From: [redacted]
To: [redacted]
Subject: Fighting Fire with Fire Hearing March 16th
Date: Tuesday, March 15, 2022 4:25:22 PM
Attachments: Final_EA_Comments_Caribou_Prescribed_Fire_Restoration_Project_09_23_2020_Y2U_AWR_NEC.pdf
Protecting_30%_of_Our_Lands_by_2030_Comments_04_15_2021.pdf

I am very disturbed by the current approach to combat wildfire on our public lands. A great deal of misinformation peddled by the timber industry and its allies in the Forest Service is being brought forward as the best science to address wildfire.

I have attached our Comments that were submitted on a recent National Forest Wide Prescribed Fire Project Environmental Analysis. These comments outline the issues in great detail and provide the science needed to actually reduce carbon emissions from Forests and counter the misinformation on wildfire being used to engage in a massive assault on our National Forests thru supposed "restoration" projects that are nothing more than logging projects that will increase carbon emissions and destroy the biological integrity of our National Forests.

Here is a brief summary of our concerns and the issues outlined in these comments are found throughout the West and apply to most prescribed fire projects currently being proposed by the Forest Service:

- The site-specific analysis and comparison to ecological criteria, best available science or Forest Plan intent is often not done or not available as the specific locations for prescribed fire within the burn blocks generally have not been identified at the time of project proposal. The Design Elements portion of the NEPA analysis often simply states that the site-specific analysis will be done "prior to implementation" and that "treatments will be designed" in accordance with the law and best available science. By deflecting the analysis to a later date while simultaneously authorizing the project the public has been eliminated from the NEPA process and left without a voice.
- There is rarely a complete analysis included in the NEPA analysis of the Regionally Significant Wildlife Corridors, ESA, special status species such as Grizzly bear, goshawk, Canada lynx or wolverine, or for that matter native plants. A "hard look" must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, snowmobile, and ohv activity, trapping and other human activity as well as livestock grazing on Canada lynx, Grizzly bear and other ESA or special status species. That look must also include all Forest Plan requirements and intent as well as embody the best available science applicable to Canada lynx, Grizzly bear and other ESA or special status species.
- The NEPA analysis often does not include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on lynx, grizzly bears, wolverines and other ESA or special status species. The NEPA analysis often simply states that the FS will consult with the USFWS in the future. The NEPA analysis often also states that the Biological Assessment has not yet been finalized and therefore is not available for public review and commenting prior to the project approval

by the FS. How can the FS approve the projects without either one of these actions being completed?

· Reliance is placed on Best Management Practices (BMPs) instead of science-based criteria under which to manage the project and overlapping uses such as livestock grazing, mining and recreation.

· Climate Change and the role of forests in storing carbon is often not addressed in the NEPA analysis' other than a brief statement that Climate Change impact on the project area is outside of the scope of the project analysis. This statement once again deflects from the reality of a "Hard Look", or the cumulative analysis required by NEPA.

· There is often no analysis of NFMA viability requirements for special status species.

· There is almost never any Cumulative Effects Analysis (CEA) in the NEPA analysis' despite the importance of these Regionally Significant Wildlife Corridors. The Forest Service continuously authorizes "management" and other actions such as livestock grazing and mining, that degrade the natural qualities, without ever analyzing and disclosing the cumulative impacts of all these authorized projects on the values this Corridor represents.

· Old growth locations often have not been identified and the potential of old growth getting burned during the proposed action and the impact that burning of old growth forest has on wildlife is still not addressed.

· These NEPA analysis' lack data to support the projected outcome of the project – increase resiliency of existing vegetation groups; restore proper ecological function to native vegetation communities and wildlife habitats; and to improve firefighter and public safety.

· These NEPA analysis often lack data to support the claim that active management, by whatever name used, whether vegetation treatment, fuels reduction, logging, restoration, salvage, or mastication is effective in restoring ecosystem function or reducing large wildfires and are inappropriate and/or effective in most situations.

· These NEPA analysis' often lacks analysis of the impact that domestic livestock grazing has on fire regime and domestic livestock movement and utilization impacts on the project area following the implementation of prescribed fire. The FS continually claim that the impact of livestock grazing on the project area composition and aspen regeneration is outside of the scope of the project analysis. This statement deflects from the reality of a "Hard Look", or the cumulative analysis required by NEPA. Livestock grazing is an important factor in changing forest stand conditions and fire regimes. There is a substantial body of scientific literature that identifies livestock grazing as a major factor in the alteration of historic fire regimes and fire hazard.

· These NEPA analysis' often lack defined monitoring protocol for noxious weed invasion of the project area following implementation of the proposed action.

We urge the House Oversight Subcommittee to Pass the Northern Rockies Ecosystem Protection Act. Instead of logging our national forests to subsidize timber

corporations, the Forests should be protected as carbon sinks;

1) commercial thinning or other forms of commercial logging are not a fire management solution, and often make wildfires burn more intensely, as over 200 climate scientists and ecologists told Congress last year;

2) commercial thinning and other forms of commercial logging emit far more carbon into the atmosphere than wildfires alone, and such logging worsens the climate crisis, as over 200 climate scientists and ecologists told Congress last year;

3) the only effective way to protect communities from wildfire is to focus resources and attention directly on communities, in terms of assisting with home hardening and defensible space pruning, *not* more logging in forest wildlands;

4) logging harms countless imperiled wildlife species and undermines the 30x30 goals that the Democrats say they want to advance. See the attached Comments to the President's Climate Task Force Regarding the January 27, 2021 - Executive Order on Tackling the Climate Crisis and Development of Guidelines for Determining Protected Areas.

Thank you,

[redacted]
Yellowstone to Uintas Connection
[redacted]
www.yellowstoneuintas.org

From:	[redacted]
To:	[redacted]
Subject:	Fighting With Fire Hearing March 16
Date:	Tuesday, March 15, 2022 1:50:44 PM
Attachments:	Protecting 30% of Our Lands by 2030 Comments_04_15_2021.pdf

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We are greatly concerned about the current approach to wildfire on our public lands. A great deal of misinformation peddled by the timber industry and its allies in the Forest Service is being brought forward as the best science to address wildfire.

We have attached our Comments to the President's Climate Task Force Regarding the January 27, 2021 Executive Order on Tackling the Climate Crisis and Development of Guidelines for Determining Protected Areas. This illustrates the issue and provides you with the science needed to actually reduce carbon emissions from Forests and counter the misinformation on wildfire being used to engage in a massive assault on our National Forests thru supposed "restoration" projects that are nothing more than logging projects that will increase carbon emissions and destroy the biological integrity of our National Forests.

Briefly:

1) Pass the Northern Rockies Ecosystem Protection Act. Instead of logging our national forests to subsidize timber corporations, the Forests should be protected as carbon sinks;

2) commercial thinning or other forms of commercial logging are not a fire management solution, and often make wildfires burn more intensely, as over 200 climate scientists and ecologists told Congress last year;

3) commercial thinning and other forms of commercial logging emit far more carbon into the atmosphere than wildfires alone, and such logging worsens the climate crisis, as over 200 climate scientists and ecologists told Congress last year;

4) the only effective way to protect communities from wildfire is to focus resources and attention directly on communities, in terms of assisting with home hardening and defensible space pruning, *not* more logging in forest wildlands;

5) logging harms countless imperiled wildlife species and undermines the 30x30 goals that the Democrats say they want to advance

Thank you,

[redacted]
Yellowstone to Uintas Connection
Bondurant, Wyoming

Comments to the President's Climate Task Force Regarding the January 27, 2021 Executive Order on Tackling the Climate Crisis and Development of Guidelines for Determining Protected Areas.

Reply To: [redacted]
Yellowstone to Uintas Connection
[redacted]

These comments are submitted on behalf of 501c3 environmental organizations and individuals listed in the cover letter. These are science-based organizations and individuals working on National Forest and public lands issues. Here, we focus on these Forest issues and the need for the Executive Branch to ensure the Forest Service and other public lands management agencies are addressing the management needed to ensure our National Forests and these public lands are **conserving and restoring** wildlife habitat, migration corridors and ensuring maximum carbon sequestration. These elements are essential in arriving at net-zero emissions by 2050 by conserving our lands, waters, oceans and biodiversity and protecting 30 percent of our lands and waters by 2030. This reflects the mission of the January 27, 2021 Executive Order on Tackling the Climate Crisis. [1]

Our National Forests, National Parks, Wildlife Refuges, National Monuments, and Bureau of Land Management (BLM) managed lands do not meet sufficient criteria to be deemed "protected" as they are subject to many damaging practices. These practices include, but are not limited to logging, thinning, prescribed fire, sagebrush and juniper removal, excessive road density and off-road vehicle use, livestock grazing and other extractive uses, all of which exacerbate climate change by depleting carbon stocks or by their emissions of carbon.

These comments review the proposition of "conservation" or "protection" in the context of Climate by providing a closer look at National Forest management. This is illustrated by examples of a wildlife corridor and lands managed by the Forest Service showing the effects of past and ongoing management with recommendations for what management meets the intent of "conservation" or "protection". Mere administrative boundaries do not comprise protection. It is what happens within those boundaries that matters.

Our public lands such as National Forests, BLM-managed lands, National Parks, Wildlife Refuges, and National Monuments encompass about 30% of our land base. Since these are under Federal management, maximizing protection on these lands to achieve the goals of the Executive Order would be a logical approach with efficiencies of scale as uniform principles could guide their management going forward.

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[1] Biden, J. 2021. Executive Order on Tackling the Climate Crisis at Home and Abroad. January 27, 2021

The Executive Order

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% each 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.[2] The USGS protected area database is available online.[3] 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.[4] In Yellowstone National Park, each day during winter, hundreds of snowmobiles pollute and cause disturbance.[5]

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.[6] 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.

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, grizzly bears or others. This entails use of the quantitative, science-based habitat criteria required for these species and comparing this to the current habitat conditions in the corridor or lands of interest. Then, the agency must adjust management to meet these conditions, such as reducing

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[2] 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.

[3] U.S. Geological Survey. 2021. GAP Analysis Project PAD - US Data Overview.

[4] Wilderness Watch. 2019. The Cattle Compromise: Livestock Grazing's Damaging Effect on Wilderness and the Way Toward a Livestock - Free Wilderness System. Missoula, MT.

[5] U.S. Department of Interior. 2021. Visiting Yellowstone in Winter. National Park Service. https://www.nps.gov/yell/planyourvisit/visiting-yellowstone-in-winter.htm

[6] USDA Forest Service. 2010. National Roadmap for Responding to Climate Change.

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.

Impacts of Forest Management on Carbon Sequestration

See Attachment 1 for a brief review of literature that provides insight into the activities occurring in our National Forests and public lands that are in opposition to the goals of the Executive Order. Some of the major points from that review are summarized here.

Livestock globally produce an estimated 14% of total greenhouse gas emissions. The review points out that livestock grazing is occurring on vast areas of our Western National Forests (103 million acres) and BLM lands (165 million acres). Aside from the environmental degradation leading to loss of biodiversity and productivity, it is causing a loss of carbon storage in watersheds, plants and soils.

Road densities are extremely high and at levels many times that which provides wildlife security. Roads, both legal and illegal, fragment the Forests and wildlife corridors. Off-road vehicles (OHVs) such as ATVs and snowmobiles using roads or groomed trails, or traveling cross-country generate high levels of emissions. For example, OHVs in California annually emit more than 230,000 metric tons of carbon dioxide into the atmosphere. Their emissions are 118 times greater per mile than modern automobiles. Another example, that of fossil fuels consumed by snowmobiles and transporting them in Montana each year releases 192 million pounds of carbon dioxide into the atmosphere per year.

The forests in the lower 48 states are estimated to sequester 460 teragrams[7] of carbon per year while losses from disturbance are 191 teragrams per year. This loss is mostly from timber harvest which reduces the estimated carbon sink of US forests by 42%. Losses from insects and other causes are minimal. Carbon losses from forest treatment projects (logging, thinning) may exceed those from wildfire because most of the carbon mass remains on site unburned during fire. Studies at large spatial and temporal scales suggest that there is a low likelihood of high-severity wildfire events interacting with treated forests, negating any expected benefit from fuels reduction. Further, forests with higher levels of protection such as in wilderness areas had lower severity fires even though they are considered to have the highest levels of biomass and fuel loads.

In the past two years, in the Yellowstone to Uintas Connection, the wildlife corridor in SE Idaho and NE Utah, we have seen over 2,000,000 acres of "restoration" projects aimed at addressing the problems the Forest Service identifies as adversely affecting these Forests. They describe the problem as a departure from natural regimes of vegetation characteristics and fire frequency.

[7] 1 teragram = 2,204,622,621 pounds

These departures are attributed to past fire suppression, timber harvest, drought, and livestock grazing. Generally, the stated purpose of these proposed projects is to improve big game habitat, reduce conifer encroachment in aspen and manage hazardous fuel accumulations.[8] [9]

None of these projects propose to halt or reduce the activities that they claim to be causing these departures from historic or natural conditions, or that affect wildlife. They do not propose to limit timber harvest. They do not propose to terminate or reduce livestock grazing. They do not propose to close and restore roads to a natural state to achieve security habitat and connectivity for wildlife. They also do not acknowledge the inability of fuels treatments to moderate severe fires as these are climate driven events. They do not propose to limit their logging, thinning and fuels reductions to areas immediately around structures as the science recommends, but instead propose to treat millions of acres remote from structures. A recent article pointed out that this "Active Forest Management" or "Restoration" is a ruse to promote logging and deflect around the science.[10] In that article, the author cites a 2018 letter to Congress from more than 200 scientists refuting the current proposed solutions to wildfire such as forest thinning. Thinning, by removing large trees opens the canopy, leads to drying of the understory, and increases fire spread by increased wind velocity and increased flammability of understory vegetation. It also reduces carbon stored in the forests.

These activities currently occurring on our National Forests are perpetuated by misinformation, rather than science and are counter to the goals of the Executive Order. The example below illustrates one wildlife corridor and the damage to habitats and carbon storage from livestock grazing and other activities occurring on the National Forests comprising that corridor.

The Yellowstone to Uintas Connection

The Yellowstone to Uintas Connection is the high elevation wildlife corridor in southwest Wyoming, southeast Idaho and northeast Utah connecting the Greater Yellowstone Ecosystem and Northern Rockies to the High Uintas Wilderness and Southern Rockies. The Corridor includes portions of several National Forests, including the Ashley, Bridger-Teton, Caribou-Targhee, and Uinta-Wasatch-Cache. It is a critical link in the larger Regionally Significant Wildlife Corridor designated by the Forest Service.[11] In the past, Canada lynx, wolverine, grizzly bears, and other wildlife used this corridor and the associated core areas such as the High Uintas Wilderness. Today, these animals are absent from much of this former range.

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[8] USDA Forest Service. 2020. Caribou Prescribed Fire Restoration Project. Scoping Proposed Action. Caribou-Targhee National Forest.
[9] USDA Forest Service. 2020. Targhee Prescribed Fire Restoration Project. Scoping Proposed Action. Caribou-Targhee National Forest.
[10] Wuerthner, G. 2021. The Active Forest Management Scam. Counterpunch March 18, 2021.
[11] USDA Forest Service. 2003. Regionally Significant Wildlife Corridor. Wasatch-Cache National Forest 2003 Revised Forest Plan and Final Environmental Impact Statement.

The Yellowstone to Uintas Connection is fragmented, degraded, and made non-functional for these animals and other native wildlife by a variety of human activities. Road densities exceed levels these animals can tolerate. Roads fragment the habitat and intrude even into areas designated as Inventoried Roadless Areas (IRA). In Idaho, these IRAs are divided into prescriptions that allow extractive uses and are degraded by user-created roads, timber harvest, and sold off or traded for mining facilities. [12] Phosphate mines and mountain top removal, pipelines, roads, transmission lines, and timber harvest further fragment and destroy the habitat.[13]

Noise and disturbance from mining, recreational vehicles such as ATVs, dirt bikes and side by sides drown out natures' sounds in spring, summer and fall while in winter, groomed snowmobile trails dissect the mountains. Thus enabled, snowmobilers leave no place secure from their noise and disturbance as they "high mark" remote slopes, many carry guns to kill wolves, coyotes and other carnivores, or "coyote whack", a term used to describe chasing down and running over coyotes with their machines. They can scout a hundred miles of groomed trails in a day looking for mountain lion tracks so they can turn their dogs loose, chase down and tree the lion and kill it. An example is the Caribou National Forest in Idaho where 97% of the Forest is open to snowmobiles, including IRAs.[14]

Finally, the habitat degradation and fragmentation is made complete by the livestock grazing the Forest Service permits across the landscape. Entire Forests in the West are divided into grazing allotments with fences, water troughs, pipelines, herders with guns to kill any bear, wolf, coyote or other carnivore they see "harassing" livestock. States are also doing their best to eliminate carnivores. For example, Idaho is now proposing no limits on killing mountain lions.[15]

The Forest Service does not address the activities fragmenting the corridor. At best, they will claim that animals will travel around the periphery of a project and use other habitat.[16] That other habitat is not analyzed for its functionality for any species whether it is deer, elk, sage grouse, lynx. wolverine or others. Population data is not kept current, so impacts are not documented.

