 60% moderate to high value for watershed protection for the following reasons.

- It conflicts with guidance in Chapter 20 of FSH 2209. Section 22.1.4 of FSH 2209.21, which states that "the Range Inventory Standardization Committee Report (1983) suggests that a value of 75 percent similar or greater [with respect to potential natural community, or PNC] may be used to differentiate between meeting and not meeting management objectives." A minimum 75% similarity to potential natural community was adopted in a Record of Decision for managing livestock grazing in the Wyoming Range Allotment Complex (USFS 2004b).
- This desired condition does not meet needs for wildlife and will allow many riparian areas, rangelands, and aspen understories that currently provide unsuitable habitat for wildlife due to highly-altered plant species composition would be allowed to persist in deteriorated condition. Riparian areas, rangelands, and aspen understories that currently provide suitable habitat for wildlife would be permitted to deteriorate.
- Forest Plan DFCs and Management Area priorities must be evaluated to determine the suitability of any proposed such desired conditions.
- "The interpretation of desired species and amounts will change when goals change for specific purposes, like watershed sustainability, forage production, sage grouse habitat, low risk wildfire community, or a pleasing wildflower setting in a sagebrush community" (section 22.1.4 of FSH 2209.13.21-2005-1).
- Watershed value ratings in Exhibit 02 of FSH 2209.21.27.4, provide a poor indicator of the suitability of plant species composition for wildlife. As examples:
    - Of a total of 323 grasses, sedges, rushes, and forbs that were rated as moderate or high for watershed value, an average of 96 (30%) were rated as low for mule deer and elk. For forbs, 101 of 323 (41%) were rated as low for elk.
    - Of a total of 235 grasses, sedges, rushes, and forbs that were rated as low for watershed value, 90 were rated low for mule deer (38%) and 145 (62%) were rated moderate or high for mule deer.
    - Of a total of 233 grasses, sedges, rushes, and forbs that were rated as low for watershed value, 117 were rated low for elk (50%) and 116 (50%) were rated moderate or high for elk.

    - Several non-native species are designated as having high value for watershed protection (e.g., Kentucky bluegrass, smooth brome) or moderate value for watershed protection (e.g., Canada bluegrass, redtop, meadow foxtail), and dominance of plant communities by these species signal deteriorated habitat conditions for wildlife communities. Where these species comprise a large proportion of the canopy cover, herbaceous species composition is typically reduced, height is reduced (e.g., Kentucky bluegrass), and herbaceous vegetation density and biomass (Kentucky bluegrass, smooth brome) are reduced, meaning that habitat conditions are poor for wildlife despite meeting the draft benchmark.
    - Several native species having moderate value for watershed protection (e.g., mule ears, black coneflower, cutleaf balsamroot, woodland strawberry, Louisiana sagewort) typically indicate, when at a high percent canopy cover, altered species composition due to elevated grazing use.
    - Therefore, the benchmark could be met while providing far less-than-suitable habitat for native wildlife.
- The benchmark only addresses plant species composition to a small degree, and the handbook (FSH 2209.21.22.1) identifies plant species composition as one of four rangeland health criteria that need to be considered in determining the functionality of upland rangelands. The functionality of rangelands is cornerstone to providing suitable wildlife habitat.
- Under Species Composition, the handbook explains that "A general evaluation may be conducted using a basic species composition list…" The draft benchmark does not meet this most basic approach because it does not address species richness beyond the presence/absence of certain species as a group. According to the benchmark, a site can have only one species having a moderate or high rating and still be deemed to meet this desired condition.
- Also, the benchmark not having any measure of the 'amount' of each species, the other half of species composition, or the 'amount' of herbaceous vegetation as a whole is a problem. According to the benchmark, a site can have a total herbaceous canopy cover of, say, 5% and still be deemed to meet this desired condition.

Our experience with the work of Goodrich and Huber was addressed in comments on the Draft Environmental Impact Statement (DEIS)[172] for the High Uintas Wilderness Domestic Sheep Analysis Project.[173] Dr. John Carter spent years surveying the alpine areas included in domestic sheep allotments in the Wasatch Cache NF and Ashley NF. He found severely degraded conditions of soil erosion, bare ground, streambank scouring and depleted plant communities. The report with numerous photographs and analyses documented this.[174] Yet, the monitoring data and information in the DEIS and files contained in a FOIA request based on work by Goodrich and Huber showed few, if any, impacts from domestic sheep grazing. Briefly, the

[172] https://app.box.com/s/xecfxpc17km0fp9nmt7wfhzxs5zw989z
[173] https://app.box.com/s/797x21rggtx1t6yayr0gi9kpbouis4sr
[174] https://app.box.com/s/944957604b8618539585

Forest Service monitoring was limited to less sensitive areas such as meadows and wetlands which have higher resistance to sheep grazing and receive less use by domestic sheep. Here are a couple paragraphs from our comments on the DEIS reflecting the records we obtained from the FOIA request as well as the DEIS itself.

