December 4, 2025

Madison Ranger District
Attn: Josh Connors
5 Forest Service Road
Ennis, MT 59729.

Re: Greenhorns Vegetation Project Supplemental Environmental Assessment And Finding of No Significant Impact

Dear Mr. Connors,

Thank you for this opportunity to comment on the Greenhorns Vegetation Project Supplemental Environmental Assessment And Finding of No Significant Impact. Please accept these comments from me on behalf of the Alliance for the Wild Rockies, Native Ecosystems Council, Council on Wildlife and Fish, Gallatin Wildlife Association, Nancy Schultz and Glenn Monahan.

The Alliance for the Wild Rockies, Council on Wildlife and Fish, Native Ecosystems Council, Gallatin Wildlife Association, Nancy Schultz and Glenn Monahan (collectively "Alliance") submit the following comments to guide the development of the environmental analysis for the proposal. The Forest Service must complete a full environmental impact statement (EIS) for this Project because the scope of the Project will likely have a significant individual and cumulative impact on the environment. Alliance has reviewed the statutory and regulatory requirements governing National Forest Management projects, as well as the relevant case law, and compiled a check-list of issues that must be included in the EIS for the Project in order for the Forest Service's analysis to comply with the law. Following the list of necessary elements, Alliance has also included a general narrative discussion on possible impacts of the Project, with accompanying citations to the relevant scientific literature. These references should be disclosed and discussed in the EIS for the Project.

## I. NECESSARY ELEMENTS FOR PROJECT EIS:

A. Disclose all Beaverhead-Deerlodge National Forest Plan requirements for logging projects and explain how the Project complies with them;
B. Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, and road-building activities within the Project area;
C. Solicit and disclose comments from the Montana Department of Fish, Wildlife, and Parks and the U.S. Fish and Wildlife Service regarding the impact of the Project on fish and wildlife habitat;

D. Solicit and disclose comments from the Montana Department of Environmental Quality regarding the impact of the Project on water quality;
E. Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/or actual habitat in the Project area;
F. Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the Project area;
G. Disclose the snag densities in the Project area, and the method used to determine those densities;
H. Disclose the current, during-project, and post-project densities in the Project area;
I. Disclose the number of road closure violations in the Madison Ranger District in the last 5 years;
J. Disclose the Beaverhead-Deerlodge National Forest's record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities;
K. Disclose the Beaverhead-Deerlodge National Forest's record of compliance with its monitoring requirements as set forth in its Forest Plan;
L. Disclose the Beaverhead-Deerlodge National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/FONSIs and RODs on the Beaverhead-Deerlodge National Forest;
M. Disclose the results of the field surveys for threatened, endangered, proposed, sensitive, and rare plants and species, in each of the proposed units;

N. Disclose the number of acres and location of Lynx Analysis Units (LAU)s that were removed from the BDNF without going through NEPA;
O. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations;
P. Disclose the impact of the Project on noxious weed infestations and native plant communities;
Q. Disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities;
R. Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation;
S. Disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/ remediation;
T. Disclose the analytical data that supports proposed soil mitigation/remediation measures;
U. Disclose how grazing affects aspen regeneration;
V. Disclose the timeline for implementation;
W. Disclose the funding source for non-commercial activities proposed;
X. Disclose the current level of old growth forest in each third order drainage in the Project area;
Y. Disclose the method used to quantify old growth forest acreages and its rate of error based upon field review of its predictions;
Z. Disclose the historic levels of mature and old growth forest in the Project area;

AA. Disclose the level of mature and old growth forest necessary to sustain viable populations of dependent wildlife species in the area;
BB. Disclose the amount of mature and old growth forest that will remain after implementation;
CC. Disclose the amount of current habitat for old growth and mature forest dependent species in the Project area;
DD. Disclose the amount of habitat for old growth and mature forest dependent species that will remain after Project implementation;
EE. Disclose the method used to model old growth and mature forest dependent wildlife habitat acreages and its rate of error based upon field review of its predictions;
FF. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the area;
GG. Have forest fires contributed to a diverse landscape?
HH. Please disclose what is the best available science for restoration of whitebark pine.
II. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations
JJ. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation;
KK. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation;

LL. Disclose the method used to determine big game hiding cover, winter range, and security, and its rate of error as determined by field review;

MM. Disclose and address the concerns expressed by the ID Team in the draft Five-Year Review of the Forest Plan regarding the failure to monitor population trends of MIS, the inadequacy of the Forest Plan old growth standard, and the failure to compile data to establish a reliable inventory of sensitive species on the Forest;

NN. Disclose the actions being taken to reduce fuels on private lands adjacent to the Project area and how those activities/or lack thereof will impact the efficacy of the activities proposed for this Project;

OO. Disclose the efficacy of the proposed activities at reducing wildfire risk and severity in the Project area in the future, including a two-year, five-year, ten-year, and 20-year projection;

PP. Disclose when and how the Beaverhead-Deerlodge National Forest made the decision to suppress natural wildfire in the Project area and replace natural fire with logging and prescribed burning;