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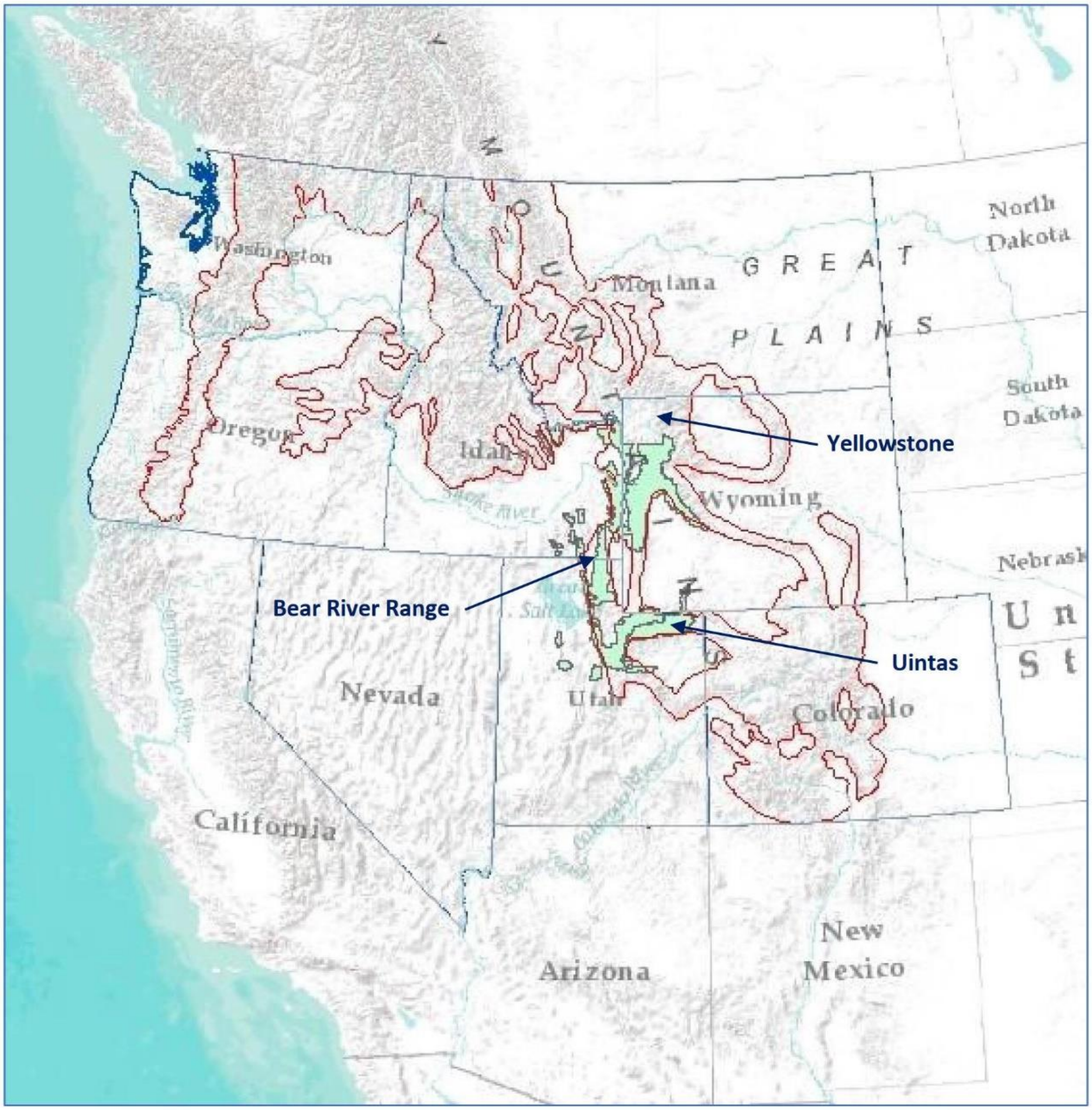
[12] USDA Forest Service. 2008. Roadless Area Conservation National Forest System Lands in Idaho. Final Environmental Impact Statement Appendix C - Idaho Roadless Areas.

[13] Carter, J. 2019. Surface Mining in the Yellowstone to Uintas Connection: What About Wildlife? Counterpunch April 5, 2019.

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

[15] Idaho Department of Fish and Game. 2021. Big Game Season Setting.

[16] U.S. Department of Interior and USDA Forest Service. 2019. Final Environmental Impact Statement Proposed Dairy Syncline Mine and Reclamation Plan. Bureau of Land Management and Forest Service. Pocatello, ID.



Regionally Significant Wildlife Corridor (red outline)
Yellowstone to Uintas Connection (green fill)*
***Includes (north to south) Bridger-Teton, Caribou-Targhee, Uinta-Wasatch-Cache and Ashley National Forests. Map by John Carter.**

The Bear River Range

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. The stand in the lower photo is being lost with only a handful of trees left. Photos by John Carter.

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.[17]

The Bear River Range also has all the problems with habitat fragmentation by roads and extractive uses described above for the corridor overall. Even the Caribou National Forest Revised Forest Plan in its FEIS (referenced above) 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.

We have studied the Bear River Range over the decades as it 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.[18] [19] They conflate livestock with elk and deer by using the term, "ungulates" to describe them while it is the cattle and sheep

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

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

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

that are the major consumers of plants and browsers of aspen shoots.[20] 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.

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.

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. 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.[21]

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.

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[20] 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.

[21] Chard, B., Chard, J., and J. Carter. 2002. Assessment of Habitat Conditions Bear River Range Caribou National Forest, Idaho.

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.

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%

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. 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.[22]

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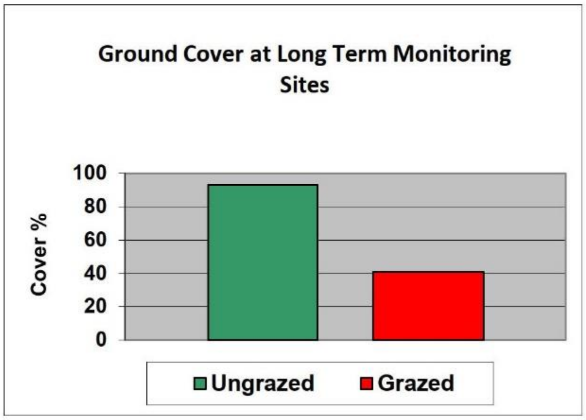
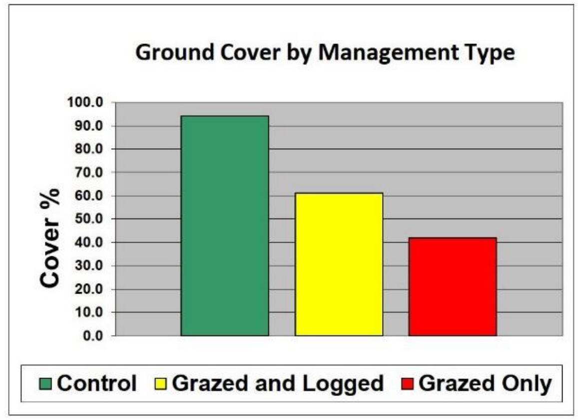
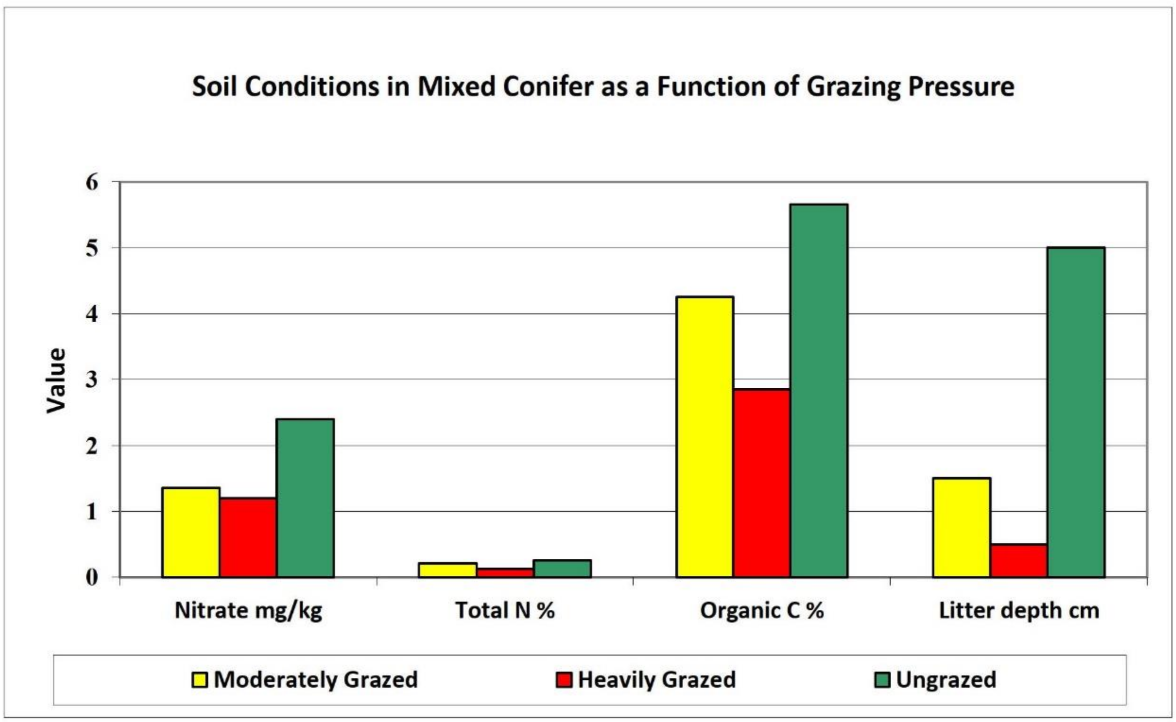
[22] Carter, J., Chard, B., and J. Chard. 2011. Moderating livestock grazing effects on plant productivity, nitrogen and carbon storage. In Monaco, T.A. et al. comps. 2011. Proceedings – Threats to Shrubland Ecosystem Integrity; 2010 May 18-20; Logan, UT. Natural Resources and Environmental Issues, Volume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







Bear River Range - Ground Cover and Soil Properties at Grazed and Ungrazed Sites. Charts by John Carter.

Conclusions and Recommendations

As pointed out in Attachment 1, 103 million acres of National Forests in the West are grazed by livestock. Even if active forest management (logging, thinning, prescribed fire) could provide a benefit relating to reduced intensity of wildfires, the costs to wildlife habitat and carbon storage are large. The benefits are also negated if livestock remain and continue to destroy the aspen communities, denude and pollute watersheds, streams and springs, and create thickets of conifer saplings. Livestock are grossly overstocked across the public lands in the West. For example, a recent paper demonstrated that stocking rates in the High Uintas Wilderness would need to be reduced by over 90% to be sustainable and minimize environmental damage.[23] In our experience, this is typical across the West.

The Forest Service continues business as usual and is budget-driven to propose projects such as the 2,000,000 acres of prescribed fire restoration projects in the Yellowstone to Uintas Connection corridor because they can fit into the wildfire program.[24] Across the country, logging and thinning continue to be a major emphasis.[25] This fire-driven set of priorities must change if we are to "protect" and restore these lands for the purposes of the Executive Order.

The Forest Service and other agencies such as the Bureau of Land Management must recognize the contribution of timber harvest and livestock grazing to loss of carbon storage in plant communities and soils, increased carbon emissions, degradation of wildlife habitat and loss of biodiversity. It is important to eliminate from consideration as "protected" those lands that are grazed by livestock due to their negative effects on these goals. Agencies must delineate, protect and restore wildlife migration corridors. Snowmobile access must be limited and excluded from areas needed for sensitive wildlife species such as Canada lynx, grizzly bears, and wolverine. These agencies must act to reduce road density with its associated motorized recreation and carbon pollution, and greatly reduce or eliminate livestock grazing thru permit action and mechanisms such as voluntary permit retirement and buyouts. In addition, a reduction in commercial timber sales, a diameter limit on logging, protection and restoration of old growth, and a banning of politically derived timber mandates are steps to take to maximize carbon storage and biodiversity. Until this happens, Forest Service and other Public Lands will remain in the lowest protection status while continuing to exacerbate climate change by loss of carbon storage and increases in carbon pollution, accompanied by ongoing losses in biodiversity.

An example of a proposal that would protect 23,000,000 acres in the Northern Rockies is the Northern Rockies Ecosystem Protection Act (NREPA). This Act has been introduced in Congress and would protect all the remaining roadless lands in the Northern Rockies. The purpose of the Act is "To designate certain National Forest System lands and certain public lands under the jurisdiction of the Secretary of the Interior in the States of Idaho, Montana, Oregon, Washington, and Wyoming as wilderness, wild and scenic rivers, wildland recovery areas, and biological connecting corridors, and for other purposes."[26] It would designate current

[23] 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

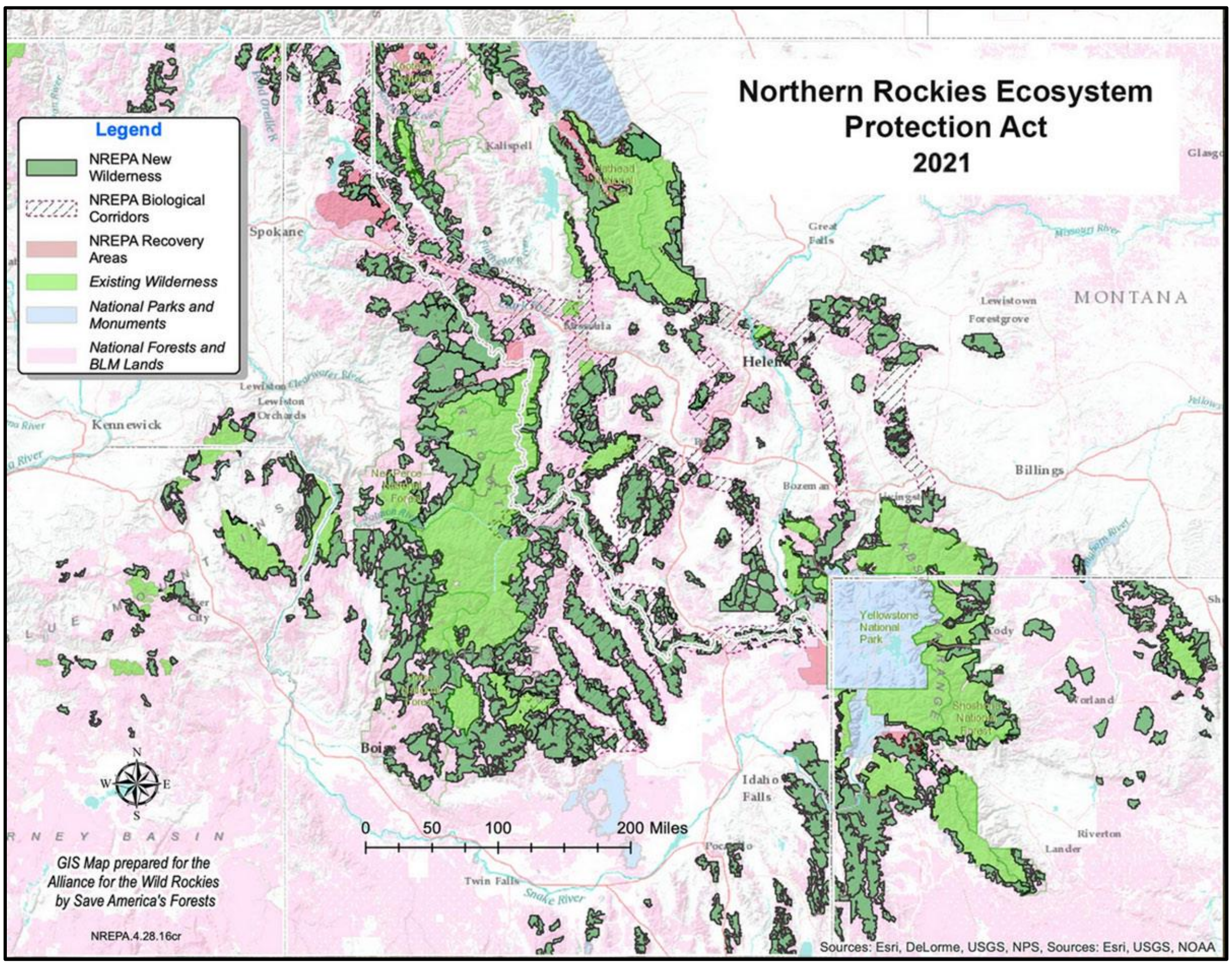
[24] USDA Forest Service. 2020. FY 2021 Budget Justification.

[25] Mounger, D. 2021. Restoration, Resiliency, and Regeneration Follies n the Central Hardwood Region. Tennesee Heartwood. Powerpoint Presentation. https://app.box.com/s/fpyn1q5l68im45e0jguwv62ftzmz9d17

[26] https://www.congress.gov/bill/117th-congress/house-bill/1755

Inventoried Roadless Areas as wilderness and protect 1,800 miles of rivers under the Wild and Scenic Rivers Act. It would remove thousands of miles of roads used for past logging and other purposes that fragment the landscape and restore natural conditions.[27]

NREPA would partially meet the goals of the Executive Order and Forest Service Roadmap for Climate Change to provide for protection, restoration, carbon sequestration, biodiversity and habitat connectivity. Expanding this to include reductions in livestock grazing, timber harvest and vegetation manipulations across the 103 million acres of National Forest and 165 million acres of BLM managed land in the West would begin to restore the native plant communities, watersheds, streams and wetlands, and wildlife habitat to their potential natural condition. Along with this, a necessary step is removal of livestock infrastructure such as fences that fragment habitat and water diversions that dry up streams and springs. Halting the killing/removal of native sagebrush and junipers to benefit livestock would allow species such as sage grouse and migrant birds to begin recovery.



Map of the extent of lands proposed in the Northern Rockies Ecosystem Protection Act in Idaho, Montana, Wyoming, Washington and Oregon. Map provided by the Alliance for the Wild Rockies.

Attachment 1

This summary of pertinent literature is intended to provide context to the issues addressed in the accompanying comments to the Climate Task Force on protecting 30% of the lands and waters by 2030 as outlined in the January 27, 2021 Executive Order on Tackling the Climate Crisis. Topics covered include:

1. Livestock Grazing and Carbon Storage
2. Livestock Grazing and Biodiversity
3. Forests and Carbon Storage
4. Wildfire and Species Effects
5. Wildfire and Insect Outbreaks
6. Fire Suppression and Fuel Buildup
7. Summaries of Issues Around Fire
8. Road Densities and Effects
9. Off Road Vehicles and Carbon Emissions

Livestock Grazing and Carbon Storage

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.

The Intergovernmental Panel on Climate Change (IPCC) released its special report on climate change in August 2019.[1] 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 CO_2 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 CO_2 emissions, 44% of methane emissions, and 53% of nitrous oxide emissions.[2] In a prior

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[1] 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.

[2] 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.

study, FAO estimated the GHG emissions from livestock production was more than that of all transportation and industry sources. [3]

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. [4] [5] Long term intensive agriculture can significantly deplete soil organic carbon and past livestock grazing in the United States has led to such losses. [6] [7] [8] The United Nations Convention to Combat Desertification has estimated that 73 percent of livestock-grazed lands worldwide have suffered soil degradation.[9]

The literature regarding grazing effects upon carbon storage varies, in part because diverse ecosystems may respond differently to grazing animals. For instance, livestock grazing was found to significantly reduce carbon storage on Australian grazed lands while destocking currently grazed shrublands resulted in net carbon storage. [10] 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.[11] 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. [12] Analysis of livestock grazing in the High Uintas Wilderness demonstrated that the Forest Service grossly overstocked this

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[3] 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.