> The entire database of studies provided in our FOIA response dated July 10, 2019 is devoid of reference to the role of domestic sheep in accelerating loss of soil cover and erosion. All bare soil is natural, a result of gophers, snowbeds, talus slope runoff, frost boils and so on. Bedding, salting, watering spots, trailing and camps are claimed to only damage small areas. (DEIS p53). For example, sheep bedding is claimed to be less than 1% of the Project Area. Salt grounds are moved around, and account for less than 1% of the Project Area. Trail damage is acknowledged as less than 1% of the Project Area (160,000) acres. For bedding, this amounts to 1,600 acres in a single year, but sheep have grazed these allotments for decades, nearly a century. In ten years, the damage would be 10% or 16,000 acres. In a century, the entire project area has been subjected to bedding, salting, and trailing with the associated damage to soils and plant communities. Trailing is not limited to a narrow band, as high passes and slopes on both sides are grazed and denuded.
>
> A huge problem is present in this DEIS and the monitoring studies conducted by the Forest Service. This is to deflect around damage by domestic sheep. This appears in the record after Mont Lewis, who worked in these areas in the 1960's, applied ecological principles driven by the R4 Range Analysis Handbook. It was a logical, science-based document, but has been abandoned as have the basic principles of Range Science. Such things as setting stocking rates based on desirable forage present in capable areas, these are areas that are not on steep slopes, are not moderately to highly erodible, are not in dense forest and do not risk accelerated erosion. Stocking rates were to be based on the amount of forage consumed[175] by the permitted livestock in those capable acres, which the Forest Service states now must produce more than 200 lbs/acre of forage, but doesn't account for that and these other factors in its own capability and suitability determinations. Utilization rates supported by science are currently 30%, not the 50 - 60% allowed on most public lands. In addition, grazing periods should be adjusted to allow sensitive native plants to maintain vigor, i.e. productive and producing seed or propagules, and not be grazed during early growth. Destocking during drought[176] is vital, rest is vital for recovery of plant vigor following grazing.[177] None of these principles were observed in the DEIS or the "studies" provided by the Forest Service. The DEIS is devoid of Range or Ecological Science.

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[175] Carter, J. 2016. Updating the Animal Unit Month. Yellowstone to Uintas Connection. https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk

[176] Holechek et al. 2004. Range Management Principles and Practices. 5th Ed. Prentice-Hall, NJ.

[177] Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review. Yellowstone to Uintas Connection. https://app.box.com/s/ngw6723dx52quxw2rd8u

In his 1970 Report, *"Alpine Rangelands of the Uinta Mountains - Ashley and Wasatch National Forests"*, Mont Lewis addresses the sensitive nature of these alpine areas and applies these principles to management.[178] He identifies the areas that should not be grazed due to erosion susceptibility, he identifies the mechanisms of sheep damage to soils and plant communities. He explains that potential ground cover in most areas is near 100% and provides examples of grazing damage. Mont was apparently the last objective Range Professional on these Forests.

Our comments on the DEIS reviewed in detail the Lewis Report and provided examples from our field work in these sheep grazed areas that reflected the damage Lewis also described. (Comments p28 - 35). Those comments also provided evidence by Darlene Voerner, former Ashley NF Soil Scientist showing the sensitivity of these alpine areas along with examples of the damage by domestic sheep grazing. (Comments p35 - 39). Ms. Voerner noted the need for detailed soil surveys and evaluation of suitability for grazing. Following Ms.Voerner's writeup, we evaluated monitoring data and photographs received from our FOIA. The monitoring data included the past two decades, much of which was collected by Goodrich and Huber. Our review of the 1,565 study sites showed only 69 reported ground cover data. (Comments p40 - 60). Areas that had been closed to sheep grazing were recovering, including headcuts which remain active in the currently grazed allotments. Trailing areas were revegetating. Grazed area photographs showed continued erosion, reduced plant cover and clear evidence of grazing damage, particularly denuded upland areas showing exactly the conditions Lewis had illustrated years before and Carter found in his surveys. None of the damage was found by Goodrich and Co. and if it was, it was blamed on gophers or snowbeds. So gophers create damage but tens of thousands of domestic sheep trailing, bedding, grazing don't.

A final example from our comments on the Uinta Domestic Sheep DEIS also relate to Goodrich failing to document livestock damage. In our comments (p51) is a photo from the Ottoson allotment showing domestic sheep grazing in the vicinity of a stream and wetlands. The sheep are grazing in the upland areas, not the wetland areas. Further in our comments (p54) we cite Goodrich stating about a wetland/riparian area photo (1994) in the Ottoson allotment that, "Sheep are very reluctant to use these wet meadows". Yet, in a meeting in 2002 in Coalville Utah where the Forest Service was presenting its West Fork Blacks Fork EIS position, Goodrich, in a powerpoint presentation showed a similar wetland with sedges and used that photo of sedges with no evidence of grazing as evidence of how sheep do not damage these systems and use is light.[179]

In our experience the Forest Service fails to document livestock degradation that is obvious to the naked eye. It does this by manipulating monitoring locations to less sensitive areas far from water or on ridges. That was certainly reflected in our experience on the Uinta Domestic Sheep

[178] Lewis, M. 1970. Alpine Rangelands of the Uinta Mountains, Ashley and Wasatch National Forests. US Forest Service. https://app.box.com/s/mdf4yl6ss5glbip50kd6hh4fayczi4qr

[179] Dr. John Carter recalls this meeting.