QQ. Disclose the cumulative impacts on the Forest-wide level of the Beaverhead-Deerlodge National Forest's policy decision to replace natural fire with logging and prescribed burning;

RR. Disclose how Project complies with the Roadless Rule;

SS. Disclose the impact of climate change on the efficacy of the proposed treatments;

TT. Disclose the impact of the proposed project on the carbon storage potential of the area;
UU. Disclose the baseline condition, and expected sedimentation during and after activities, for all streams in the area;
VV. Disclose maps of the area that show the following elements:
WW. Disclose how will the project effect sage grouse;
XX. What is the fire cycle of sagebrush;
1. Past, current, and reasonably foreseeable logging units in the Project area;
2. Past, current, and reasonably foreseeable grazing allotments in the Project area;
3. Density of human residences within 1.5 miles from the Project unit boundaries;
4. Hiding cover in the Project area according to the Forest Plan definition;
5. Old growth forest in the Project area;
6. Big game security areas;
7. Moose winter range;

Sage grouse

The Greenhorn SIR and FONSI state on page 28:

***Greater Sage-grouse***

***The greatest potential use of the project area by sage-grouse would be during the late summer brood-rearing phase. Brood-rearing occurs between May and August and habitats include wet meadows, burned areas, near***

***riparian areas, farmland and other areas that usually have less dense sagebrush canopy than nesting habitats and generally have a higher proportion of grasses and forbs in the understory. May through August is the time these habitats have the most nutrients and growth which correspond to the timeframe that grouse are seen in this area. This also corresponds to when sage- grouse are seen in the analysis area (summer and fall).***

***The Greenhorns analysis area is not within the distance preferred by nesting sage- grouse as all leks are farther than 6.2 miles away. This was previously disclosed in the 2023 EA wildlife report (Appendix A of the 2023 Final Environmental Assessment) and is also shown in Greater Sage-grouse map Appendix A in this supplemental EA.***

***Research indicates that up to 95 percent of nests occur within 6.2 miles of active leks. Therefore, the analysis area is generally not used by sage-grouse for nesting and early brood rearing.***

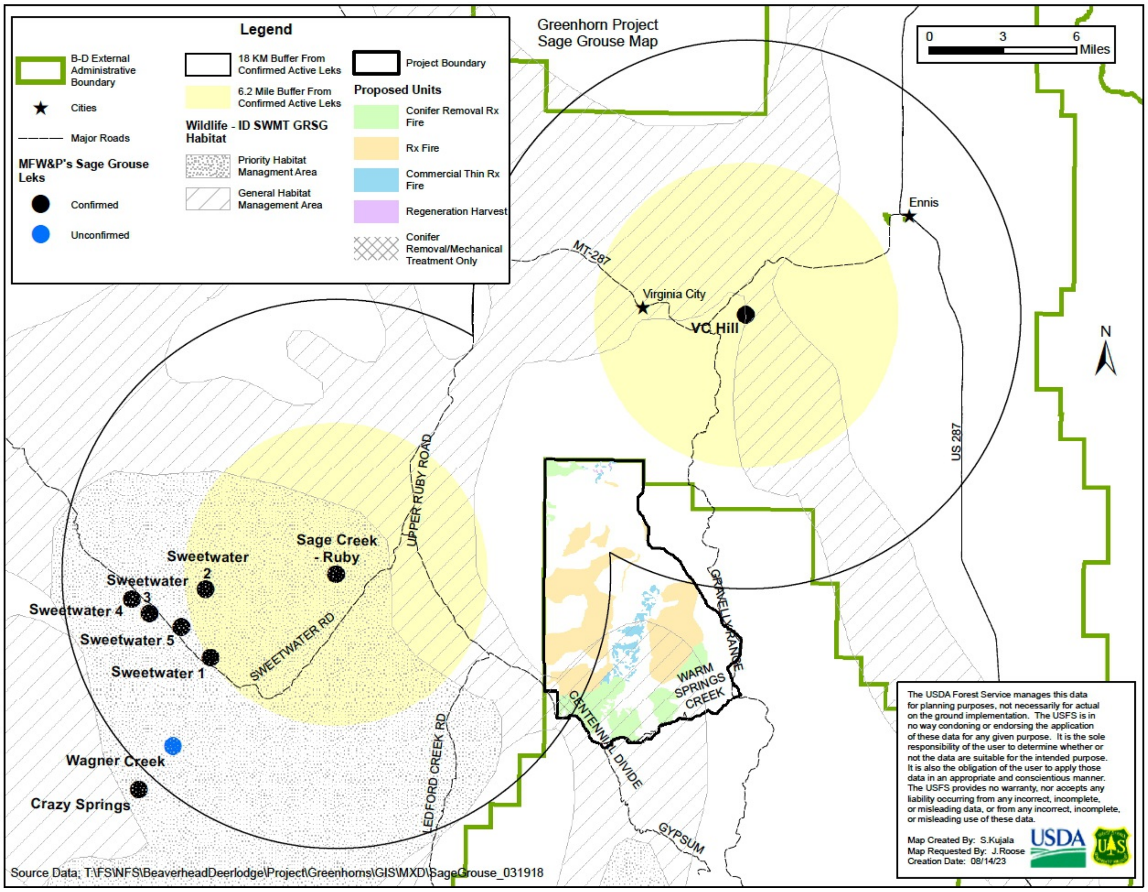
The problem is the Forest Plan states: "Sage Grouse: Sagebrush habitat supports sage grouse and pygmy rabbit populations by providing suitable sage grouse brood-rearing habitat on at least 40% of the sagebrush habitat within 18 kilometers of documented active or inactive sage grouse leks and the area mapped as potential pygmy rabbit habitat." The SIR and FONSI state that the project won't be 6.2 miles or 10 km of active leks instead of 18 km in violation of NEPA, NFMA, the Forest Plan, and the APA.