[4] 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.

[5] 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.

[6] 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.

[7] 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.

[8] eely, 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.

[9] 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.

[10] 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.

[11] 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.

[12] 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.

Upper - Lake in High Uintas Wilderness grazed by livestock leading to barren, eroding soil, loss of vegetation and rapid filling of the lake with sediment. Lower - Stream and wetlands in an ungrazed watershed in the High Uintas Wilderness have complete soil cover, and a healthy and productive vegetation community. Photos by John Carter

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 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.[13]

Livestock Grazing and Biodiversity

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 these BLM and Forest Service managed areas as well as wildlife refuges, wilderness areas, national monuments and national 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.[14] 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.[15] 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.[16] Other studies have documented increased riparian songbird abundance after livestock exclusion.[17] [18] Overall biodiversity increased under long term rest from livestock grazing.[19] [20]

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[13] 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

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

[15] 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.

[16] 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

[17] 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.

[18] 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.

[19] 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

[20] 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.

Forests and Carbon Storage

Forests currently capture and store approximately 25% of global anthropogenic carbon emissions. Forests in the lower 48 states sequester 460 ± 48 Teragrams (Tg) of carbon per year, while losses from disturbance average 191 ± 10 Tg carbon per year. Carbon loss in the southern US was 105 ± 6 Tg with 92% from harvest and 5% from wind damage. Carbon loss in the western US was 44 ± 3 Tg with 66% due to harvest, 15% from fire, and 13% from insect damage. Carbon loss in the northern US was 41 ± 2 Tg with 86% from harvest, 9% from insect damage, and 3% from land conversion. Taken together, these disturbances reduced the estimated potential carbon sink of US forests by 42%.[21] Life cycle analyses of fuel reduction treatments including removal of woody biomass, combustion of fuel in logging machinery, transport, burning of slash, milling energy use, and other factors lead to the conclusion that over the long term, carbon losses from treatment projects may exceed those from wildfire because most of the carbon mass remains on site unburned during fire. The authors further noted that, "Studies at large spatial and temporal scales suggest that there is a low likelihood of high-severity wildfire events interacting with treated forests, negating any expected benefit from fuels reduction."[22]

A USDA study estimated soil organic carbon in relatively undisturbed secondary forests in the Rocky Mountain Region is 71,571 lbs/acre. Estimated carbon in dead organic matter above the mineral soil horizon in lodgepole pine forest in the Rocky Mountain Region is 13,411 lb/acre. Average storage of carbon by Forest ecosystem component for the Rocky Mountain Region is 148,190 lb/acre for Idaho with trees (60,961 lb/acre), soil (64,417 lb/acre), forest floor (21,735 lb/acre) and understory (1,077 lb/acre). Annual average carbon accumulation in live trees for Idaho is 1,112 lb/acre/year. [23] The Proceedings of the American Society of Mining and Reclamation reported that, "Soil organic matter (OM) is drastically reduced by various processes (erosion, leaching, decomposition, dilution through soil horizon mixing etc.) typically associated with topsoil salvage prior to surface mining activities. Of these processes, loss of physical protection of OM through the breaking up of soil aggregation can result in up to 65% of soil carbon (C) reductions."[24] This has implications for timber harvest, or other activities that disturb and disrupt the soil.

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[21] Harris, N.L., Hagen, S.C., Saatchi, S.S. et al. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. Carbon Balance Manage 11, 24 (2016). https://doi.org/10.1186/s13021-016-0066-5

[22] Restaino, J.C. and D.L. Peterson. 2013. Wildfire and fuel treatments effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.

[23] Birdsey, R. A. Carbon Storage and Accumulation in United States Forest Ecosystems. USDA Forest Service General Technical Report WO-59.

[24] Wick et al. 2008. Soil aggregate and aggregate associated carbon recovery in short-term stockpiles. Proceedings America Society of Mining and Reclamation, 2008 pp 1389-1412. DOI: 10.21000/JASMR08011389

Both fuel treatments and wildfire remove carbon from forests. In mature ponderosa pine forests, for example, protecting one unit of carbon from wildfire combustion came at a cost of removing three units of carbon with treatments. "The reason for this is simple: the efficacy of fuel reduction treatments in reducing future wildfire emissions comes in large part by removing or combusting surface fuels ahead of time. Furthermore, because removing fine canopy fuels (i.e. leaves and twigs) practically necessitates removing the branches and boles to which they are attached, conventional fuel-reduction treatments usually remove more carbon from a forest stand than would a wildfire burning in an untreated stand." The analysis showed that thinning and other fuel treatments to reduce high-severity fire, although considered to keep carbon sequestered, do not do so. High carbon losses came from treatments while only small losses were associated with high-severity fire. These were similar to the losses with low-severity fire that treatments are meant to encourage.[25]

Wildfire and Species Effects

More species (48% of the community) reached peak abundance at moderate-high-severity-fire locations than at low-severity fire (8%), silvicultural management (16%), or undisturbed (13%) locations. Total community abundance was highest in undisturbed dense forests as well as in the first few years after silvicultural management and lowest in the first few years after moderate-high-severity fire, then abundance in all types of disturbed habitats was similar by 10 years after disturbance. Even though the total community abundance was relatively low in moderate-high-severity-fire habitats, species diversity was the highest. Moderate-high-severity fire supported a unique portion of the avian community, while low-severity fire and silvicultural management were relatively similar.[26]

[25] Campbell, J.L., Harmon, M.E., and S.R. Mitchell. 2012. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Frontiers in Ecology and Environment 10(2):83-90. doi:10.1890/110057.

[26] Roberts, L.J.; Burnett, R.; Fogg, A. Fire and Mechanical Forest Management Treatments Support Different Portions of the Bird Community in Fire-Suppressed Forests. Forests 2021, 12, 150. https://doi.org/10.3390/f12020150

Clearcuts in the Helena NF (upper) and Gallatin NF (lower) result in habitat fragmentation and loss of carbon storage. Photos by George Wuerthner.

Thinning projects in the Deschutes NF result in soil disturbance, loss of habitat and loss of carbon storage. Photos by George Wuerthner.

Old growth mixed conifer forests in the Caribou NF have habitat structure, healthy and diverse understory habitat and provide maximum carbon storage.

Photos by John Carter

Wildfire and Insect Outbreaks

An analysis of 2766 large wildfires that burned in the west during the 2003 - 2012 period was carried out to determine the influence of mountain pine beetle outbreaks on fire behavior and area burned. Approximately 12% of these fires intersected prior beetle outbreaks and burned in those areas for only about 4 days. Daily area burned for high-extreme fire behavior in large fires burning for long periods in landscapes affected by mountain pine beetles was not related to beetle activity, but was due to warm, dry and windy conditions.[27] A study of the effects of spruce beetle on fire activity in Colorado found no effect of pre-fire beetle activity on fire severity. Both bark beetle outbreaks and wildfires have increased due to climate variability while topography, weather conditions and pre-outbreak basal area exerted a stronger effect on fire severity. [28] Review of treatments (tree harvest and prescribed burning, among other actions) for mountain pine beetle control found that overall, they had little to no impact on mountain pine beetle. Controls that had not been logged or thinned had more trees killed by beetles, but in the end, contained more residual mature trees than did thinned stands.[29]

Fire Suppression and Fuel Buildup

Fire suppression and the associated fuel buildup is often blamed for the larger wildfires in recent years. The solution proposed nearly always is for more logging and thinning, or fuel treatments. But this does not apply to most fires and plant communities in the West. For example, about half the 20,000,000 acres burned in California in 2020 were in chapparal or grassland, not forests, while about 35% were in conifer forests. There is also a difference in fire intervals depending on whether the forest is a dry conifer forest. These make up only about 4% of forest types in western Montana and northern Idaho and are subject to more frequent fire return intervals on the order of decades. The higher elevation conifer forests have much longer fire return intervals of 200 - 300 years. Large fires are the result of drought, high temperatures, low humidity and wind.[30] An analysis of 1500 fires affecting Ponderosa and Jeffrey Pine and mixed conifer western forests found that "forests with higher levels of protection had lower

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[27] Hart, Sarah J.; Preston, Daniel L. 2020. Fire weather drives daily area burned and observations of fire behavior in mountain pine beetle affected landscapes. Environmental Research Letters 15(5):054007.
[28] Robert A Andrus, Thomas T Veblen, Brian J Harvey, Sarah J Hart. 2016. Fire severity unaffected by spruce beetle outbreak in spruce-fir forests in southwestern Colorado. Ecol Appl;26(3):700-11. Doi: 10.1890/15-1121.
[29] Six, D.L., Biber,E., and Long, E. 2014. Management for mountain pine beetle outbreak suppression: Does relevant science support current policy? Forests 5:103-133. doi:10.3390/f5010103
[30] Wuerthner, G. 2021. Fire Suppression Hyperbole. The Wildlife News, March 1, 2021. https://www.thewildlifenews.com/2021/03/01/fire-suppression-hyperbole/

severity fire even though they are considered to have the highest levels of biomass and fuel loads.[31]

Summaries of Issues Around Fire

The Firefighters United for Safety, Ethics and Ecology have summarized the issues surrounding fires, logging, fuels treatments, carbon storage and climate change. Some of their points are that: (1) most forests are fire-adapted and renewed by fire; (2) more acres burned in the past than today; (3) logging targets commercially valuable trees for harvest and these trees have the least influence on fire spread; (4) logging does not address fuels such as small diameter ladder and surface fuels; (5) past logging has made the forest more flammable than the original forest cover; (6) firefighting efforts are irrelevant against large or high-intensity fires burning under severe conditions; (7) firefighters are most effective in suppressing small, low-intensity fires that should not be suppressed; (8) only 15% of total carbon from a tree is preserved in wood products while most enters the atmosphere from logging and milling and these losses are greater than from wildfires; (9) most carbon is stored in large tree boles or soils and most severe wildfires do not completely consume large tree boles or deep layers of organic soils; (10) areas closest to communities have the legacy of logging and fire exclusion and these areas pose the greatest fire risk and fuel hazards. They conclude that "attempts to fire-proof the forest through landscape-scale logging or mechanized firefighting are essentially geoengineering schemes that would fundamentally alter forest ecosystems, ultimately put them at greater risk of destruction, and further accelerate global heating."[32]

A recent book has addressed the value of large trees using Oregon Eastside Forests as an example.[33] The values of large trees include: (1) forest raptors, woodpeckers, songbirds, bats, and other small mammals depend on large trees to nest, forage, overwinter, roost, and den; (2) large trees provide shelter and microclimates for countless invertebrates, epiphytes, herpetofauna, and rare plants; (3) large trees in riparian areas provide stream-side shading and, when they fall into streams, hiding cover for aquatic species; (4) large trees store the accumulation of decades to centuries of atmospheric carbon helping to reduce adverse consequences of global overheating; (5) large trees are essential to nutrient cycling, soil stabilization, and below-ground processes that develop as they mature; (6) large trees remain in short supply due to a legacy of logging; (7) when logged, large trees release most (up to two-thirds) of their stored carbon to the atmosphere (contributing to global overheating) and their emitted carbon takes decades to centuries to recover, if ever. A current article also reviews the

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[31] Bradley, C.M., Hanson, C.T., and DellaSala, D.A. 2016. Does increased forest protection correspond to higher fire severity in frequent fire forests in the western United States? Ecosphere 7(10)/e01492. https://doi.org/10.1002/ecs2.1492

[32] Ingalsbee, T. 2020. Incendiary rhetoric: climate change, wildfire, and ecological fire management. Firefighters United for Safety, Ethics & Ecology. 24 p. https://fusee.org/fusee/incendiary-rhetoric

[33] DellaSala, D.A. and Baker, W.L. 2020. Large Trees: Oregon's Bio-Cultural Legacy Essential to Wildlife, Clean Water, and Carbon Storage. https://oregonwild.org/sites/default/files/pdf-files/Large%20Trees%20Report%20resize.pdf

value of large trees for carbon storage and notes that live and dead trees and forest soil hold the equivalent of 80% of all the carbon currently in Earth's atmosphere.[34] They point out that in mature and old forests in Oregon: "Big trees, with trunks more than 21 inches in diameter, make up just 3% of these forests but store 42% of the above-ground carbon. Globally, a 2018 study found that the largest-diameter 1% of trees hold half of all the carbon stored in the world's forests." This validates the need to protect and restore mature and old-growth forests for their value in carbon storage.

Another article regarding fire in California addressed these and similar points, citing supporting science.[35] Some of these are that: (1) there is not an unnatural excess of fires in forests today, in fact, there is less than in the past; (2) current fires are mostly low to moderate intensity in western US forests; (3) those forests that have remained without fire the longest have mostly low to moderate intensity fire; (4) high intensity fires do not destroy wildlife habitat, but create "snag forest" which is comparable to old growth forest in terms of native biodiversity and wildlife abundance; (5) human-caused climate change increases temperatures and influences wildland fire; (6) today's forests are not unnaturally dense and overgrown, there are more small trees and fewer medium and large trees, less overall biomass and therefore less carbon stored; (7) recent large fires are not unusual and occurred prior to modern fire suppression; (8) drought and native bark beetles do not make forests unhealthy, during drought, bark beetles selectively kill the weakest and least climate adapted trees leaving the better adapted ones to survive and reproduce, while bird and small mammal species increase in numbers because snags provide excellent wildlife habitat; (9) logging reduces the cooling shade of forest canopy, creating hotter and drier conditions and leaves behind "kindling-like slash debris, and spreads combustible weeds; (10) Field studies of large fires find only about 11% of forest carbon is consumed and only 3% of the carbon is from trees. Vigorous post-fire regrowth absorbs huge amounts of CO_2 from the atmosphere, resulting in an overall net decrease in atmospheric carbon a decade after fire; and (11) landscape scale prescribed burning would cause at least a ten-fold increase in smoke emissions relative to current fire levels; (12) prescribed burns do not stop wildland fire when it occurs but can alter intensity, while the short-term benefit lasts only about 10 - 20 years so would have to be repeated every 10- 20 years.

In a review[36] of wildland fuel treatments in the interior forests of the US, the following points were made:

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[34] Law, B. and Moomaw, W. 2021. Curb climate change the easy way: Don't cut down big trees. Phys.Org April 7, 2021. https://phys.org/news/2021-04-curb-climate-easy-dont-big.html

[35] Hanson, C. 2019. Common Myths about Forests and Fire. In: A New Direction for California Wildfire Policy - Working from the Home Outward. Leonardo DeCaprio Foundation.

[36] Reinhardt, E.D., Keane, R.E., Calkin, D.E., and J.D. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. Forest Ecology and Management. 256:1997-2006. https://app.box.com/s/loj3dqgz37akelxs18thq0qpkplmk533

(1) "Treating fuels to reduce fire occurrence, fire size, or amount of burned area is ultimately both futile and counter-productive" because most acreage burned is under extreme conditions which make suppression ineffective. If, due to treatments, moderate intensity fires are suppressed this leads to most acres burning under extreme conditions. Reducing burned area would not be desirable as large fires were common prior to European settlement and many western plant species are adapted to large, severe wildfires. Large fires generally have many areas lightly to moderately burned. Any fire "could offer a unique opportunity to restore fire to historically fire-dominated landscapes and thereby reduce fuels and subsequent effects."

(2) Reducing fuel hazard is not the same as ecosystem restoration. Treatments such as mastication and thinning may leave stand conditions that do not mimic historical conditions. Mastication breaks, chips, grinds canopy and surface woody material into a "compressed fuel bed" while thinning that removes fire-adapted species and leaves shade tolerant species do not mimic historical conditions. "Fire itself can best establish dynamic landscape mosaics that maintain ecological integrity."

(3) Thinning for fire hazard reduction should concentrate on the smaller understory trees to "reduce vertical continuity between surface fuels and the forest canopy." Thinning can increase surface fire behavior, for example, it increases surface wind speed and results in solar radiation and drying of the forest floor creating drier surface fuels.

(4) Fuel treatments are transient. Prescribed fire creates tree mortality with snag fall contributing to fuel loads, tree crowns expand to fill voids, trees continue to drop litter. Trees cut for harvest or killed by fire contribute limbs to the forest floor, increasing fuel loadings. Up to seven treatments may be needed to "return the area to acceptable conditions that mimic some historical range."

(5) Fire was historically more complex and everchanging than commonly believed and cannot be mimicked by prescribed burning. The low-severity model that is being pushed as "restoration" is no longer widely accepted by scientists. Prescribed fires do not have the variability of past wildfires, and thus can cannot mimic them.

(6) Commercial Thinning and Prescribed out of season burning have negative ecological impacts. Out of season burning coincides with nesting season for birds. Smoke may drive them from their nest, possibly even kill nestlings, etc. Ground nesters will be most impacted.

(7) The probability that a fire will encounter a fuel treatment of any kind is low.

Another review questions current policy and whether it is based on science. Lack of monitoring of post treatment effects leaves questions as to the efficacy of treatments. "While the use of timber harvests is generally accepted as an effective approach to controlling bark beetles during outbreaks, there has been a dearth of monitoring to assess outcomes, and failures are often not reported. Additionally, few studies have focused on how these treatments affect forest structure and function over the long term, or our forests' ability to adapt to climate change. Despite this, there is a widespread belief in the policy arena that timber harvesting is an effective and necessary tool to address beetle infestations. That belief has led to numerous proposals for, and enactment of, significant changes in federal environmental laws to encourage more timber harvests for beetle control."[37]

Analysis of fire severity patterns in western ponderosa pine and mixed conifer forests showed that " that the traditional reference conditions of low-severity fire regimes are inaccurate for most forests of western North America. Instead, most forests appear to have been characterized by mixed-severity fire that included ecologically significant amounts of weather-driven, high-severity fire." "Biota in these forests are also dependent on the resources made available by higher-severity fire. Diverse forests in different stages of succession, with a high proportion in relatively young stages, occurred prior to fire exclusion. Over the past century, successional diversity created by fire decreased. Our findings suggest that ecological management goals that incorporate successional diversity created by fire may support characteristic biodiversity, whereas current attempts to 'restore'' forests to open, low-severity fire conditions may not align with historical reference conditions in most ponderosa pine and mixed-conifer forests of western North America."[38]

Analysis of fuel treatments and fire occurrence in the western US Forest Service managed lands determined that fuel treatments have a probability of 2.0 - 7.9% of encountering moderate or high-severity fire in a 20-year period of reduced fuels (estimated time frame for return of fuels to prior levels or the "window of effective fuel reduction").[39]

In an Open Letter to Decision Makers Concerning Wildfires in the West, 215 scientists and Forest advocates expressed their concerns about ongoing proposals to expand logging on public land in response to recent increases in wildfire in the West.[40] They called for science-based solutions to maintain biologically diverse fire-dependent ecosystems while reducing risks to communities and firefighters. Today, less acres burn than in the past, but since the 1980s, the fire season has become longer and the number of wildfires has increased, while temperatures have risen and snowpack decreased, and the fire season has increased from five to seven

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[37] Six, D.L., Biber, E., and E.L. Esposito. 2014. Management for mountain pine beetle outbreak suppression: does relevant science support current policy?. Forests 5(1):103-133. DOI: 10.3390/f5010103. https://app.box.com/s/4y9y70lbqyza4xnn56a9764abhyr92h8

[38] Odion DC, Hanson CT, Arsenault A, Baker WL, DellaSala DA, et al. (2014) Examining Historical and Current Mixed-Severity Fire Regimes in Ponderosa Pine and Mixed-Conifer Forests of Western North America. PLoS ONE 9(2): e87852. doi:10.1371/journal.pone.0087852.