EIS process. We published a paper showing how grossly overstocked the High Uinta Wilderness is with domestic sheep.[180] The research showed stocking at an order of magnitude higher than Regional capability criteria, current forage production, and current livestock forage consumption rates support. The Forest Service uses key species for utilization monitoring that do not reflect the actual amount of forage removal.[181] It monitors greenline stubble height on low palatability sedges along streams while ignoring the extreme utilization occurring in the adjacent riparian zone that is critical for cover for amphibians, migrant birds, sage grouse, and small mammals.[182]

**19. Aquatic Species Biological Assessment/Biological Evaluation (Aquatic BA/BE)**

The Aquatic BA/BE cites ESA and Forest Service Manual direction and objectives for not adversely modifying critical habitat of federally listed species, to provide a process and standard to ensure that TE&S species receive "full consideration in the decision-making process, and to enhance opportunities for mitigation." (p1). Then, without any mapping or analysis of watershed condition, stream and spring condition and flows emanating from the Forest, claims for the four listed species (Bonytail, Colorado pikeminnow, Humpback chub, and Razorback sucker) that the project would have "No effect". (p2). The rationale for this No Effect determination is that, "Suitable aquatic habitats that the bonytail would utilize are not present in the vicinity of project activities. There would be no water depletion from the Upper Colorado River Basin as a result implementing the proposed project." (p2-3).

Livestock are grazing the 25 allotments listed for this proposed project as well as most of the remainder of the Ashley NF of over 1 million acres. There are thousands of range structures that alter streams and springs, concentrate livestock, lead to accelerated erosion, altered runoff patterns and lowered infiltration that alters the flow and water quality delivered downstream to the Colorado River system where these TE&S species have potential habitat. Does the CUP remove water that would otherwise flow downstream in the Colorado River system? We cited references in our comments regarding the effects of livestock grazing on ecosystems. This BA/BE does no analysis of current and potential conditions either on a site-specific project level, or on a Forest-wide level for cumulative effects on factors that would affect downstream habitat. What are the cumulative effects of past timber harvest, roads, livestock grazing and its inherent ecosystem degradation on runoff and stream flow? How does this affect downstream habitat for these TE&S species? A recent paper compared paired watersheds in which one had

[180] Carter, J., Vasquez, E. and Jones, A. (2020) Spatial Analysis of Livestock Grazing and Forest Service Management in the High Uintas Wilderness, Utah. Journal of Geographic Information System, 12, 45-69. https://doi.org/10.4236/jgis.2020.122003

[181] Catlin et al. 2011. Range Management in the Face of Climate Change. In Monaco, T.A. et al. comps. 2011. Proceedings – Threats to Shrubland Ecosystem Integrity; 2010 May 18-20; Logan, UT. Natural Resources and Environmental Issues, Volume XVII. S.J. and Jessie E. Quinney Natural Resources Research Library, Logan Utah, USA.

[182] Carter, J., Catlin, J., Hurwitz, N., Jones, A., and Ratner, J. 2017. Upland Water and Deferred Rotation Effects on Cattle Use in Riparian and Upland Areas. Rangelands 39:112-118.

old growth logging, roads, and replanting conifers with a reference watershed. Analysis of over 1,200 runoff events showed that "Hydrologic processes altered by harvest of old-growth conifer forest more than 50 years ago (transpiration, interception, snowmelt, and flow routing) continued to modify streamflow, with no clear evidence of hydrologic recovery."[183] Clearing of trees, removal of vegetation, roads, and ohv use, trampling and compaction of soils by livestock are among many factors altering watershed characteristics leading to altered runoff regimes. In addition are the associated sediment, nutrient and bacterial loadings affecting in-stream and downstream water quality. There was no mapping or analysis of the actions (past, present, and planned) across the project area or the Ashley NF to characterize effects. The public is left in the dark.

When it comes to sensitive species, there are similar issues. Colorado cutthroat trout, boreal toad and spotted frog are described. While the Aquatic BA/BE mentions that the Forest is "addressing the needs of CRCT by following the multi-agency CRCT Conservation Agreement." It also mentions that "The Forest remains consistent with its Forest Plan by protecting habitat for the CRCT." There are no provisions, standards, objectives, goals, guidelines for addressing CRCT habitat listed and analyzed in the report. Habitat condition is not analyzed.

The boreal toad is also described as being "managed under a multi-agency conservation agreement and strategy." Its status is described as "There are no known populations of sensitive amphibian species on the Ashley NF." As it was for the CRCT there is no analysis of habitat conditions resulting from past, present, and foreseeable actions in the project area or the Ashley NF. While claiming that "historical records indicate that boreal toads were once present in many locations on the Uinta Mountains within the Forest", the report fails to explain why no current populations exist. It describes collection of historical specimens from some locations and recent observations by UDWR in the Burnt Fork drainage on the north slope of the Uintas. It also reports the observation of two toads by UDWR fishery crew on the south slope. These observations appear to all be incidental observation by UDWR while conducting fishery surveys. The report does not describe when, where, or if, any surveys for boreal toads or their potential habitat have been conducted within the Forest. There should have been an effort to map and describe the habitat characteristics for these toads, factors that degrade the habitat, and the status of that potential habitat. This also applies to the CRCT and the spotted frog. That habitat should be analyzed across the project area and the Forest, for direct, indirect, and cumulative effects. Any impacts to these three species are dismissed because "Design criteria and BMPs" would minimize potential effects to suitable habitat. The project is claimed to have a Beneficial Impact on CRCT and No Impact on the boreal toad and Columbia spotted frog. It is of interest that the report claims habitat degradation along the Wasatch Front have led to declines in populations for the spotted frog, yet apparently there is no habitat degradation in the Ashley NF.

[183] Crampe, E.A., Segura, C., and Jones, J.A. 2021. Fifty years of runoff response to converstion of old-growth forest to planted forest in the H.J. Andrews Forest, Oregon, USA. Hydrological Processes. 2021;35:e14168. https://doi.org/10.1002/hyp.14168

A series of studies in the Bridger Teton NF has looked in detail at the herbaceous retention needed to support amphibians such as boreal toad and spotted frog as well as migratory birds.[184] [185] [186] [187] These studies are the best available information on the buffers for amphibians in both upland and riparian areas, showing that they are using upland areas to migrate, and need herbaceous cover both in riparian and upland areas. These reports and their analysis and recommendations need to be used for this project. Livestock, of course, are the principal culprits in destroying this herbaceous cover needed by migrant birds and amphibians.

**20. Biological Assessment for Threatened and Endangered Plant Species**

This BA cites the ESA regarding the obligation of agencies to conserve T&E species. It also cites, a DOI report from 1997 that listed TE species and states that those listed for Utah were "considered in this BA". It then lists plant collections by various entities that led to the conclusion that only *Spiranthes diluvialis* (Ute Ladies Tresses) is to be expected on the Ashley NF. The USDA Plants Database[188] shows the Ute Ladies Tresses range occurring in British Columbia, Washington, Idaho, Montana, Nevada, Utah, Colorado, Wyoming, and Nebraska. There was no listing of species and their habitats with which the public could evaluate whether there are other plants that could potentially occur on the Ashley NF.

The USDA Plants database described habitat for Ute Ladies Tresses as, "Ute Ladies'-Tresses occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist to wet meadows along perennial streams. It typically occurs in stable wetland and seep areas associated with old landscape features within historical floodplains of major rivers. It also is found in wetland and seep areas near freshwater lakes and springs." The Ashley NF has these features occurring across its landscape. What are the impacts to Ute Ladies Tresses from the impacts associated with livestock grazing and trampling in riparian and wetland areas which are the habitat of the orchid? What are the effects of dewatering of springs, streams and wetlands for water developments? How about timber harvest and associated roads, roads, trails and ohvs, oil and gas, etc.? The extent of potential habitat in the project area and the Ashley NF should have been mapped and then the direct, indirect, and cumulative impacts analyzed. There were no reports of surveys for the species in the Ashley NF or the project area. This is a common pattern of the Forest Service to claim a species does not occur in the affected

[184] DeLong, D. 2016. Upper Green Allotment Management Planning EIS Supplemental Wildlife Specialist Report Migratory Birds. Bridger-Teton National Forest. 183p
[185] DeLong, D. 2015. Summary Basis for Building Wildlife Habitat-Needs & Protection into Forage Utilization Limits. West Zone Wildlife Biologist, Bridger-Teton National Forest. 8 p.
[186] DeLong, D. 2015b. Literature Review and Analysis of Scientific Information for the Conservation Assessment for Columbia Spotted Frogs and Boreal Toads on the Bridger-Teton National Forest
[187] DeLong, D. 2021. Forest Plan Direction & Other Wildlife. PowerPoint. 115p.
[188] https://plants.usda.gov/home/plantProfile?symbol=SPDI6

area, while having not done surveys. This again is a failure to comply with the NEPA hard look principle, the ESA and NFMA for maintaining species viability.

**21. Forest-Wide Range Improvement, Aquatic Species Effects Analysis**

This report states, "This analysis assumes the identified project design criteria are effectively implemented and minimize effects to aquatic resources such as increased sediment delivery to streams from soil disturbing activities. Design criteria include establishing buffers in association with aquatic management zones (AMZ), following appropriate BMPs to equipment use and installation of improvements." (p3). The analysis report notes that annual surveys for fish habitat and populations, amphibians and habitat are completed annually. That is of note to learn that there is a database that could have been used in the Aquatic BA/BE report to assist in the analysis but was not used. Where were the surveys done, when and what did they find regarding habitat quality and populations? Cause and effect?

The activities for this project were reviewed to "determine potential to have an effect on aquatic species or habitat". The proximity of the project activity to aquatic habitat was used to determine the project elements potentially affecting the habitat based on proximity and sediment delivery. It is unclear if the grazing, trampling, and alteration of streams, springs, and wetlands by livestock across the landscape area affected by the troughs, ponds, salting, and spring dewatering and modification were considered. As we noted earlier, each water development or trough can affect an area of thousands of acres.

There are Forest Plan provisions relating to the biotic condition index being maintained at 75 or above, maintain sediment buffering capability of riparian areas, maintain or improve riparian areas and riparian dependent resources. Resource values including wildlife, fish, vegetation, watershed, and recreation should be in a stable or upward trend. It is unclear, given the known damaging effects of livestock grazing to these resources, how an area that previously may have had less livestock presence and that will now be subject to greater concentrations of livestock due to this project will maintain or improve the resource values described. In fact, there is no description of the status of those resource values either in the project area or the Ashley NF itself.

The analysis report describes the aquatic species and habitat in more detail than we find in other reports, so it does give some parameters to consider. Based on the descriptions, it is evident that potential habitat exists for Ute Ladies Tresses, boreal toads, other amphibians, and several fish species. Activities generating sediment are listed, including wildfire, forest roads and dispersed recreation. Livestock grazing and its effects on stream habitat and water quality were not included.

Degradation of streams by livestock grazing was described for the few areas the initial review indicated where project construction might generate sediment. Conditions reported include: cattle trailing and crossing the stream, dispersed recreation and user created roads impacting

vegetation and soil, stream channel incised and not connected to its floodplain, bank erosion, and debris flows. Because livestock will now occur in higher numbers in areas that previously saw less numbers, the entire watersheds of these 25 allotments stand to have the currently impacted areas remain degraded while additional area will be subjected to increased degradation.

While the BCI data for a couple of streams indicated macroinvertebrate populations are within the acceptable or near the acceptable range, the other stream conditions described indicate severely degraded fish habitat. The presence of non-native fish species combined with degraded habitat was not described as a problem, but these combined stresses can adversely affect fish populations.