[39]Rhodes, J.J. and Baker, W.L. 2008. Fire probability, fuel treatment effectiveness and ecological tradeoffs in
western U.S. public forests. The Open Forest Science Journal 1: 1-7. https://app.box.com/s/s3dqfmgcxizw0pkrva56ott43qphhjya

[40] Geos Institute. 2018. Open Letter to Decision Makers Concerning Wildfires in the West. Geos Institute, Ashland, Oregon. https://wildfiretoday.com/2018/09/22/217-scientists-sign-letter-opposing-logging-as-a-response-to-wildfires/

months. This is attributed in part to climate change. They make several points about forest management, including; (1) thinning is ineffective in extreme fire weather; (2) post-disturbance salvage logging reduces forest resilience and can increase fire hazards; (3) wilderness and other protected areas are not especially fire prone; (4) fires burned more severely in previously logged areas, while in wilderness, parks and roadless areas, they burned "in natural fire mosaic patterns of low, moderate, and high severity" which maintained resilient forests.

Road Densities and Effects

Big Game security areas are defined as an area of cover over 0.5 miles from an open motorized route and over 250 acres.[41] These areas are important for limiting disturbance and hunting vulnerability to big game animals, but also provide benefits to other animals as well. Higher road densities correspond to lower security for wildlife.

There have been numerous publications on the benefits of roadless areas and the negative effects of roads regarding noise pollution and wildlife. Roads increasingly provide vehicle access into more and more remote areas, forcing sensitive species to be eliminated or greatly reduced especially when the cumulative impacts from livestock, oil, gas and mineral exploration and development are included. Roads and groomed trails provide increased access that can be used in summer and winter to damage environmental resources and displace or disrupt wildlife. Motorized vehicles, OHV/ATVs and snowmobiles, with their ability to travel large distances cross-country, often have negative environmental impacts whether the trail is open, closed, or user created. The ecological effects of roads and/or mechanized use include erosion, air and water pollution, spread of invasive weeds, avoidance of road or machine-affected areas by wildlife, and habitat fragmentation.[42, 43]

Roads, human activity, and noise fragment habitats by breaking large areas into smaller areas. These smaller areas no longer retain their original functions and begin losing the ability to

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

[42] T. W. Clark, P. C. Paquet, and A. P. Curlee. 1996. Large Carnivore Conservation in the Rocky Mountains of the United States and Canada," Conservation Biology 10: 936–939.

[43] Trombulak, S. C. & C. A. Frissell. 2000. The ecological effects of roads on terrestrial and aquatic communities: a review. Conservation Biology 14:18-30

support many species, especially those that are wide-ranging.[44, 45, 46, 47] Roads have been shown to have thresholds of density above which species begin to decline or be eliminated. This has been reported to generally be 1 mile per square mile, with effects to some large mammals such as bears at a road density of 0.5 miles/square mile.[48, 49] The importance of roadless areas was documented for both small (1,000-5,000 acres) and large (>5,000 acres) roadless areas under consideration in the Clinton Roadless Area Draft Environmental Impact Statement (DEIS).[50] A press release at the same time noted that this roadless area rule would protect 58.5 million acres, or nearly one-third of America's national forests.[51] That DEIS contained an alternative 4 that would "Prohibit road construction, reconstruction and all timber harvest within unroaded portions of Inventoried Roadless Areas".

Researchers, including those with the Forest Service, have documented the benefits of roadless areas and the negative effects of roads and OHV/ATVs on wildlife.[52] [53] Twenty-five percent of elk exhibited a flight response to ATVs that were 1 km or 0.6 miles away. [54] Elk select summer

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[44] D. A. Saunders, R. J. Hobbs, and C. R. Margules. 1991."Biological Consequences of Ecosystem Fragmentation: A Review," Conservation Biology 5 (1991): 18-32.

[45] Hitt, N.P. and C.A. Frissell. 1999. Wilderness in a landscape context: a quantitative approach to ranking Aquatic Diversity Areas in western Montana. Presented at the Wilderness Science Conference, Missoula, MT, May 23-27, 1999.

[46] J. R. Strittholt and D. A. DellaSala, Importance of Roadless Areas in Biodiversity Conservation in Forested Ecosystems: A Case Study-Klamath-Siskiyou Ecoregion, U.S.A. 2001. Conservation Biology 15 (6): 1742-1754.

[47] G. E. Heilman, Jr., J. R. Strittholt, N. C. Slosser, and D. A. DellaSala. 2002. Forest Fragmentation of the Conterminous United States: Assessing Forest Intactness Through Road Density and Spatial Characteristics. Bioscience 52 (5): 411-422.

[48] R. P. Thiel. 1985. Relationship Between Road Densities and Wolf Habitat Suitability in Wisconsin. American Midland Naturalist 113: 404-407.

[49] L. D. Mech, S. H. Fritts, G. L. Radde, and W. J. Paul. 1988. Wolf Distribution and Road Density in Minnesota. Wildlife Society Bulletin 16: 85-87.

[50] USDA Forest Service. 2000. Forest Service Roadless Area Conservation Draft Environmental Impact Statement. Volume 1. Washington Office. 504p.

[51] The White House. 2001. President Clinton: Strong Action to Preserve America's Forests. January 5,2001 press release. https://clintonwhitehouse5.archives.gov/WH/new/html/Fri_Jan_5_151122_2001.html Accessed April 2, 2021.

[52] 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.

[53] Canfield, J.D., L.J. Lyon, J.M. Hillis, and M.J. Thompson. 1999. Ungulates. Pages 6.1-6.25 in G. J oslin and H. Youmans, coordinators. Effects of recreation on . Rocky Mountain Wildlife: A Review for Montana. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.

[54] 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.

range with low road densities and abandon summer range early when in areas easily accessible to motorized use.[55] [56]

Off Road Vehicles and Carbon Emissions

Off road vehicles such as ATVs, dirt bikes, UTVs and snowmobiles are used in our National Forests and public lands. The impacts of these machines include noise, damage to soils and vegetation, accelerated erosion, and displacement of wildlife.[57] An analysis[58] of the carbon footprint of off-road vehicles in California determined that:

(1) Off-road vehicles in California currently emit more than 230,000 metric tons — or 5000 million pounds — of carbon dioxide into the atmosphere each year. This is equivalent to the emissions created by burning 500,000 barrels of oil. The 26 million gallons of gasoline consumed by off-road vehicles each year in California is equivalent to the amount of gasoline used by 1.5 million car trips from San Francisco to Los Angeles.

(2) Off-road vehicles emit considerably more pollution than automobiles. According to the California Air Resources Board, off-road motorcycles and all-terrain vehicles produce 118 times as much smog-forming pollutants as do modern automobiles on a per-mile basis.

(3) Emissions from current off-road vehicle use statewide are equivalent to the carbon dioxide emissions from 42,000 passenger vehicles driven for an entire year or the electricity used to power 30,500 homes for one year.

Another study[59] provides data on the amount of fossil fuel being consumed by snowmobiles in Montana, from which one can calculate the carbon footprint. The study found that resident snowmobilers burn 3.3 million gallons of gas in their snowmobiles each year and a similar amount of fuel to transport themselves and their snowmobiles to and from their destination. Non-residents annually burn one million gallons of gas in snowmobiles and about twice that in related transportation. That adds up to 9.6 million gallons of fuel consumed in the pursuit of snowmobiling each year in Montana alone. Multiply that by 20 pounds of carbon dioxide

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https://www.researchgate.net/publication/228447373_Effects_of_Off-Road_Recreation_on_Mule_Deer_and_Elk.

[55] Stubblefield C.H., Vierling Kt.T., and MA. Rumble. 2006. Landscape-Scale Attributes of Elk Centers of Activity in the Central Black Hills of South Dakota. Journal of Wildlife Management. 70(4): 1060—1069.

[56] Grigg, J. 2006. Gradients of predation risk affect distribution and migration of a large herbivore. Master Thesis, Montana State University, Bozeman.

[57] Wuerthner, G. 2007. Thrillcraft. Foundations for Deep Ecology. 312p.

[58] Kassar, C. and P. Spitler, 2008. Fuel to Burn: The Climate and Public Health Implications of Off-road Vehicle Pollution in California. A Center for Biological Diversity report, May 2008.

[59] Sylvester, James T., 2014. Montana Recreational Off-Highway Vehicles Fuel-Use and Spending Patterns 2013. Prepared for Montana State Parks by Bureau of Business and Economic Research, University of Montana. July 2014.

September 29th, 2021

Mel Bolling, Forest Supervisor
Caribou-Targhee NF
[redacted]

Dylan Johnson, Project Lead
Montpelier Ranger District
[redacted]

Re: Caribou Prescribed Fire Restoration Project – Environmental Assessment and Finding of No Significant Impact

Comments sent via email to mel.bolling@usda.gov , dylan.johnson@usda.gov, FS-comments-intermtn-caribou-targhee@usda.gov AND USPS CERTIFIED/RETURN RECEIPT.

Mr. Bolling:

Yellowstone to Uintas Connection, Alliance for the Wild Rockies and Native Ecosystems Council are submitting these comments for the Caribou Prescribed Fire Restoration Project – Environmental Assessment and Finding of No Significant Impact.

Yellowstone to Uintas 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 Uintas 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 Uintas Connection is headquartered in Mendon, Utah with a satellite office near Paris, Idaho.

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 logging impacts on wildlife in Montana and Idaho. NEC is headquartered in Willow Creek, Montana.

The August 31st, 2021, Caribou Prescribed Fire Restoration Project – Environmental Assessment and Finding of No Significant Impact (EA) still provides an indication of some ongoing issues that this project proposal does not address.

Our Concerns:

- **The site-specific analysis and comparison to ecological criteria, best available science or Forest Plan intent is still not available as the specific locations for prescribed fire within the burn blocks have not been identified at this time. The Design Elements portion of the EA simply states that the site-specific analysis will be done "prior to implementation" that "treatments will be designed" in accordance with the law and best available science. By deflecting the analysis to a later date while simultaneously authorizing the project the public has been eliminated from the NEPA process and left without a voice.**
- **There was not a complete analysis included in the EA of the Regionally Significant Wildlife Corridor, ESA, special status species such as Grizzly bear, goshawk, Canada lynx or wolverine, or for that matter native plants. The data shown for the current state of grizzly bear occupancy in the project area nor of the impact the project will have on this species is incorrect. Grizzly bears have been documented by the Wyoming Game and Fish the past two years in the southern Wyoming range near Kemmerer, Wyoming and could easily be found in the Salt River Range directly adjacent to the Wyoming Range. https://www.sweetwaternow.com/grizzly-bear-spotted-near-viva-naughton-reservoir/. https://kemmerergazette.com/article/game-and-fish-verifies-grizzly-bear-sighting-in-kemmerer-area. The CTNF should now analyze the suitability of grizzly habitat in both Forests. A "hard look" must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, snowmobile, and ohv activity, trapping and other human activity as well as livestock grazing on Canada lynx. That look must also include all Forest Plan requirements and intent as well as embody the best available science applicable to Canada lynx. Did the CTNF previously have identified lynx LAUs? Did the CTNF remove these lynx LAUs at some point in the past?**
- **The EA does not include the results of a formal consultation with the US Fish and Wildlife Service (USFWS) regarding the impact of the project on lynx, grizzly bears, and wolverines. The EA simply states that the FS will consult with the USFWS in the future. The EA also states that the Biological Assessment has not yet been finalized and therefore is not available for public review and commenting prior to the project approval by the FS. How can the FS approve the project without either one of these actions being completed?**
- Reliance is placed on Best Management Practices (BMPs) instead of science-based criteria under which to manage the project and overlapping uses such as livestock grazing, mining and recreation.
- Climate Change and the role of forests in storing carbon was not addressed in the EA other than a brief statement that Climate Change impact on the project area is outside of the scope of the project analysis. This statement once again deflects from the reality of a "Hard Look", or the cumulative analysis required by NEPA.
- There was no analysis of NFMA viability requirements for special status species.
- There is still no Cumulative Effects Analysis (CEA) in the EA despite the importance of this Regionally Significant Wildlife Corridor. The Forest Service continuously authorizes "management" and other actions such as livestock grazing and mining, that degrade the natural qualities, without ever analyzing and disclosing the cumulative impacts of all these authorized projects on the values this Corridor represents.

- Old growth locations have still not been identified and the potential of old growth getting burned during the proposed action and the impact that burning of old growth forest has on wildlife is still not addressed.
- The EA lacks data to support the projected outcome of the project – increase resiliency of existing vegetation groups; restore proper ecological function to native vegetation communities and wildlife habitats; and to improve firefighter and public safety.
- The EA lacks data to support the claim that active management, by whatever name used, whether vegetation treatment, fuels reduction, logging, restoration, salvage, or mastication is effective in restoring ecosystem function or reducing large wildfires and are inappropriate and/or effective in most situations.
- The EA lacks analysis of the impact that domestic livestock grazing has on fire regime and domestic livestock movement and utilization impacts on the project area following the implementation of prescribed fire. Once again, the FS claims that the impact of livestock grazing on the project area composition and aspen regeneration is outside of the scope of the project analysis. This statement once again deflects from the reality of a "Hard Look", or the cumulative analysis required by NEPA. Livestock grazing is an important factor in changing forest stand conditions and fire regimes. There is a substantial body of scientific literature that identifies livestock grazing as a major factor in the alteration of historic fire regimes and fire hazard.
- The EA lacks defined monitoring protocol for noxious weed invasion of the project area following implementation of the proposed action. The EA simply states that the Design Elements will incorporate weed prevention and control. How? What is the protocol and what monitoring will take place to ensure the success of this design element?
- A summary of all monitoring of resources and conditions relevant to the proposal or Analysis Area as a part of the Forest Plan monitoring and evaluation effort is necessary.

Purpose and Need

The Forest Service seeks to conduct a forest management project on approximately 266,000 acres in the Caribou zone of the Caribou-Targhee National Forest. The proposed objective is to improve the health and resiliency of vegetation communities and habitats in the project area to reduce the risk of uncharacteristic wildfire to key ecosystem components by modifying and reducing natural fuel accumulation, increase resiliency of existing vegetation groups to future stressors like wildfire and drought by improving plant vigor, stand structure, and species composition, and to improve the proper ecological function of vegetative communities within the project area.

Y2U, AWR and NEC would argue that the Forest Service has failed to effectively analyze the magnitude of the impact of climate change, domestic livestock grazing on forest structure, aspen regeneration, and overall forest health in the project area.

Y2U, AWR and NEC differ from the Forest Service in terms of which management protocols should be implemented to best manage forest resources as well as identify and protect critical habitat connectivity in the Corridor.

1. Proposed Action

Y2U, AWR and NEC do not support the proposed action. There must be an alternative that specifically addresses climate change, livestock grazing impacts on forest stands, understory conditions and aspen recruitment, and the impact that climate change and livestock grazing have on overall forest resiliency.

There must also be an alternative that addresses the Regionally Significant Wildlife Corridor, ESA, special status species such as Grizzly bear, goshawk, Canada lynx or wolverine, or for that matter the native plant community and the impact that this project will have on these species. It should include mapping and identification of all roads, trails, open or closed, user created or not and a plan to close the illegal roads and trails, while also reducing the OMRD to within limits recognized in the RFP.

2. Environmental Assessment – Finding of No Significant Impact

The EA for this project proposes that this project and its unknown number of site-specific projects will be "analyzed prior to implementation" and following the FS approval of the project. This precludes the public from seeing and commenting on a site-specific analysis and gives no opportunity to comment, object or appeal. It also implies that there will be no Cumulative Effects Analysis (CEA) or "Hard Look" at the direct or indirect effects, or for that matter, no informing the public about existing conditions and the cause and effect related to those conditions in their National Forest.

The basis for a determination that this project will improve the health and resiliency of vegetation communities and habitats in the project area to reduce the risk of uncharacteristic wildfire to key ecosystem components by modifying and reducing natural fuel accumulation, increase resiliency of existing vegetation groups to future stressors like wildfire and drought by improving plant vigor, stand structure, and species composition, improve the proper ecological function of vegetative communities was never provided. The only mention of the impact of the proposed project on wildlife occurring within the project area is found within the project design element section and minimally outlines procedure following implementation of the project.

We believe that NEPA requires the agency to adequately demonstrate the impact that this project will have on all wildlife species and needs to be included in the public involvement process, which in this case is the EA. There is no documentation of the current status of special status species potentially occurring or occurring in the project area. As discussed below, species such as Bald eagle, Grizzly bear, Northern goshawk, Canada lynx, and wolverine are potentially affected by this project.

There is no analysis in the EA that defines why prescribe burning the forest will not significantly affect the area's value to wildlife. We contend that the proposed use of prescribed fire may have significant adverse impacts on many wildlife species. Impacts that are not currently present. The EA does not identify any adverse impacts to wildlife or the current habitat conditions in the project area. The project may eliminate existing values of special status species habitats or may further degrade those values, such as wildlife security habitat.

3. Reliance on Best Management Practices

Will this project rely on Best Management Practices (BMPs)? The BMPs are assumed to be effective and relied upon. 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 is no 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

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 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 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?

The reliance on BMPs is a flawed approach that assumes they work. Ziemer and Lisle (1993)[1] indicated that there are no reliable data showing that BMP's are cumulatively effective in protecting aquatic resources. Espinosa et al. (1997)[2] provided evidence from case histories in Idaho that BMP's 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[3], Rhodes et al., 1994[4] Espinosa et al., 1997). Stanford and Ward (1992) termed this phenomenon the *"illusion of technique."*

4. Climate Change

The EA does not mention climate change and the role of forests in storing carbon other than a brief statement that Climate Change impact on the project area is outside of the scope of the project analysis. This statement once again deflects from the reality of a "Hard Look", or the cumulative analysis

[1] 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.
[2] 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.
[3] 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.
[4] 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.

required by NEPA. Instead, trees are to be removed and/or burned, the reverse of damping down climate change. Scientists say halting deforestation is just as urgent as reducing emissions to address climate change, given the function forests provide as a carbon sink.[5] Forest thinning reduces this carbon sink function. The IPCC released its special report on climate change in August 2019.[6] 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." In past reports such as Livestock's Long Shadow[7], the FAO discussed the contribution of livestock to greenhouse gas emissions. A large factor is also conversion of forests to grasslands for livestock. "Worldwide, livestock production accounts for about 37 percent of global anthropogenic methane emissions and 65 percent of anthropogenic nitrous oxide emissions with as much as 18% of current global greenhouse gas emissions (CO2 equivalent) generated from the livestock industry." Livestock grazing and trampling in the western US led to a reduction in the ability of vegetation and soils to sequester carbon and led to losses in stored carbon.

An analysis of net carbon change in US Forests found that, "Carbon loss in the western US (44 ± 3 Tg C per year) was due predominantly to harvest (66%), fire (15%), and insect damage (13%). Across the US, the various disturbances (harvest, fire, insect, wind and forest conversion) reduced the estimate of potential Carbon sink of the US forests by 42%."[8] Life cycle analyses of fuel reduction treatments including removal of woody biomass, combustion of fuel in logging machinery, transport, burning of slash, milling energy use, and other factors lead to the conclusion that over the long term, carbon losses from treatment projects may exceed those from wildfire because most of the carbon mass remains on site unburned during fire. The authors further noted that, "Studies at large spatial and temporal scales suggest that there is a low likelihood of high-severity wildfire events interacting with treated forests, negating any expected benefit from fuels reduction."[9]

Both fuel treatments and wildfire remove carbon from forests. A simulation showed that even in mature ponderosa pine forest, protecting one unit of carbon from wildfire combustion came at a cost of removing three units of carbon with treatments. "The reason for this is simple: the efficacy of fuel reduction treatments in reducing future wildfire emissions comes in large part by removing or combusting surface fuels ahead of time. Furthermore, because removing fine canopy fuels (i.e., leaves and twigs) practically necessitates removing the branches and boles to which they are attached, conventional fuel-reduction treatments usually remove more carbon from a forest stand than would a wildfire burning in an untreated stand." The analysis showed that thinning and other fuel treatments to reduce high-severity fire, although considered to keep carbon sequestered, do not do so. High carbon losses came from treatments while only small losses were associated with high-severity fire, and these

[5] Millman, O. 2018. Scientists say halting deforestation "just as urgent" as reducing emissions. The Guardian, October 4, 2018.

[6] 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.

[7] 7H. Steinfeld, P. Gerber, T. Wassentaar, V. Castel, M. Rosales, and C. de Haan, Livestock's Long Shadow, Food and Agriculture Organization of the United Nations, Rome, Italy, 2006. http://www.fao.org/3/a0701e/a0701e00.htm. Accessed 11/23/2019.

[8] Harris, N.L.; Hagen, S.C.; Saatchi, S.S.; Pearson, T.R.H.; Woodall, C.W.; Domke, G.M.; Braswell, B.H.; Walters, B.F.; Brown, S.; Salas, W.; Fore, A.; and Y. Yu. 2016. Attribution of net carbon change by disturbance type across forest lands of the conterminous United States. Carbon Balance and Management. 11(1): 24. 21 p. http://dx.doi.org/10.1186/s13021-016-0066-5.

[9] Restaino, J.C. and D.L. Peterson. 2013. Wildfire and fuel treatments effects on forest carbon dynamics in the western United States. Forest Ecology and Management 303:46-60.

were similar to the losses with low-severity fire that treatments are meant to encourage.[10] A USDA study[11] estimated soil organic carbon in relatively undisturbed secondary forests in the Rocky Mountain Region is 71,571 lbs/acre. Estimated carbon in dead organic matter above the mineral soil horizon in lodgepole pine forest in the Rocky Mountain Region is 13,411 lb/acre. Average storage of carbon by Forest ecosystem component for the Rocky Mountain Region is 148,190 lb/acre for Idaho with trees (60,961 lb/acre), soil (64,417 lb/acre), Forest Floor (21,735 lb/acre) and Understory (1,077 lb/acre). Annual average carbon accumulation in live trees for Idaho is 1,112 lb/acre/year. The Proceedings of the American Society of Mining and Reclamation reported that, "Soil organic matter (OM) is drastically reduced by various processes (erosion, leaching, decomposition, dilution through soil horizon mixing etc.) typically associated with topsoil salvage prior to surface mining activities. Of these processes, loss of physical protection of OM through the breaking up of soil aggregation can result in up to 65% of soil carbon (C) reductions."[12] What impact does the mechanical disturbance of soils to carry out a project such as the Caribou Prescribed Fire Restoration Project have when masticators and other equipment dig up the soils surface for fire lines, masticating and other actions?

The BLM and Forest Service allocate AUMs for livestock that relate to forage consumption by a cow and calf, or five ewes with lambs. In a review of the forage consumption for both cattle and sheep using current weights for these animals, we found that currently, a cow/calf pair consumes 1,504 lbs/month and five ewes with lambs consume 1,976 lbs/month.[13] The cumulative effect of this forage consumption, the gases released by livestock and that lost in timber removal should also be added to the Green House Gas (GHG) emissions analysis as a contribution to atmospheric GHGs and loss in carbon sequestration. Removing livestock from the project area is a possibility to offset annual GHG emissions.

In 2010, the Forest Service produced a National Roadmap for Responding to Climate Change. The principles expressed therein are applicable to this project and others in the phosphate mining region.[14] This roadmap provides guidance to the agency, including, but not limited to:

- Assess vulnerability of species and ecosystems to climate change
- Restore resilience
- Promote carbon sequestration
- Connect habitats, restore important corridors for fish and wildlife, decrease fragmentation and remove impediments to species migration

To date, we have not seen the Forest Service cite or adhere to these principles in any project Scoping, EA or EIS. A “Hard Look” would require such an analysis and promote appropriate mitigation actions to include carbon sequestration and offsets as well as habitat restoration and corridor connectivity and habitat integrity.

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[10] Campbell, J.L., Harmon, M.E., and S.R. Mitchell. 2012. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Frontiers in Ecology and Environment 10(2):83-90. doi:10.1890/110057.

[11] Birdsey, R. A. Carbon Storage and Accumulation in United States Forest Ecosystems. USDA Forest Service General Technical Report WO-59.

[12] Wick et al. 2008. Soil aggregate and aggregate associated carbon recovery in short-term stockpiles. Proceedings America Society of Mining and Reclamation, 2008 pp 1389-1412. DOI: 10.21000/JASMR08011389

[13] Carter J. 2016. Updating the animal unit month. Report by Yellowstone to Uintas Connection. https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk

[14] USDA. 2010. National Roadmap for Responding to Climate Change. 30p. www.fs.fed.us/climatechange/pdf/roadmap.pdf

In addition, the National Fish, Wildlife and Plants Climate Adaptation Strategy proposed by the US Fish and Wildlife Service, NOAA Fisheries and the American Fish and Wildlife Association describes climate change effects and emphasizes conservation of habitats and reduction of non-climate stressors to help fish and wildlife adapt.[15] Agencies such as the Forest Service and Bureau of Land Management must address conservation of habitats and reduction of non-climate stressors such as the habitat degradation from livestock grazing, including soil loss, stream dewatering, plant communities shifting to increasers or weeds to help fish and wildlife adapt in accordance with the National Fish, Wildlife and Plants Climate Adaptation Strategy.

Regarding connecting habitats, later in these comments we describe the regional Corridor and its importance to perpetuation of wildlife and their gene pools.

Figure 1 shows the Western Wildway, the Continental Corridor connecting Mexico to Alaska and the regions of that corridor being addressed by scientists and advocates of connectivity for wildlife. In that map, the Yellowstone to Uintas Connection is identified, and is the focus of Y2U. This represents a conservation biology approach to landscape conservation which emphasizes corridors and connectivity for Canada lynx and other species. As we read EAs and EIS for project after project in our National Forests, it appears that conservation biology principles are abandoned, and corridor/connectivity ignored.

Figure 1. Western Wildway Network

[15] https://www.wildlifeadaptationstrategy.gov/

An analysis of factors affecting climate change as well as the other topics covered in these comments should include the loss of vegetation and stored carbon by logging, burning, mastication and livestock consumption of vegetation. In addition, use of gas or diesel-powered machines to carry out the project needs to be addressed in terms of the emissions generated. Soil carbon loss due to mechanical disturbance for skid trails, mastication, chainsaws, and other machines needs to be calculated. Recreation occurring in the Project Area and any Cumulative Effects Area produces GHGs from ATVs/OHVs, dirt bikes, snowmobiles and other vehicles used for camping and recreating.
Such greenhouse gas sources can be quantified. An analysis[16] of the carbon footprint of off-road vehicles in California determined that:

- Off-road vehicles in California currently emit more than 230,000 metric tons — or 5000 million pounds — of carbon dioxide into the atmosphere each year. This is equivalent to the emissions created by burning 500,000 barrels of oil. The 26 million gallons of gasoline consumed by off-road vehicles each year in California is equivalent to the amount of gasoline used by 1.5 million car trips from San Francisco to Los Angeles.
- Off-road vehicles emit considerably more pollution than automobiles. According to the California Air Resources Board, off-road motorcycles and all-terrain vehicles produce 118 times as much smog-forming pollutants as do modern automobiles on a per-mile basis.
- Emissions from current off-road vehicle use statewide are equivalent to the carbon dioxide emissions from 42,000 passenger vehicles driven for an entire year or the electricity used to power 30,500 homes for one year.

Another study[17] provides data on the amount of fossil fuel being consumed by snowmobiles in Montana, from which one can calculate the carbon footprint. The study found that resident snowmobilers burn 3.3 million gallons of gas in their snowmobiles each year and a similar amount of fuel to transport themselves and their snowmobiles to and from their destination. Non-residents annually burn one million gallons of gas in snowmobiles and about twice that in related transportation. So that adds up to 9.6 million gallons of fuel consumed in the pursuit of snowmobiling each year in Montana alone. Multiply that by 20 pounds of carbon dioxide per gallon of gas (diesel pickups spew 22 pounds per gallon) and snowmobiling releases 192 million pounds (96 thousand tons) of climate-warming CO2 per year into the atmosphere.

Any project proposal such as the Caribou Prescribed Fire Restoration Project must address climate change by addressing these factors within the Project and Cumulative Effects Areas.

5. Regionally Significant Wildlife Corridor

Circa 2000, the Wasatch Cache National Forest produced the map shown in Figure 2 representing the Corridor.[18] The Forest Service should provide a map and analysis of the Corridor addressing habitat fragmentation and the presence of core habitat and habitat connectivity for special status species including Grizzly bear, Canada lynx and wolverine, Roadless Areas, Wilderness Areas, NRAs, areas closed to livestock grazing, security areas, and Northern goshawk and owl home ranges.

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[16] Kassar, C. and P. Spitler, 2008. Fuel to Burn: The Climate and Public Health Implications of Off-road Vehicle Pollution in California. A Center for Biological Diversity report, May 2008.
[17] Sylvester, James T., 2014. Montana Recreational Off-Highway Vehicles Fuel-Use and Spending Patterns 2013. Prepared for Montana State Parks by Bureau of Business and Economic Research, University of Montana. July 2014.
[18] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5076928.pdf

In future proposed management projects, Y2U, AWR and NEC would like to see more alternatives that propose additional road closures to attain a scientifically defensible density per square mile, grazing allotment closures, fence removals, and setting noise limits on vehicles. Winter use should be closed or severely limited in the Corridor so that Grizzly bear, Canada lynx, wolverine, and other far-ranging species (elk, deer) have an opportunity to migrate and have security cover during all seasons. The Forest Service can use its Prohibition Authority (36 CFR 261) to regulate noise and other activities detrimental to wildlife such as hunting, trapping, or harassing wildlife.

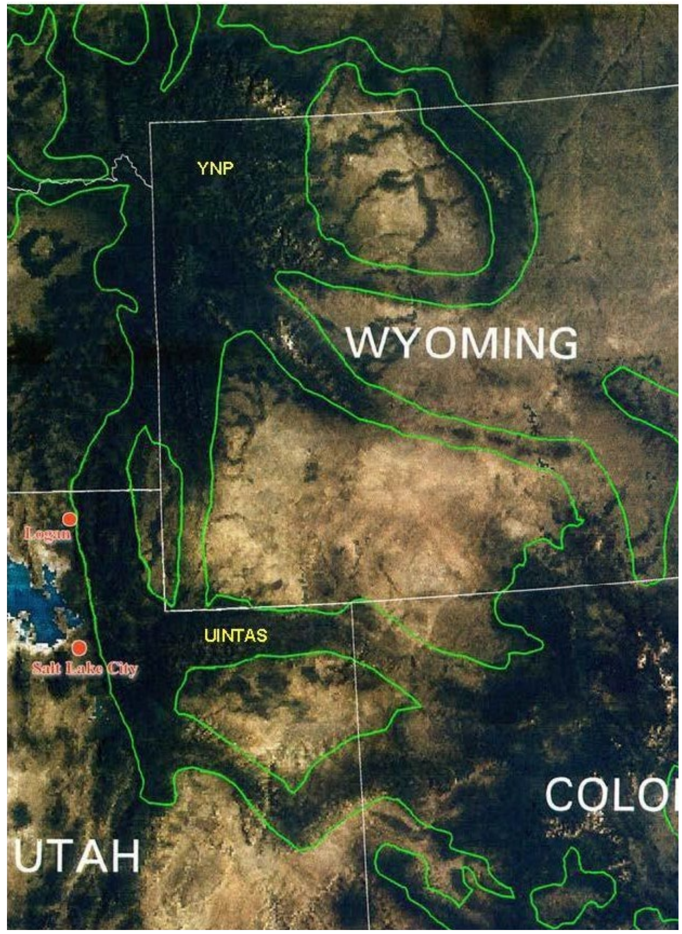

Figure 2. Regionally Significant Wildlife Corridor.

The FEIS for the 2003 Caribou National Forest Revised Forest Plan provides a section on corridors in Volume IV. In that section (pages D-4 to D-8), a process for assessing connectivity is suggested. This includes:

- 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.

The FEIS for the 2003 Caribou National Forest Revised Forest Plan also summarizes past efforts at corridor identification, including factors that the Targhee portion of the National Forest should consider when identifying linkages. The map in that FEIS Figure 1 (D-5) is referenced in that discussion. This proposed project provides the opportunity for the Forest Service to accomplish some mitigation on behalf of wildlife in the region through the closure of additional routes, livestock grazing moratoriums, and snowmobile exclusion during and after the vegetation management project is completed.

6. Grizzly Bear

There was not a complete analysis included in the EA of the Regionally Significant Wildlife Corridor, ESA, or special status species Grizzly bear. The data shown for the current state of grizzly bear occupancy in the project area nor of the impact the project will have on this species is incorrect. Grizzly bears have been documented by the Wyoming Game and Fish the past two years in the southern Wyoming range near Kemmerer, Wyoming. https://www.sweetwaternow.com/grizzly-bear-spotted-near-viva-naughton-reservoir/. https://kemmerergazette.com/article/game-and-fish-verifies-grizzly-bear-sighting-in-kemmerer-area. Figure 3 is a map of grizzly management zones in the Greater Yellowstone Ecosystem. The CTNF should now analyze the suitability of grizzly habitat in both Forests due to the planned prescribed burns and timber projects occurring here as well as the other activities and projects the Forest currently allows. These activities would include excessive road densities, snowmobile and ohv use, timber projects, mines and other activities fragmenting or disturbing potential grizzly habitat.

No direct, indirect, and cumulative effects on Grizzly bears in the project area were identified. Y2U, AWR and NEC identified the following potential issues:

- Livestock grazing reduces a basic Grizzly bear food source—herbaceous vegetation.
- Has conflict with livestock grazing in the project area led to unusually high grizzly bear mortality or relocation?
- Cattle carcasses invite conflicts, and livestock grazing practices do not effectively mitigate these conflicts.
- Roads facilitate human access, which results in habitat disturbance and avoidance, and increases hunter-caused mortalities.
- Does grazing management in the project area avoid preferred foraging or security areas for grizzly bears?
- Measures to reduce livestock/grizzly bear conflicts are too discretionary and ineffective as evidenced by high grizzly mortalities.
- Habitat fragmentation and other cumulative effects on the Regionally Significant Wildlife Corridor are not being properly addressed.
- The project must adhere to the principles in the Forest Plan Amendment for the Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests FEIS and Record of Decision at a minimum.