The analysis report concludes that the proposed range improvements will only improve natural conditions in (and) around riparian areas which will improve habitat for aquatic species. This flies in the face of science and logic. A much more comprehensive analysis of aquatic resources across the Forest and in the project area must be done given the presence of over 1,700 range improvements plus the ones proposed here. Maps, summaries of trends in populations for fish, amphibians, macroinvertebrates are needed to meet the NEPA hard look and cumulative effects principles as well as NFMA viability provisions.

**22. Forest Wide Range Improvement Project: Hydrology Effects Analysis**

The report notes that water resources occur throughout the project area, that minimal effects to hydrologic resources are expected, that effects may include increases in sediment and turbidity, that some of the riparian, wetland, and floodplains may be compacted and disturbed. "Design features and BMPs all contribute to the prevention of sediment delivery to streams and impacts to riparian areas, floodplains, or wetlands." (p2). With over 1,700 range improvements in the 25 allotments in the project area and with the added 79 in this project, many of which alter springs, streams, and wetlands by diverting water to troughs or capturing runoff in ponds, it is astounding there is no analysis of direct flow depletion by these diversions or ponds intercepting runoff. Let's not forget the CUP and other major irrigation withdrawals that export water out of the watersheds. It is equally astounding that the impacts of grazing, trampling and defecating cattle and sheep to instream hydrology (PFC), aquatic habitat and water quality, are not considered. Municipal watersheds are mentioned, but no analysis of the cumulative effects or NFMA requirements for protection are analyzed.

The report notes that "due to time constraints, a handful of representative sites were visited." (p3). Forest Plan provisions are listed but not analyzed either relative to existing conditions in the 25 allotments or the Forest as a whole. These have to do with protecting riparian areas, ecological condition, plant diversity, protecting springs and seeps from livestock grazing, maintain soil stability, site productivity, repair damaged watersheds, maintain riparian buffers, and so on. The analysis then makes this flat statement in lieu of documenting conditions, analyzing project impacts, cumulative impacts, "The Forest Wide Range Improvement Project is

in compliance with the current forest plan. The projects proposed are designed to improve the movements and distribution of livestock, so impacts are less concentrated on the ground. Fencing that includes protection of a wetland area, spring developments, and enclosures will improve riparian condition and quality in those areas." (p4).

Then, in relation to the Clean Water Act, the statement is that none of the streams in the project area are listed by the State of Utah as sediment impaired. (p6). There was no mention of E.coli and nutrient pollution which are likely to be elevated and affect habitat and recreational use and are directly related to the presence of livestock.[189] With livestock grazing in the 25 allotments, it is certain that there are water quality issues, it is just that the Ashley NF does not monitor for E.coli and nutrients, instead leaving this to the State of Utah. So, most of the Forest is not monitored which allows this pollution to go undocumented. What's not to like?

Then the report discusses the Watershed Condition Classification (WCC) claiming that slightly more than half of the watersheds are functioning properly relative to water quantity (quality?) while the remaining half are functioning at risk or at impaired function with the concern centered on flow characteristics. Roughly 20 percent were considered functioning at risk or impaired function relative to water quality. There is no site specific or cumulative analysis. Wetlands and riparian areas are relegated to the mere mention of national datasets for wetlands and streams. Then the WCC is used to claim that aquatic biological indicators for Riparian/Wetland Vegetation is 63% good, 39% fair and 1% poor. When we looked up the USDA Watershed Condition Classification Technical Guide[190] it did not use those classes so we conclude this condition relates to the plant community composition related to potential. Without going into detail, these classes relate to the percentage of the potential plant community that is present with poor = 25% or less, fair = 26 - 50%, good = 51 - 75%. (See Dyksterhuis reference cited above). Here the report is describing significant degradation of the plant communities and habitat. But there is no site specific or cumulative effects analysis and the writeup is confusing as to whether it is addressing water quality or quantity.

The WCC Technical Guide is used in describing watershed condition (p7). According to this guide, the "Forest Wide Resource Indicator scores for Aquatic Physical are 67% - Good, 33% - Fair". It is not discussed as to what this means, which watersheds are degraded and to what degree, which are in the project area and how the project will affect these when added to existing impacts. "Municipal watersheds are managed under multiple use prescriptions in land and resource management plans." What are these, where are they applied, what is the condition of the watersheds in the project area, how does this relate to the delivery of clean water supplies to the affected municipalities?

[189] Carter, J. 2012. Livestock and Water Quality. Yellowstone to Uintas Connection. https://app.box.com/s/d77e4fcf844ff0eabdf9

[190] USDA. 2011. Watershed Condition Classification Condition Guide. Forest Service FS-978

In conclusion, "The range improvements should have minimal and mostly beneficial effects on channel function (Aquatic Physical) and should not change the Resource Indicator ratings derived from the WCC". (p8). This conclusion is arrived at with no site-specific data, no real analysis of actual conditions in the affected watersheds while they are being logged, grazed, roaded, fenced, water sources altered by diversion and dewatering, and suffering wildfires, or prescribed burns. Then the statement is made that design features include: "Springs, floodplains, and wetlands should be protected with riparian fencing/exclosures." Is the hydrologist saying that all of these on the Forest need this protection? What percent are protected in this manner? In the project area or the Ashley NF overall? We are left hanging.