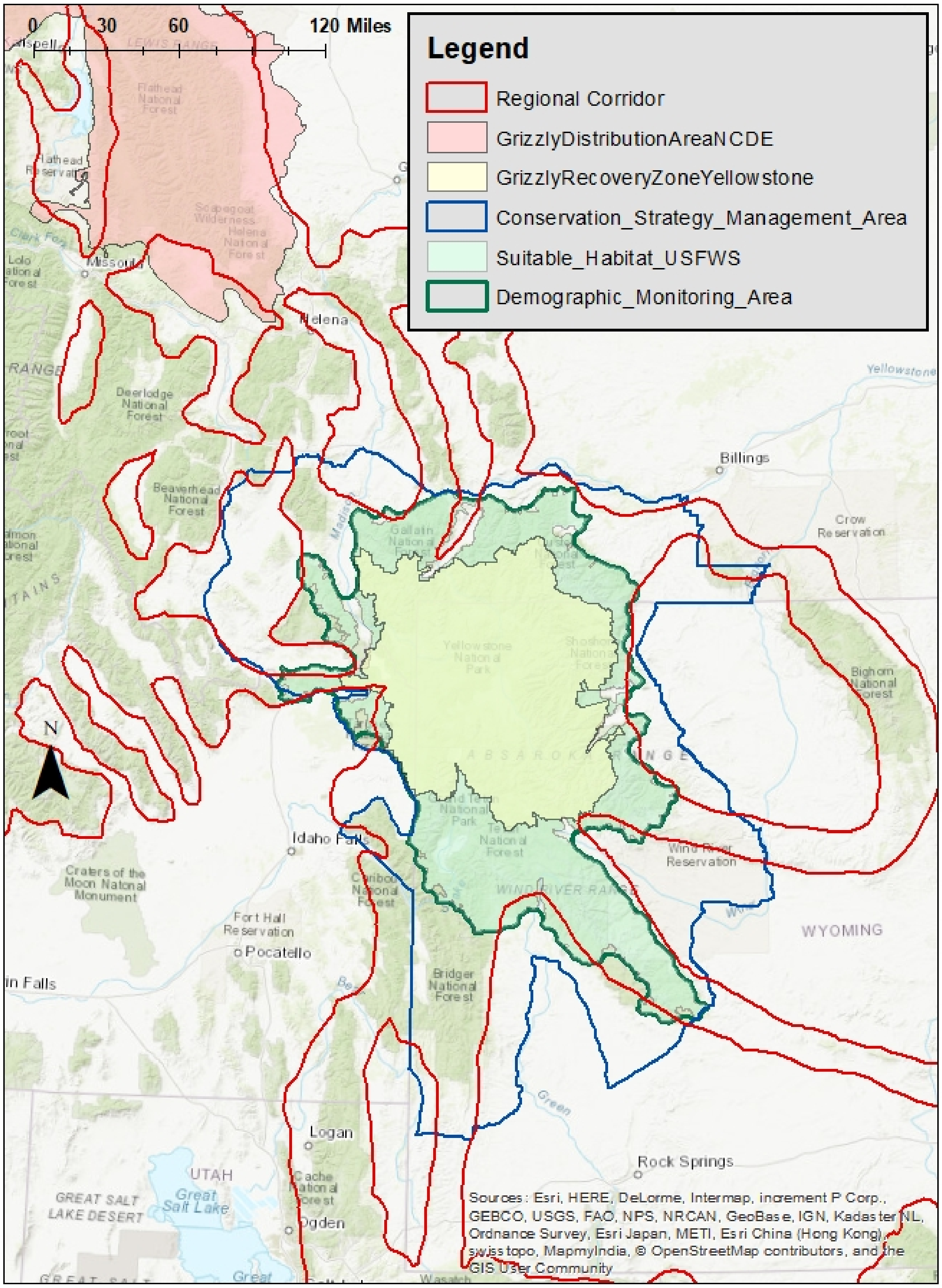

Figure 3. Grizzly Bear Management Zones in the Greater Yellowstone Ecosystem

7. Canada Lynx

The Forest Service provides a map of historic lynx distribution showing that the Caribou NF has historically been used by Canada lynx. (Figure 3). There are core and peripheral or linkage areas.[19] The Biological Assessment[20] for Canada lynx documents the importance of peripheral areas as:

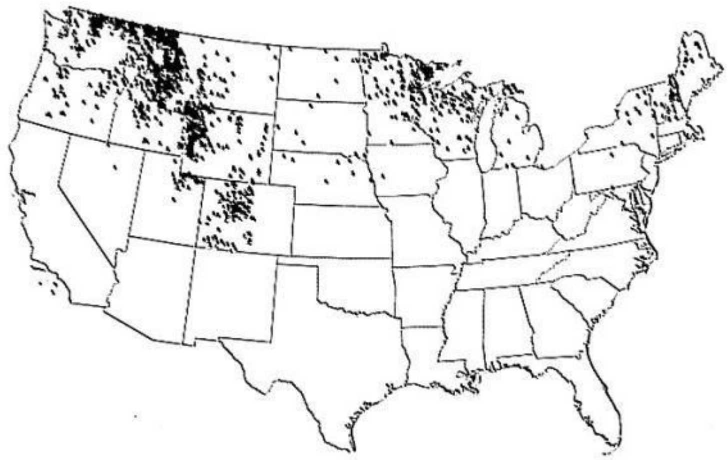

Figure 4. Historical Canada Lynx Distribution

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 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[21]). 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.

Ruggierio et al (1999)[22] also discuss the effects of fragmentation on competition with lynx by other carnivores and the loss of connectivity. The Forest Service map of historic lynx distribution for 1842 - 1998 is shown in the referenced link and in Figure 4.[23] This reveals the historical areas used and the pattern of connectivity, which clearly connects Colorado populations to the Greater Yellowstone Ecosystem and northern Rockies. The Ashley, Wasatch-Cache and Uinta NFs also published a map showing lynx analysis units, primary and secondary habitat, and connections.[24] (Figure 5). Did the CTNF previously have identified lynx LAUs? Did the CTNF remove these lynx LAUs at some point in the past? The CTNF should also publish such a map.

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[19] USDA Forest Service. 2007. Final Environmental Impact Statement Northern Rockies Lynx Management Direction National Forests in Montana, and parts of Idaho, Wyoming and Utah. Figure 1-1.

[20] 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.

[21] 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.

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

[23] http://www.fs.usda.gov/detail/r1/landmanagement/resourcemanagement/?cid=stelprdb5160688

[24] https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5076927.pdf

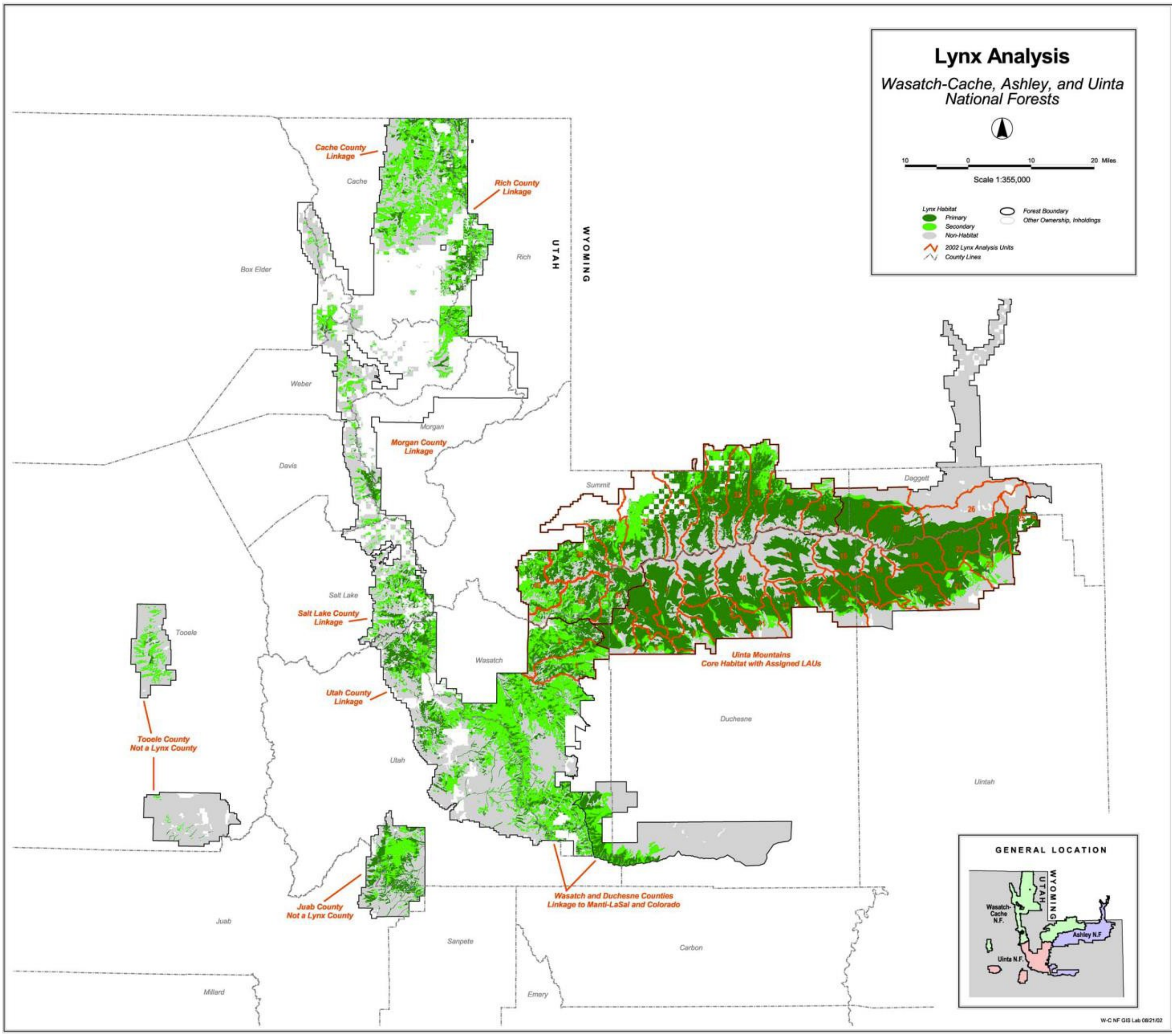

Figure 5. Lynx LAUs, Primary and Secondary Habitat and Connections.

In a sophisticated modeling of lynx habitat, it was determined that the Uintas are core lynx habitat.[25] (Figure 6).

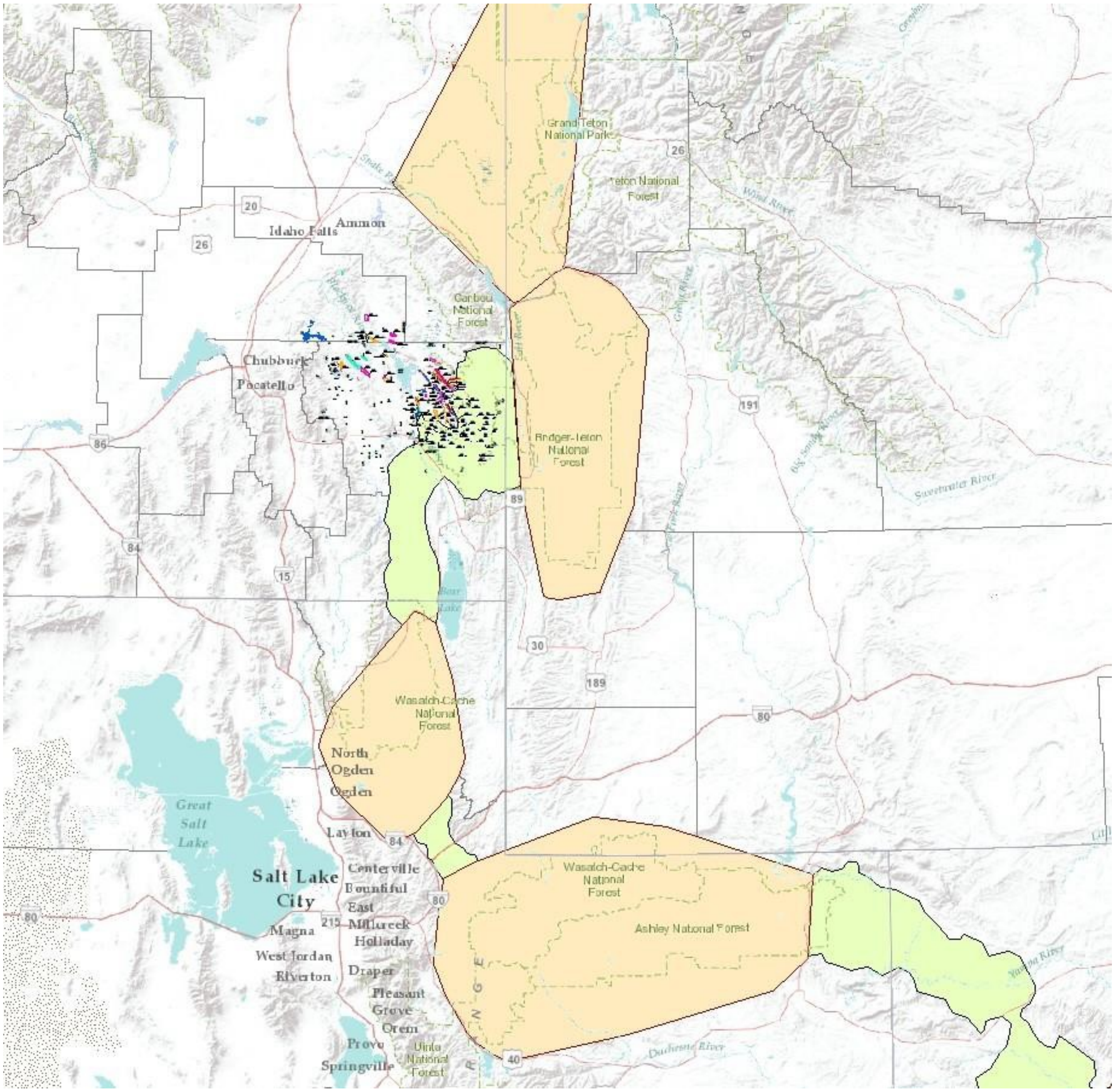

Figure 6. Modeled corridor from Bates and Jones. Orange is depicting a core area for lynx, while yellow are linkages. Mine leases in Idaho shown in various colors blue, red, orange depending on status.

[25] Bates,W. and A. Jones. 2010. Least-Cost Corridor Analysis for Evaluation of Lynx Habitat Connectivity in the Middle Rockies. Wild Utah Project, Salt Lake City, UT. https://app.box.com/s/0g8b1ryqg1iz6r1fd61rdkc8fso97oh5

More recently, the Colorado Division of Wildlife tracked radio-collared lynx released in Colorado. The tracked lynx show a similar pattern of use in the map. (Figure 7).[26] These maps show the migration path, and that lynx have been historically using NE Utah and SE Idaho and have many occurred in the Uinta Mountains. 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 and potential core area, it is no surprise that lynx still use the Caribou-Targhee NF. Indeed, telemetry records confirm that there is a "hot spot" of lynx occurrences at the western end of the Uinta Mountains, where collared lynx from Colorado remain for a time before moving on, presumably unable to find mates. As of 2009, at least 22 individuals had made at least 27 visits to the state of Utah, recorded by air telemetry and satellite.[27] 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."[28]

A recent paper found that lynx exhibited decreasing use of stand initiation structures up to a maximum availability of 25%.[29] Another found that 50% of lynx habitat must be mature-undisturbed forest for it to be optimal lynx habitat and no more than 15% can be young clear-cuts, i.e. trees <4" dbh.[30] The study also found that lynx do not use clear-cuts in winter when they are at most risk of starvation.

It is critical that the Forest Service fully analyze the effect of livestock grazing, the effects of these aspen treatment or restoration projects as well as any other past, present and foreseeable actions in the Caribou-Targhee NF on Canada lynx habitat and food base, such as hares and squirrels as well as the impact of livestock grazing on accelerating conifer encroachment into aspen and the direct effects of livestock grazing removal of aspen shoots on recruitment.

A "hard look" must be conducted of habitat fragmentation, corridor functionality, vegetation treatments, road density, snowmobile, and ohv activity, trapping and other human activity as well as livestock grazing on Canada lynx. That look must also include all Forest Plan requirements and intent as well as embody the best available science applicable to Canada lynx.

In furtherance of this request, several organizations sent a letter to Mel Bolling, Supervisor of the Caribou Targhee National Forest.[31] That letter (attached) laid out our concerns and the lack of analysis of habitat for lynx in the Caribou NF and the continuing elimination of habitat in the Targhee NF LAUs. A major problem we identified is the failure of the CTNF to analyze all the historic observations of lynx and identification of the habitats where the observations were made. We requested that the Caribou and Targhee habitats be further delineated using these observations and the expanded types of habitats where lynx may be found. That the Caribou is classified as unoccupied is merely an artifact of the failure to account for historical observations and model the habitats present. By claiming there are no

[26] Devineau P, Shenk T.M., White, G.C., Doherty Jr., P.M. and R.H. Kahn. 2010. Evaluating the Canada lynx reintroduction programme in Colorado: patterns in mortality. Journal of Applied Ecology. doi: 10.1111/j.1365-2664.2010.01805.x 8 p.
[27] Colorado Department of Wildlife (CDOW) Report, 2006-7, Tables 4 and 6, pages 23 and 24.
[28] Ibid. page 10; see also Figure 2, page 29.
[29] Holbrook, J. D., J. R. Squires, L. E. Olson, N. J. DeCesare, and R. L. Lawrence. 2017. Understanding and predicting habitat for wildlife conservation: the case of Canada lynx at the range periphery. Ecosphere 8(9): e01939.10.1002/ecs2.1939.
[30] Kosterman, M.K. 2014. Correlates of Canada lynx reproductive success in northwestern Montana. Masters Thesis,University of Montana,Missoula, MT. 79p.
[31] Carter, J. 2021. Request for Response on Lynx Analysis in the CTNF. Letter to Mel Bolling, Forest Supervisor dated August 15, 2021. On behalf of Yellowstone to Uintas Connection, Alliance for the Wild Rockies, Native Ecosystems Council, and Wildlands Defense.

lynx occupying this area based on recent surveys omits those activities such as timber harvests, roads and ohv use, snowmobile use, mines, and other activities that fragment habitat are responsible for the lack of recent sightings. This allowed the Forest Service to disallow meaningful standards and guidelines applicable to this area. Even though the CTNF recognized linkage habitat in its Forest Plan FEIS, it has done no analysis of the condition of habitat in that linkage. The Northern Rockies Lynx Management Direction has no meaningful standards for linkages and we pointed out that there is no evidence the NRLMD has made any helpful modifications to management to preserve or restore lynx.

We received a response to our letter from Supervisor Bolling.[32] That response mostly reiterated the history of lynx decision making and did not address our basic questions and request for a broad analysis of lynx habitat in the CTNF. There was no commitment to do the analysis we requested. The response cited a 2021 research paper that used gps and Argus data for lynx locations to model the habitats in which they were documented.[33] This analysis was an example of applying habitat data, testing applicability of the model and then ranking habitats in Idaho, Montana, Washington and Wyoming based on certain key factors. The letter from Supervisor Bolling went into detail on how this model is the best current information. We have included one of the maps (Figure 7.) from that paper showing that the model predicted lynx habitat exists in the very areas we have been pointing out in our comments to the CTNF for several years. It is incumbent on the CTNF to now acknowledge that, at a minimum, lynx habitat does exist in the Caribou NF and do a detailed analysis of that habitat and the various factors that degrade its functionality for lynx.