**23. Biological Assessment (Terrestrial Wildlife)**

The Terrestrial Wildlife BA is another example of virtually no analysis, no characterization of habitat, pretending that if designated critical habitat does not exist in the project area, then there is no need for "further discussion". The BA states there is "potential for nine federally-listed species to be affected by project activities" but there is no "critical habitat" within the proposed project areas. Then with no given rationale or list of the nine species, the BA claims to analyze four species, Canada lynx, Mexican spotted owl, yellow-billed cuckoo, and monarch butterfly, but dismisses all but lynx "due to lack of suitable habitat within the project vicinity". Finally, the BA says, "The UDWR and the Ashley NF have no records of any federally-listed species within two miles of the project locations."

One could write many pages of comments just based on these vague statements. Here are some questions and points.

- If nine federally-listed species could be affected by "project activities" what species are these, what are their habitat requirements, where is their range?
- What is meant by "project activities"? Is this just the digging of pipelines and ponds, installing troughs, building fences, or clearing trees? Or is it all that in addition to the concentrations of livestock that will trail along fences, trail and graze back and forth to ponds and troughs in areas where livestock may have had a lower presence before this project? Over what area? Just at the troughs and ponds? Or are we talking about the 471,719 acres contained in the 25 affected allotments that are grazed by livestock?
- Does the absence of "critical habitat" mean these species have no potential habitat in the project area or the Ashley NF in total?
- Does the absence of "records" of these federally-listed species mean they never have occurred or do occur in the area, it is just that the Forest Service has not conducted surveys for them?
- What about historical occurrence? What sources other than the FWS IPaC tool are available to provide historical records?

While the BA dismisses Mexican spotted owl, yellow-billed cuckoo, and monarch butterfly from analysis due to "lack of suitable habitat within the project vicinity", there is no description of

what attributes suitable habitat would contain, no mapping of that suitable habitat and if potential habitat exists, why it is not suitable. We know from the above referenced Federal Register publication, monarch butterflies depend on many different flower species and that larva depend on milkweed. Monarch butterflys also migrate large distances. The discussion on monarch butterfly does not look at the current and potential habitat for flowers or forbs that might serve these butterflies during migration or other life stages before the eggs are deposited. In addition, what are the habitat characteristics of milkweed and does this habitat occur on the Ashley NF? Given the likely altered plant composition and its production from a century of livestock grazing, timber harvest, prescribed fire, roads, range improvements, recreation and other activities which are not addressed, it could be that milkweed and monarch butterflies had suitable habitat before the forest was degraded by these uses. The public deserves a full analysis of the condition of the plant communities current and potential condition and extent.

Similar arguments regarding the MSO and cuckoo regarding what constitutes their potential habitat, its current and former extent and condition? These are essential elements of analysis to meet the NEPA burden of a hard look and evaluation of cumulative impacts. Have there been significant impacts to the habitat of these animals in the past? Will there be significant impacts from the proposed action and the associated expanded livestock grazing it will create?

Canada lynx are considered to suffer "no effect" in the BA. In our comments we have delineated much of the history of lynx in the Uinta mountains. That they are likely absent today is used as a way to claim "no effect" without examining the degradation of all aspects of lynx habitat by activities occurring across the Ashley NF including timber harvest, livestock grazing and its infrastructure, herders killing predators and scavengers, trapping, the loss of snowshoe hare habitat to livestock grazing, the loss of cover to timber and fire, and the loss of habitat for other lynx prey such as red squirrels and other small mammals, habitat fragmentation by roads and recreation, among other insults to habitat. These are all cumulative effects from forest management and all activities degrading habitat should be examined relative to lynx habitat needs, security and the habitat needs of lynx prey. The analysis in the BA fails to mention the Lynx Analysis Units occurring across the Ashley and Uinta Wasatch Cache NFs, their condition relative to habitat needs of lynx, the Northern Rockies Lynx Management Direction - all of which we have described in our comments. As for the other listed species, there is no analysis here, just deflection around the real question as to why, when they occurred in previous decades, the Ashley NF is claiming they no longer exist.

**24. Management Indicator Species and Migratory Birds Specialist Report**

The MIS report lists the Forest Plan Direction, Applicable Management Area Wildlife Directions and Objectives but does not analyze these in the context of where they occur, what habitats are included, what the potential and current condition of those habitats are, and what activities explain current conditions or population trends and numbers for each species. We note that

migratory birds are declining across the US with losses of 29% of 1970 abundance.[191] With climate effects superimposed on human activities such as we have described over and over in these comments there can be no argument that the Ashley NF activities have degraded habitats, forage base, security for many if not all the species discussed in the BA. It should not be the job of the public to research, map, and analyze the habitat requirements for each species and then monitor that habitat and their populations to evaluate their current and potential status.

For example, the BA states, " The analysis below will evaluate the potential impacts to wildlife. Specifically mentioning the wildlife standards and guidelines of the Ashley Forest Plan in the analysis will not be necessary as the analysis will take these standards and guidelines into consideration as potential impacts to wildlife from the proposed project are identified. Unless otherwise stated, the determinations in this document will be consistent with these standards and guidelines in the Forest Plan." This lack of analysis is a violation of the APA and results in decisions or interpretations that are arbitrary and capricious aside from not meeting the intent of NEPA for a hard look and thorough evaluation of cumulative effects and a determination of significant effects.

The BA cites the 1982 planning regulations (36CFR 219.19) regarding maintaining and improving habitat for MIS, their selection as indicators of effects of management activities, evaluating alternatives in terms of amount and quality of habitat, population trends, and the relationship of population trends to habitat are determined. In addition, Section 219.26 is also cited, "Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area. Such diversity should be considered throughout the planning process. Inventories shall include quantitative data making possible the evaluation of diversity in terms of its prior and present condition…."