[32] Bolling, M. 2021. Response Letter to John Carter. Mel Bolling, Forest Supervisor dated September 13, 2021.
[33] Improved prediction of Canada lynx distribution through regional model transferability and data efficiency Lucretia E. Olson, Nichole Bjornlie, Gary Hanvey, Joseph D. Holbrook, Jacob S. Ivan, Scott Jackson, Brian Kertson, Travis King, Michael Lucid, Dennis Murray, Robert Naney, John Rohrer, Arthur Scully, Daniel Thornton, Zachary Walker, John R. Squires. First published: 24 January 2021 https://doi.org/10.1002/ece3.7157
Funding information: This work was funded by Region 1 of the U.S. Forest Service, United States Department of Agriculture.

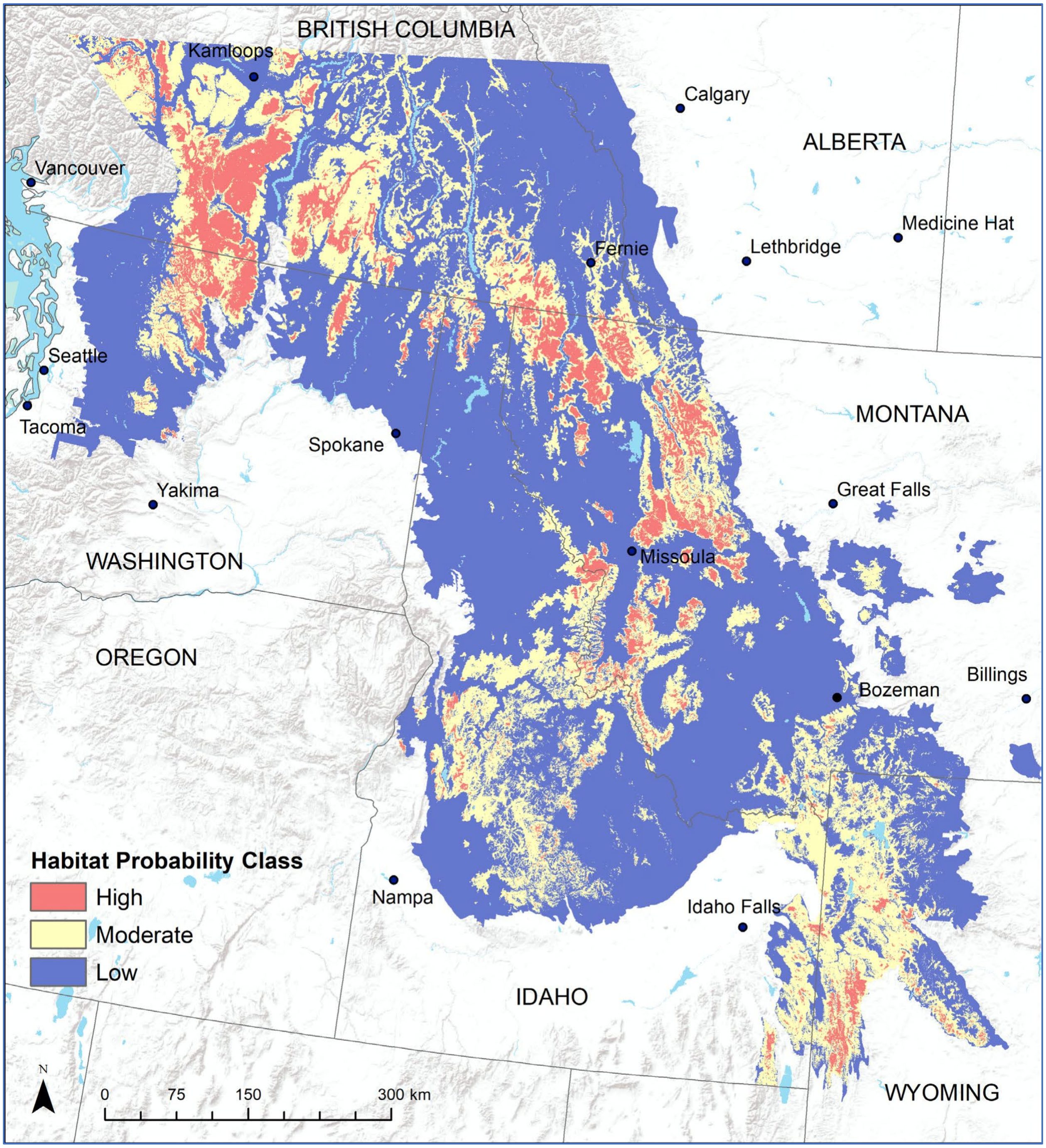

Figure 7. (Figure 8 from Olsen et al, 2021). Categorical spatial predictions of Canada lynx relative habitat probability across the study region in the northwest United States, as generated by the top-performing species distribution model. Model thresholds are based on correctly assigning 90% of Canada lynx withheld GPS locations for the "High" category and 85% of independent lynx locations for the "Moderate" category. Background image sources ESRI, USGS, NOAA

7. Wolverine

Recently, a US District Court ruling remanded the 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.[34] 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, connectivity for both lynx and wolverine.

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[35], 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[36] used Global 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 base due to depletion of herbaceous plant communities and cover by livestock grazing.

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

[35] 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.

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

Robert Inman, PhD, a biologist and 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 road kill, before records were kept. So delineating habitat based on these records can understate actual range for wolverines. He also provides evidence that wolverines can den in areas lacking the presumed snow cover and that 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, transportation that can affect mortality.[37] 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.

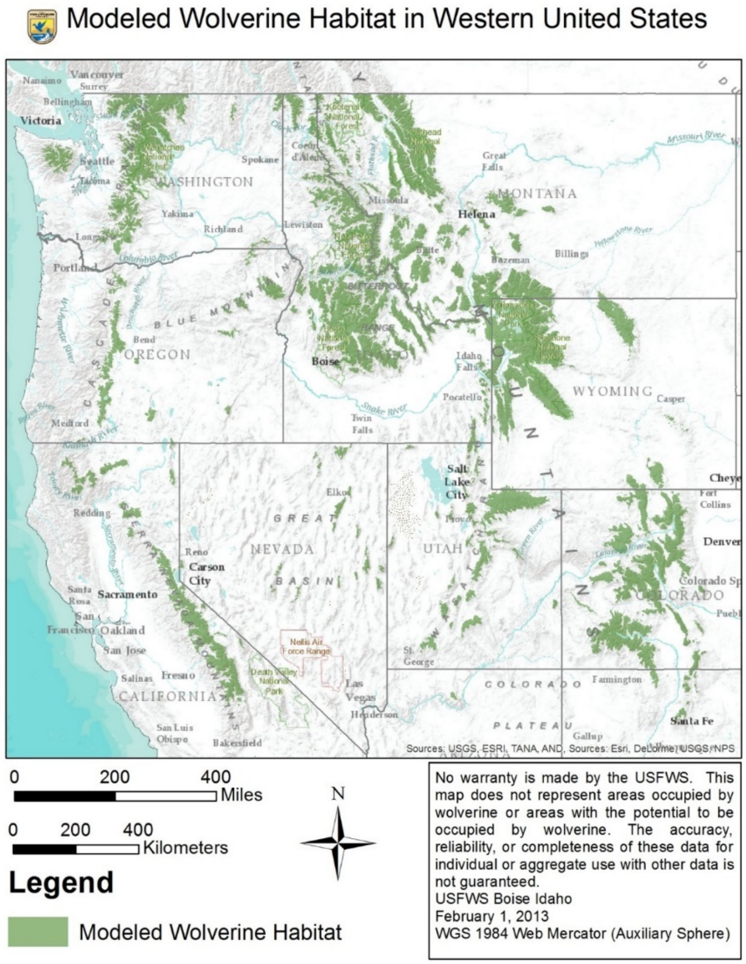

Figure 8. Fish and Wildlife Service Modeled Wolverine Habitat

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 species. See Figure 8 which is a map of the USFWS modeled wolverine habitat.[38] 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 Northern Utah and Idaho with sufficient snow cover. Connecting these "dots" would likely lead to a connectivity pattern similar to that of Canada lynx, discussed previously. Note the Uintas are considered wolverine habitat. The Idaho Management Plan for the Conservation of Wolverines identified the movement corridors shown in Figure 9.[39]

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[37] 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

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

[39] 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

These overlay with the Regionally Significant Wildlife Corridor and the Lynx Least Cost Path shown above, principally emphasizing the corridor from SW Wyoming through SE Idaho and the Bear River Range south to the Uinta Mountains. We call this the Yellowstone to Uintas Connection.

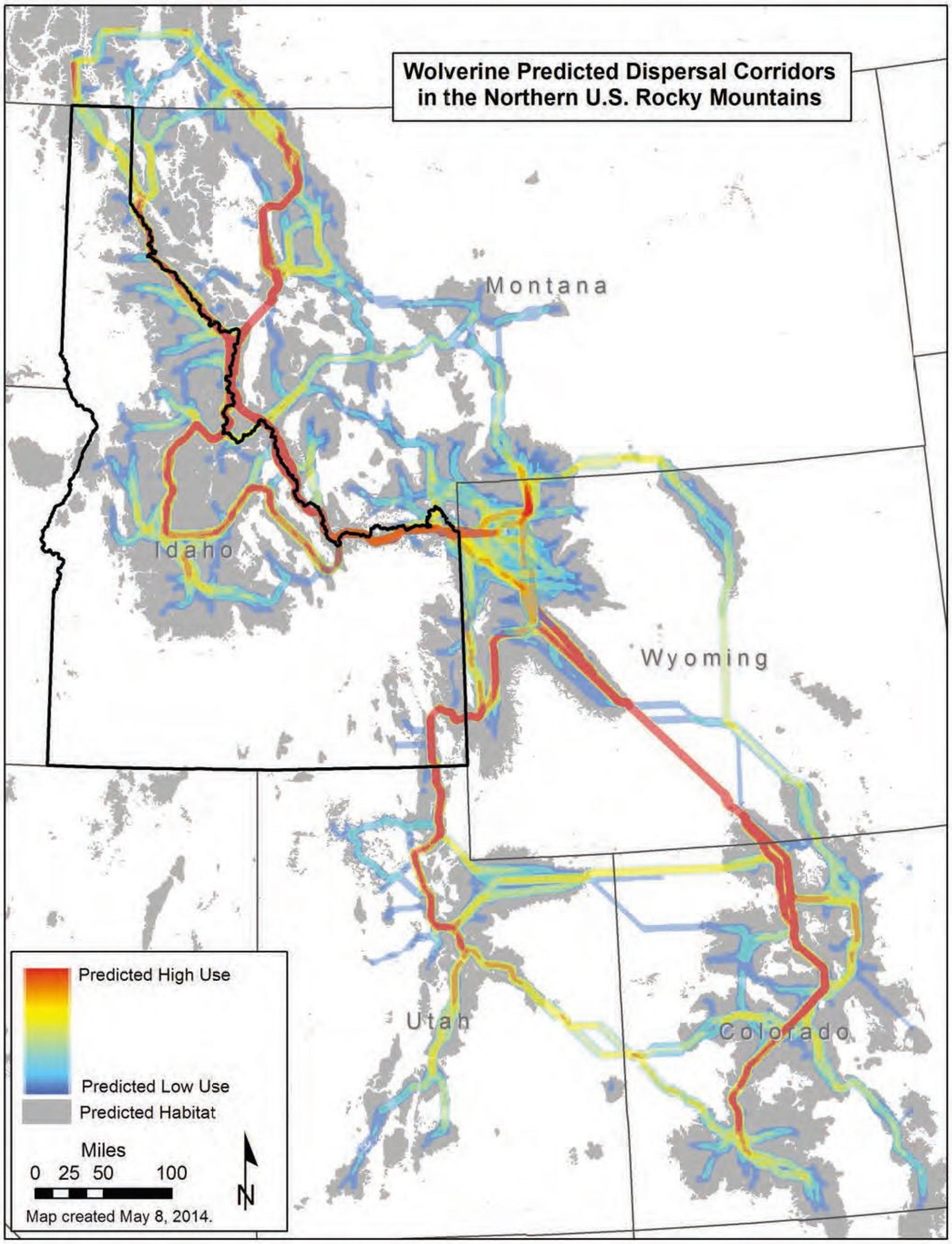

Figure 9. Wolverine predicted movement corridors in the Northern Rockies

8. Bald Eagle, Boreal Owl, Flammulated Owl, Great Grey Owl and Northern Goshawk

Population trends and viability assessments for these species and their habitats must be analyzed in concert with the various activities the Forest Service has implemented and approved throughout the Corridor and specifically in the proposed project area. Any active or historical nesting sites for these species occurring in the project area must be an analyzed to include the current state of post-fledgling family areas, foraging habitat, forage productivity, livestock utilization of forage and the impact of livestock grazing on these species.

Like Canada lynx and wolverine, Northern goshawks also depend on mammals and birds for prey. Reynolds et al (1992)[40] provide specific recommendations that livestock grazing utilization will average no more than 20% in goshawk home range of approximately 6,000 acres, which also includes nesting and post-fledging areas. They also specify forest stand structure needed for goshawk across its home range and the protection of mycorrhizal fungi in the forest floor to aid in nutrient cycling.

In the event of project approval, Y2U, AWR, and NEC would recommend a reduction in grazing numbers and season or closures of pastures and allotments within the project area to mitigate the impact of vegetation management on the Northern Goshawk population in surrounding nesting and foraging habitat.

9. Forest Structure – Species Composition/Aspen Regeneration/Permitted Livestock Grazing

"...there are over 223,535 acres on the Caribou portion of the national forest that can be characterized as being moderately or highly departed from their natural (historical) regime of vegetation characteristics and fire frequency, resulting in an appreciable risk of loss of key ecosystem components." (EA – p2)

As stated above in our overall position, livestock grazing impacts on regeneration of aspen and conifer species must be addressed in a NEPA analysis for this project. Y2U, AWR, and NEC do not agree with the Forest Service's general position that livestock grazing impacts on the forest conditions are outside of the scope of this and any other National Forest project. A discussion of these impacts should not be dismissed in a NEPA analysis for approval of a project impacting this large of an area in our National Forests.

The proposed action does not consider the impact on forest health from livestock grazing. Livestock grazing has negative effects on forest health regarding accelerating succession of aspen to conifers and increases the fire hazard in conifer forests. Aspen do not regenerate under the constant herbivory removal of younger age classes. Livestock grazing plays a key role in removing the herbaceous vegetation from the forest floor and disturbing the soil resulting in accelerated establishment of conifer seedlings. This results in thickets of saplings and a dense forest with a reduced herbaceous component and increased risk of high-intensity fires. Y2U has reviewed the aspen literature regarding impacts by livestock and browsers such as deer and elk. That review is available online.[41]

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[40] 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.

[41] https://app.box.com/s/78706949e8651d6c908e

There needs to be more analysis by the Forest Service of the effects of grazing on forest health and the adverse consequences to fuels, fire cycles, fire intensity, insect infestations, infiltration and nutrient cycling in an EIS for this project as well as any other proposed grazing, mining and timber projects in the Caribou-Targhee National Forest (CTNF).

Livestock grazing also negatively impacts the Aquatic Influence Zone (AIZ) or riparian zones as well as willow and aspen regeneration. Browsing of willows is a problem that needs to be addressed in riparian areas as well.

In a Forest Service research paper, Clary and Webster (1989) also found that 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.[42] An important consideration for sheep grazed areas is to define and document the locations and conditions in bedding areas. The bedding locations change daily throughout the grazing season and denude bedding areas, leaving non-palatable species such as tall larkspur, mint and others as the dominant understory in forested areas in the CTNF.

Range management is an issue that must be addressed in an EIS for this project as well as other proposed grazing, mining, and timber projects in the CTNF. The analysis should not omit any discussion regarding the impacts of continued grazing on the seedling/sapling age classes. Livestock grazing is the principal factor damaging forest and watershed integrity in the CTNF. It is the fundamental factor needing to be addressed in the Project Analysis Area and in the CTNF. Over the years, Y2U staff members have monitored conditions and found excessive amounts of bare soil, forest understory litter loss, soil carbon and nitrogen depletion, conifer forest mycorrhizal fungi layer disruption, degradation of riparian areas, sedimentation from erosion impacting spawning habitats, and the resulting depletion of many species such as the native cutthroat trout.[43] Our analyses have shown that National Forest allotments are generally overstocked leading to a native herbaceous plant community greatly below potential with increasers dominating the plant community. Water developments create highly damaged areas as cattle and sheep congregate around them. Livestock grazing also compacts the soil, reduces infiltration, and increases runoff, erosion, and sediment yield.[44, 45]

How is the Forest Service ensuring that the requirements outlined in the Annual Operating Instructions (AOIs) for the project area grazing permits are being met? Y2U, AWR, and NEC requests that the Forest Service disclose the level of permittee compliance with terms and conditions of allotment management plans and grazing permits as well as utilization and other monitoring protocols and results.

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

[43] Chard, B., Chard, J., Carter, J., 2002. Assessment of habitat conditions Bear River Range Caribou National Forest, Idaho. https://app.box.com/s/ad8412aa500005c761d6

[44] Trimble, S.W. and A. C. Mendel. 1995. The cow as a geomorphic agent, a critical review. *Geomorphology* 13:233-253.

[45] 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* 14:1671–1679.

In the event of project approval by the Forest Service, Y2U, AWR, and NEC would request that the Forest Service issue a 5-year moratorium on livestock grazing in the project area to ensure that the stand is fully stocked with saplings and that comprehensive monitoring be implemented to document the regeneration of aspen and conifer following project implementation. The rate of stocking recovery of other species seedlings/saplings must be documented prior to reinstating any livestock grazing on in the project area.

10. Old Growth

Y2U, AWR, and NEC oppose the removal or burning of any old growth stands of any species in the CTNF. There is not sufficient information on what old growth trees of any species will be impacted within the EA.