The analysis for MIS presented in the BA then leaves it to the public to find out what the facts are by referring to a 2006 report by the Ashley NF and a monitoring report for two Ranger Districts that covers a period of 2006- 2015. But this last report does not cover the entire project area or the Ashley NF. Measures of impacts used in the BA included noise and habitat disturbance from "project activities". From the narrative provided, these disturbances are only for the actual construction of the projects, not the increased presence of or concentrations of livestock that will be occurring because of those projects. We have discussed these impacts in our comments and won't repeat them here, but it must be recognized that thousands of acres of habitat can be affected by these livestock concentrations and in combination with all other human activities such as timber, prescribed fire, roads, recreation, hunting and trapping, to mention a few. There is no determination of the status of habitats for MIS vs potential. No population trends are provided. We do note that mule deer are well below objectives according to the BA. The BA claims that "Big game species would benefit from the additional water

[191] Rosenberg et al. 2019. Decline of North American Avifauna. Science 366:120 - 124. DOI: 10.1126/science.aaw1313

sources, citing Rosenstock et al. 1999. However, a review of that paper reveals this determination, "our understanding of both positive and negative effects of wildlife water developments is incomplete, because of design limitations of previous research. Long-term, experimental studies are needed to address unanswered questions concerning the efficacy and ecological effects of water developments." This is far from advocating water developments for wildlife. Further, we earlier cited Holecheck et al (2011) regarding the creation of "sacrifice areas" and loss of ecological function in areas within one mile of water developments. Elk, deer, and other wildlife did not evolve with water developments, they used natural water sources. How many of these have been damaged or destroyed by the 1,728 "range improvements" in the 25 allotments at issue in this project proposal? How many across the Ashley NF? There is no reporting of current conditions of riparian, wetland and important habitats in this project area, no analysis of the numerous aspen plots described in the Ashley Aspen Restoration NEPA documents. The public is left with nothing but presumption by the specialists, presumption favorable to enabling this project.

**25. Biological Evaluation (Terrestrial)**

The BE lists various Forest Service Sensitive Species Policies such as Forest Service Manual 2600 but does not provide any detail about the actual criteria or guidance provided therein as it applies to habitat, species, populations, the ESA, critical habitat, habitat of sensitive species and how that is contained in the Forest Plan or how it addresses the current and potential habitats in the project area and Ashley NF, or the populations and trends of the species of interest.

In its "Presence Review", the BE merely states, "The analysis below will evaluate the potential impacts to wildlife. Specifically mentioning the wildlife standards and guidelines of the Ashley Forest Plan in the analysis will not be necessary as the analysis will take these standards and guidelines into consideration as potential impacts to wildlife from the proposed project are identified. Unless otherwise stated, the determinations in this document will be consistent with these standards and guidelines in the Forest Plan." Thus, the actual analysis is deferred to the public. As we described above, this lack of analysis is a violation of the APA and results in decisions or interpretations that are arbitrary and capricious aside from not meeting the intent of NEPA for a hard look and thorough evaluation of cumulative effects and a determination of significant effects.

While forest dependent species such as woodpeckers, owls, goshawk, and bats are mentioned, there is no analysis of the effects of past timber harvest and habitat fragmentation on their habitats. Townsend's big eared bat, the BE claims they occupy shrub steppe and juniper habitats. How much of this habitat occurs in the Ashley NF and the project area (25 allotments) and how much has been burned, masticated, or eliminated by treatments? What is the current extent of these habitats? For northern goshawk, what areas of their home ranges have been affected by fire, logging, aspen treatments, prescribed fires, livestock elimination of aspen recruitment or accelerated conifer recruitment? While the BE cites Reynolds et al (1992) it does not discuss the elements of goshawk habitat relative to the timber structural classes, or the

livestock utilization criteria of no greater than 20% average utilization in the home range. In addition, Reynolds stresses the importance of maintaining mycorrhizal fungi at the soil/litter interface. Carter et al 2011 (cited earlier) documented the effects of cattle trampling near water developments destroying the litter/soil interface fungi, removing the litter cover in forested areas. The analysis of greater sage-grouse fails in that while numerous project elements are described as being within sage grouse habitat, there is no actual analysis of lek buffers, brood-rearing and nesting areas. What is the extent and condition of the habitats within the 6.2-mile lek buffer? What are the cover and residual vegetation heights in these grazed areas within lek buffers? What are the population trends for all leks within the Ashley NF? Within the 25 allotments in the project area? What is the herbaceous retention, utilization by livestock, standards for utilization and stubble height? Where is the analysis of monitoring data for these factors?

Important references defining the factors such as distance from leks at which impact can occur include the National Technical Team Report (NTT) which notes that impacts to leks can occur up to 11 miles from the lek.[192] The NTT provide recommendations for monitoring and restoration. These factors should be analyzed for this project, including an analysis of road density in the affected area. Some of these include delineating the types and areas disturbed for leks and nesting areas from industrial development. For example, a 4-mile radius from the disturbance is recommended for evaluation. If one placed these buffers around the leks present in or adjacent to the Ashley NF and the 25 allotment project area, it would increase the area of analysis. Some additional points made in the NTT Report include the causes of decline of sage grouse and their mechanisms, the need for habitat restoration and monitoring.

Listed below are some NTT recommended steps:

- Prioritize restoration in seasonal habitats limiting sage grouse distribution and abundance
- Include habitat parameters (cover and height of sagebrush, grasses, and forbs) recommended by Connelly et al. (2000) and compare to ecological potential using NRCS Ecological Site Descriptions
- Use native seeds and restore to ecological potential as the highest priority for restoration efforts
- Design management of livestock grazing and travel management to achieve or maintain conditions to benefit sage grouse
- Conduct population monitoring (lek counts) led by State wildlife agencies even though these have been challenged as inconsistently conducted and biased. However, lek counts appear the best available information on populations over time. Use standardized methodology.
- At landscape level, track percent of sagebrush cover and maturity of stands

[192] Sage-grouse National Technical Team. 2011. A Report on National Greater Sage-Grouse Conservation Measures. 74p.

- Collect quantitative habitat data (nesting, brood rearing, winter)
- Coordinate with State and Federal monitoring protocols.

None of this is provided in the BE. This makes the analysis arbitrary and capricious, fails to take the requisite hard look or evaluate cumulative, or significant effects.

Bighorn sheep are described as present, but there is no analysis of their forage base, competition with livestock, and proximity to domestic sheep grazing allotments. What is the extent of their historical habitat in the Ashley NF? What are their trends in population? Counts, charts? There is no discussion of the diseases transmitted to bighorns from domestic sheep, no policy direction cited for bighorn sheep. Impacts to bighorn sheep are only addressed for the construction footprint of the proposed developments, not the increased extent of livestock that will occur due to expanded sources of water, or the current extent of livestock grazing, forage competition and overlap of bighorn habitat with domestic sheep allotments and trailing areas.

The BE does mention that the proposed range projects will result in "allowing grazing in areas that were previously ungrazed or minimally grazed withing a given allotment." " These proposed projects may increase use of little used areas in an allotment due to distance from water, draw livestock away from natural riparian areas, and improve livestock distribution across the allotments." While the BE acknowledges the increased grazing of livestock there is no analysis of the projected changes in habitat and forage conditions as a result. The normal myth that water developments "draw livestock away from natural riparian areas" is false. Carter et al 2017 cited earlier demonstrates that rotation grazing and upland water did not reduce riparian use and our review shows that most use by livestock occurs near water and in areas of low gradient. See Pinchak et al 1990 and others cited above in the discussion of livestock grazing.

The Cumulative Effects discussion lists many of the activities that can generate impacts that may affect wildlife. These " include firewood gathering, grazing, roads, off-highway vehicle use, prospecting, oil & gas, mining, camping, hiking, biking, hunting, fishing, horseback riding, sightseeing, wildlife viewing, noxious weeds, backcountry skiing, snowmobile use, prescribed and unplanned fire, timber harvest, and grazing. The impacts from these are explained away in simple statements without any analysis of the extent of each activity occurring in the 25 allotments and their direct, indirect, and cumulative effects. Clearly, the combined effects of all these activities is significant without the proposed project. They are even more so when livestock are then introduced into areas that previously may have seen less grazing. Recreation which has exploded in recent years is characterized thus: " biking, hunting, fishing, horseback riding, sightseeing, and wildlife viewing contribute disturbance to wildlife and/or their prey species within. However, none of these activities would remove wildlife habitat. The main affect to wildlife from these activities is noise and human presence. Noise and human presence associated with these activities can displace wildlife to other areas of the cumulative effects area. However, these activities have been occurring in this area for decades. Wildlife would likely be either habituated to the activities or avoid the area where these activities occur. The

proposed projects are not anticipated to increase human presence or motorized travel other than the activities associated with implementation of the project." This passage describes displacement by humans but there is no analysis of road and trail density, illegal user created roads and trails and associated atv, dirt bike, utv or snowmobile activity and how far these displace wildlife and which species are affected.

Researchers, including those with the Forest Service have documented the effects of roads and ATVs/OHVs on wildlife and the benefits of roadless areas. For example, Gilbert[193], Noss[194] and Wisdom et al[195] describe the detrimental effects of road density and human activity on large mammals causing large displacements away from roads and mechanized activity. Agency researchers at UC Davis have suggested an integrated approach for addressing Canada lynx linkage corridors[196]. An integrated analysis of the effects of roads, human use and habitat fragmentation on lynx, security habitat for deer, elk, bighorn sheep and other species that incorporates this information as well as addressing other species of wildlife must be completed.

The lack of analysis of the factors we have described results in a failure to address NEPA hard look and cumulative effects provisions. The failure to determine significance of past, present, and foreseeable actions and human activities occurring in the Ashley NF and the project area on its streams, springs, wildlife and fish means that any determinations of no effect, or may affect are arbitrary and capricious.

**26. Remedy**

In these comments we have outlined numerous issues and recent failings by the Forest Service to address causes of the issues adversely affecting vegetation communities, wildlife, their habitats, and climate. These were exemplified by incorporating reference to the recent EA and associated reports for the Ashley Aspen Restoration Project. These failings must be corrected in this proposed project by preparation of an Environmental Impact Statement that includes a range of alternatives including restoration, or withdrawal of the Project in its entirety.

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[193] Gilbert, Barrie K. 2003. Motorized Access on Montana's Rocky Mountain Front. A Synthesis of Scientific Literature and Recommendations for use in Revision of the Travel Plan for the Rocky Mountain Division.

[194] http://www.wildlandscpr.org/resourcelibrary/reports/ecoleffectsroads.html

[195] Wisdom, M. J., H. K. Preisler, N. J. Cimon, B. K. Johnson. 2004. Effects of Off-Road Recreation on Mule Deer and Elk. Transactions of the North American Wildlife and Natural Resource Conference 69: in press.

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