The 1985 Forest Plan showed more than 90% of conifer stands to be in mature and old growth age classes. In 1997-98 the CNF used revised definitions for old growth reflecting a recent study by Hamilton (1993). The 1985 Forest Plan identified 24% of the conifer component as old growth. After applying the Hamilton definition, this declined to 14%. (p3-227). Current old growth status should be mapped using stand exams and quantitative data required to define timber sale for contract purposes and compared to both the pre-Hamilton definition and that resulting from applying the Hamilton definition in the CNF RFP.

The impact of removing old growth stands of any tree species on nesting sites and home range habitat for, Bald Eagle, Boreal Owl, Flammulated Owl, Great Grey Owl and Northern Goshawk must be included in the project analysis. What is the potential impact on other wildlife species associated with old growth forests such as Pine Martin, Brown Creeper, Snowshoe Hare and Moose?

11. Aspen

The Forest Service typically ignores livestock grazing effects on forest structure, understory conditions as related to potential that might be described in Natural Resource Conservation Service Ecological Site Descriptions. Those ESDs acknowledge the role of livestock and other factors in state changes and degradation of natural conditions. Recent projects proposed by the Forest Service have deflected around this issue, but it is foundational in determining ecological status of the Forest. It must be addressed Forest wide.

Browsing of aspen has been studied by Forest Service scientists such as Bartos, Mueggler, Campbell and other researchers such as Charles Kay who conducted a historic study for BLM in Nevada.[46] 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 are found to be in poor condition and many stands have 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.

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[46] 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

Other than pinyon pine, conifers were absent from the study area. Kay observes 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 cites other exclosure studies that have found that aspen stands have expanded and eliminated sagebrush. Exclosure studies have 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 exclude 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 from water and on steeper slopes were in better condition than those 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 cites 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."[47] 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

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[47] 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

and alter, as needed, management of these ungulates to ensure retention of aspen woodlands and their ecosystem services."[48]

It is incumbent on the Caribou-Targhee NF to update the capable acres based on Regional Criteria and stocking rates for all allotments in the project area and use current livestock weights and forage consumption rates.[49] Part of this analysis should also be to analyze the impact of sheep bedding areas and proximity of water developments and/or water and livestock on aspen stand dynamics, recruitment, age class, disease. The effect of slope must also be analyzed. [50] This is one of several capability criteria. Region 4 has produced updated capability criteria[51]:

- Areas with less than 45 percent slope for domestic sheep, 30% for cattle.
- Areas producing more than or having the potential to produce an average of 200 lbs. 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.

12. Active Management

Active management, by whatever name used, whether treatment, fuel reduction, logging, restoration, salvage, mastication cannot be effective in restoring ecosystem function or reducing large wildfires and are inappropriate in most situations. For example, in a letter to Congress[52], over one hundred scientists stated that in Wilderness and other protected areas (protected from logging etc.) "fires burned more severely in previously logged areas, while fires burned in natural fire mosaic patterns of low, moderate and high severity, in wilderness, parks, and roadless areas, thereby, maintaining resilient forests." They concluded their letter by stating, "Public lands were established for the public good and include most of the nation's remaining examples of intact ecosystems that provide clean water for millions of Americans, essential wildlife habitat, recreation and economic benefits to rural communities, as well as sequestering vast quantities of carbon. When a fire burns down a home it is tragic; when fire burns in a forest it is natural and essential to the integrity of the ecosystem, while also providing the most cost-effective means of reducing fuels over large areas. Though it may seem to laypersons that a post-fire landscape is a catastrophe, numerous studies tell us that even in the patches where fires burn most intensely, the resulting wildlife habitats are among the most biologically diverse in the West. For these reasons, we urge you to reject misplaced logging proposals that will damage our environment, hinder climate mitigation goals and will fail to protect communities from wildfire."

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[48] 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

[49] Carter, J. 2016. Updating the Animal Unit Month. Yellowstone to Uintas Connection, Paris, ID. 7p. https://app.box.com/s/zx4xjekrfuht2aq12soruw0qfil8hogk

[50] Carter, J. 2013. Utilization, Rest and Grazing Systems - A Review. Yellowstone to Uintas Connection. 11p. https://app.box.com/s/ngw6723dx52quxw2rd8u

[51] USDA Forest Service. 2003. Final Environmental Impact Statement Wasatch-Cache National Forest. Appendix B9.

[52] Geos Institute. 2018. Open Letter to Decision Makers Concerning Wildfires in the West. https://app.box.com/s/nemr8uoccub0u8hubomjx4uhn6sfbu83

Fire hysteria is used to justify more logging and active management when the evidence is that climatic factors such as wind and high temperatures drive severe fires and that they burn through treated areas. Beetle infestations are also implicated in these severe fires.

In a review[53] of wildland fuel treatments in the interior forests of the US, the following points were made:

- "Treating fuels to reduce fire occurrence, fire size, or amount of burned area is ultimately both futile and counter-productive" because most acreage burned is under extreme conditions which make suppression ineffective. If, due to treatments, moderate intensity fires are suppressed this leads to most acres burning under extreme conditions. Reducing burned area would not be desirable as large fires were common prior to European settlement and many western plant species are adapted to large, severe wildfires. Large fires generally have many areas lightly to moderately burned. Any fire "could offer a unique opportunity to restore fire to historically fire-dominated landscapes and thereby reduce fuels and subsequent effects."
- Reducing fuel hazard is not the same as ecosystem restoration. Treatments such as mastication and thinning may leave stand conditions that do not mimic historical conditions. Mastication breaks, chips, grinds canopy and surface woody material into a "compressed fuel bed" while thinning that removes fire-adapted species and leaves shade tolerant species do not mimic historical conditions. "Fire itself can best establish dynamic landscape mosaics that maintain ecological integrity."
- Thinning for fire hazard reduction should concentrate on the smaller understory trees to "reduce vertical continuity between surface fuels and the forest canopy." Thinning can increase surface fire behavior, for example, it increases surface wind speed and results in solar radiation and drying of the forest floor creating drier surface fuels.
- Fuel treatments are transient. Prescribed fire creates tree mortality with snag fall contributing to fuel loads, tree crowns expand to fill voids, trees continue to drop litter. Trees cut for harvest or killed by fire contribute limbs to the forest floor, increasing fuel loadings. Up to seven treatments may be needed to "return the area to acceptable conditions that mimic some historical range."
- Fire was historically more complex and everchanging than commonly believed and cannot be mimicked by prescribed burning. The low-severity model that is being pushed as “restoration” is no longer widely accepted by scientists. Prescribed fires do not have the variability of past wildfires, and thus can cannot mimic them.
- Commercial Thinning and Prescribed out of season burning have negative ecological impacts. Out of season burning coincides with nesting season for birds. Smoke may drive them from their nest, possibly even kill nestlings, etc. Ground nesters will be most impacted.
- The probability that a fire will encounter a fuel treatment of any kind is low.

Analysis of fuel treatments and fire occurrence in the western US Forest Service managed lands determined that fuel treatments have a probability of 2.0 - 7.9% of encountering moderate or high-severity fire in a 20-year period of reduced fuels (estimated time frame for return of fuels to prior levels or the "window of effective fuel reduction").[54]

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[53]Reinhardt, E.D., Keane, R.E., Calkin, D.E., and J.D. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. Forest Ecology and Management. 256:1997-2006. https://app.box.com/s/loj3dqgz37akelxs18thq0qpkplmk533
[54]Rhodes, J.J. and Baker, W.L. 2008. Fire probability, fuel treatment effectiveness and ecological tradeoffs in western U.S. public forests. The Open Forest Science Journal 1: 1-7. https://app.box.com/s/s3dqfmgcxizw0pkrva56ott43qphhjya

Another review questions current policy and whether it is based on science. Lack of monitoring of post treatment effects leaves questions as to the efficacy of treatments. "While the use of timber harvests is generally accepted as an effective approach to controlling bark beetles during outbreaks, in reality there has been a dearth of monitoring to assess outcomes, and failures are often not reported. Additionally, few studies have focused on how these treatments affect forest structure and function over the long term, or our forests' ability to adapt to climate change. Despite this, there is a widespread belief in the policy arena that timber harvesting is an effective and necessary tool to address beetle infestations. That belief has led to numerous proposals for, and enactment of, significant changes in federal environmental laws to encourage more timber harvests for beetle control."[55]

Analysis of fire severity patterns in western ponderosa pine and mixed conifer forests showed that " that the traditional reference conditions of low-severity fire regimes are inaccurate for most forests of western North America. Instead, most forests appear to have been characterized by mixed-severity fire that included ecologically significant amounts of weather-driven, high-severity fire." "Biota in these forests are also dependent on the resources made available by higher-severity fire. Diverse forests in different stages of succession, with a high proportion in relatively young stages, occurred prior to fire exclusion. Over the past century, successional diversity created by fire decreased. Our findings suggest that ecological management goals that incorporate successional diversity created by fire may support characteristic biodiversity, whereas current attempts to 'restore'' forests to open, low-severity fire conditions may not align with historical reference conditions in most ponderosa pine and mixed-conifer forests of western North America."[56]

13. Transportation Management – Road Densities/Big Game Security Areas

Big Game security areas are defined as an area of cover over 0.5 miles from an open motorized route and over 250 acres. These areas are important for limiting disturbance and hunting vulnerability to big game animals (but provide benefits to other animals as well). Because of the number of roads and trails within the CTNF, there are very few security areas within the project area.

Road density and the status of all roads and OHV/ATV trails (legal, illegal, open, temporary, closed, user-created and other classifications), not just OMRD, should be mapped and the density per square mile determined and compared to the best available science. This should be done at the project level, by Mountain Range Block for the Block(s) affected and watersheds affected by the proposed project. This analysis should determine additional closures necessary to provide security areas for wildlife such as deer, elk, and moose as well as the migration corridors for Canada lynx, wolverine, and Grizzly bears.

There have been numerous publications on the benefits of roadless areas and the negative effects of roads regarding noise pollution and wildlife. Roads increasingly provide vehicle access into more and more remote areas, forcing sensitive species to be eliminated or greatly reduced especially when the cumulative impacts from livestock, oil, gas and mineral exploration and development are included. Roads and groomed trails provide increased access that can be used in summer and winter to damage environmental resources and displace or disrupt wildlife. Motorized vehicles, OHV/ATVs and snowmobiles, with their ability to travel large distances cross-country, often have negative environmental impacts whether the trail is open, closed, or user-created. The ecological effects of roads and/or mechanized use include erosion,

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[55] Six, D.L., Biber, E., and E.L. Esposito. 2014. Management for mountain pine beetle outbreak suppression: does relevant science support current policy?. Forests 5(1):103-133. DOI: 10.3390/f5010103. https://app.box.com/s/4y9y70lbqyza4xnn56a9764abhyr92h8

[56] Odion DC, Hanson CT, Arsenault A, Baker WL, DellaSala DA, et al. (2014) Examining Historical and Current Mixed-Severity Fire Regimes in Ponderosa Pine and Mixed-Conifer Forests of Western North America. PLoS ONE 9(2): e87852. doi:10.1371/journal.pone.0087852.

air and water pollution, spread of invasive weeds, avoidance of road or machine-affected areas by wildlife, and habitat fragmentation.[57,58] Roads, human activity, and noise fragment habitats by breaking large areas into smaller areas. These smaller areas no longer retain their original functions and begin losing the ability to support many species, especially those that are wide-ranging.[59, 60, 61, 62, 63] Roads have been shown to have thresholds of density above which species begin to decline or be eliminated. This has been reported to generally be 1 mile per square mile, with effects to some large mammals such as bears at a road density of 0.5 miles/square mile.[64, 65] The importance of roadless areas was documented for both small (1,000-5,000 acres) and large (>5,000 acres) roadless areas under consideration in the Clinton roadless area environmental impact statement and for three case study regions (Klamath-Siskiyou, Appalachia/Blue Ridge, and Tongass National Forest) recognized by World Wildlife Fund (WWF) for global biodiversity importance.[66]

Road densities and effects on wildlife must be analyzed for this and other projects proposed and approved by the CTNF. Researchers, including those with the Forest Service, have documented the benefits of roadless areas and the negative effects of roads and OHV/ATVs on wildlife. For example, Gilbert[67], Noss[68] and Wisdom et. al.[69] describe the detrimental effects of road density and human activity on large mammals, causing displacement away from roads and mechanized activity. A recent publication by the National Park Service discussed the effects of snowmobiles on wildlife.[70] Agency researchers at UC Davis have suggested an integrated approach for addressing Canada lynx linkage corridors.[71]

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[57] T. W. Clark, P. C. Paquet, and A. P. Curlee. 1996. Large Carnivore Conservation in the Rocky Mountains of the United States and Canada," Conservation Biology 10: 936–939.

[58] Trombulak, S. C. & C. A. Frissell. 2000. The ecological effects of roads on terrestrial and aquatic communities: a review. Conservation Biology 14:18-30

[59] D. A. Saunders, R. J. Hobbs, and C. R. Margules. 1991."Biological Consequences of Ecosystem Fragmentation: A Review," Conservation Biology 5 (1991): 18-32.

[60] Hitt, N.P. and C.A. Frissell. 1999. Wilderness in a landscape context: a quantitative approach to ranking Aquatic Diversity Areas in western Montana. Presented at the Wilderness Science Conference, Missoula, MT, May 23-27, 1999.

[61] The Importance of Roadless Areas to Idaho's Fish, Widllife, Hunting & Angling. 2004. Trout Unlimited. http://www.tu.org/atf/cf/%7B0D18ECB7-7347-445B-A38E-65B282BBBD8A%7D/Roadless_Idaho.pdf

[62] J. R. Strittholt and D. A. DellaSala, Importance of Roadless Areas in Biodiversity Conservation in Forested Ecosystems: A Case Study-Klamath-Siskiyou Ecoregion, U.S.A. 2001. Conservation Biology 15 (6): 1742-1754.

[63] G. E. Heilman, Jr., J. R. Strittholt, N. C. Slosser, and D. A. DellaSala. 2002. Forest Fragmentation of the Conterminous United States: Assessing Forest Intactness Through Road Density and Spatial Characteristics. Bioscience 52 (5): 411-422.

[64] R. P. Thiel. 1985. Relationship Between Road Densities and Wolf Habitat Suitability in Wisconsin. American Midland Naturalist 113: 404-407.

[65] L. D. Mech, S. H. Fritts, G. L. Radde, and W. J. Paul. 1988. Wolf Distribution and Road Density in Minnesota. Wildlife Society Bulletin 16: 85-87.

[66] http://www.worldwildlife.org/wildplaces/kla/pubs/exec_sum.pdf

[67] 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.

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

[69] 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.

[70] http://www.nps.gov/yell/publications/pdfs/wildlifewint.pdf

[71] http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1002&context=jmie/roadeco

An integrated analysis of the effects of roads, human use and habitat fragmentation on lynx and other species that incorporates this information as well as addressing other species of wildlife should be completed by the CTNF.

Y2U has witnessed the difficulty in effectively closing and rehabilitating temporary roads, landings and skid trails after a timber harvest concludes and roads are "decommissioned". A NEPA document for a project of this scale needs to outline how this road decommissioning will be accomplished as well as provide a monitoring and enforcement plan to ensure the integrity of such closures.

Y2U, AWR and NEC would like to see a plan included in the EA for temporary project route closures as well as additional route closure in the CEA as mitigation for the cumulative effects of mining, timber, grazing and OHV/ATV use in the region and to create security areas in the project Analysis Area.

Y2U, AWR and NEC would also request that the installation of speed limit signage and the enforcement of speed limits be used by the Forest Service to help meet the Forest Guideline of:

"*People visiting the National Forest enjoy a broad range of recreation opportunities amid natural settings. Recreation experiences and settings meet public expectations of quality and variety, while complimenting other resource objectives*."

Noise, high speed OHV/ATV use, and dust all negatively impact "quiet" users of the forest and their experience. Motorized recreation in the CTNF has been and remains largely unpatrolled and unenforced. The USU Institute for Outdoor Recreation and Tourism has conducted studies showing that nearly 40% of riders admit going off legal trails on their last ride.[72] The Forest Service published a Technical Report in 2005 (RWU – 2905) that recognized a lack of evidence that educational programs lead to behavioral changes in motorized users. A Forest Service report on ohv collaborative efforts across National Forests demonstrates the difficulty of managing OHV/ATV use, user conflicts, enforcement and the intensive efforts needed.[73] In spite of the effort, certain statements in the report stand out as ongoing problems, which we see in the CTNF with the illegal, user-created trails that have proliferated:

- "Effective, far-reaching communication about rules, regulations and actions remains a challenge."
- "Posters and literature distributed at OHV/motorcycle retailers have not proven to be successful as 'it isn't in their best interests' to communicate closures, rules and regulations that could impact sales.' "
- "Funding for enforcement, education and trail work is a perpetual challenge."

We also note that the Caribou NF Winschell Dugway DEIS (p68) provided an analysis of sound decay with distance, assuming the source sound level of one or two ATVs at 96 – 99 dBA would decay to 69 – 72 dBA at 3200 feet from the source. This is still above the EPA recommended outdoor limit of 55 dBA. (Winschell Dugway DEIS p78). Roads and trails, including illegal, user-created routes, must be mapped and sound contours plotted showing the distance and aerial effects on wildlife security areas and "quiet" users. How much of the Analysis Area is protected from these sound levels?

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[72] http://extension.usu.edu/iort/htm/professional

[73] USDA Forest Service. 2005. Off-highway vehicle use and collaboration: Lessons learned from project implementation

What are the effects of increased dust levels due to OHV/ATV activity on the naturalness of the Forest, RWA, IRA, CEA, Corridor?

It is also important to monitor, control and prevent the spreading of noxious weeds when constructing temporary roads or resurfacing existing roads. The EA does not include any protocol to prevent the spreading of noxious weeds during the implementation of the project.

14. Hydrology and Soils

There is no clear outline in the EA of how the "best management practices" will be enforced. Will mechanical treatments take place when ground conditions are wet enough that there is a risk of rutting and compaction? Will the project implementation occur within the time period that the ground would be frozen and the least impact to soils and hydrology would occur as well as the least amount of disturbance and displacement of wildlife?

We appreciate the opportunity to provide the above comments and have provided links for downloading the articles cited and many are agency references which are available from the Forest Service.

Respectfully,

[redacted]
Yellowstone to Uintas Connection
[redacted]

And For

[redacted]
Alliance for the Wild Rockies
[redacted]

And For

[redacted]
Native Ecosystems Council
[redacted]