The Forest Plan states: “Sage Grouse: Maintain or improve sagebrush height, and canopy and grass-forb canopy of sagebrush habitat, emphasizing habitat within 18 kilometers of documented active or inactive sage grouse leks and the area mapped as potential pygmy rabbit habitat.”

The Forest Plan states: “Standard 8: Within 18 kilometers of documented active or inactive sage grouse leks, do not remove sagebrush within 300 meters of riparian zones, meadows, lakebeds or farmland, unless site specific analysis indicates such removal promotes achievement of the sagebrush habitat goal. Springs developed for livestock water in these areas must be designed to maintain free water and wet meadows.”

In a chart in an appendix to the final September 2023 EA, the Forest Service concedes: “There are 2 active leks within 18 km of the project area (VC Hill and Sage Creek – Ruby). Treatments would occur within the 18 km buffer.”

The Project activities that will occur with the 18 km lek buffer zones include prescribed burning, noncommercial tree-cutting with prescribed fire, and commercial tree-cutting with prescribed fire:




The map above was created by the Forest Service on August 14, 2023, after all public comment periods on the Project EA and the objection process for the Project had already ended.

The Forest Service's failure to disclose and demonstrate compliance with the Forest Plan requirements for sage grouse in the Project EA, violates NFMA, NEPA, and the APA.

## Weeds

Native plants are the foundation upon which the ecosystems of the Forest are built, providing forage and shelter for all native wildlife, bird and insect species, supporting the natural processes of the landscape, and providing the context within which the public find recreational and spiritual opportunities. All these uses or values of land are hindered or lost by conversion of native vegetation to invasive and noxious plants. The ecological threats posed by noxious weed infestations are so great that a former chief of the Forest Service called the invasion of noxious weeds “devastating” and a “biological disaster.” Despite implementation of Forest Service “best management practices” (BMPs), noxious weed infestation on the Forest is getting worse and noxious weeds will likely overtake native plant populations if introduced into areas that are not yet infested. The Forest Service has recognized that the effects of noxious weed invasions may be irreversible. Even if weeds are eliminated with herbicide treatment, they may be replaced by other weeds, not by native plant species.

Invasive plant species, also called noxious weeds, are one of the greatest modern threats to biodiversity on earth.

Noxious weeds cause harm because they displace native plants, resulting in a loss of diversity and a change in the structure of a plant community. By removing native vegetative cover, invasive plants like knapweed may increase sediment yield and surface runoff in an ecosystem. As well knapweed may alter organic matter distribution and nutrient through a greater ability to uptake phosphorus over some native species in grasslands. Weed colonization can alter fire behavior by increasing flammability: for example, cheatgrass, a widespread noxious weed on the Forest, cures early and leads to more frequent burning. Weed colonization can also deplete soil nutrients and change the physical structure of soils.

The Forest Service's own management activities are largely responsible for noxious weed infestations; in particular, logging, prescribed burns, and road construction and use create a risk of weed infestations. The introduction of logging equipment into the Forest creates and exacerbates noxious weed infestations. The removal of trees through logging can also facilitate the establishment of noxious weed infestations because of soil disturbance and the reduction of canopy closure  In general, noxious weeds occur in old clearcuts and forest openings, but are rare in mature and old growth forests.  Roads are often the first place new invader weeds are introduced. Vehicle traffic and soil disturbances from road construction and maintenance create ideal establishment conditions for weeds. Roads also provide obvious dispersal corridors. Roadsides throughout the project area are infested with noxious weeds. Once established along roadsides, invasive plants will likely spread into adjacent grasslands and forest openings.

Logging activities within the analysis area would likely cumulatively contribute to increases to noxious weed distribution and populations. As a disturbance process, logging has the potential to greatly exacerbate infestations of certain noxious weed species. Please disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities. Please disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation. Please disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/remediation. Please also disclose the analytical data that supports proposed soil mitigation/remediation measures.

Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for logging within project area may have closed forest service access roads (jammers) located within units. These units have the highest potential for noxious weed infestation and exacerbation through fire activities. Please provide an alternative that eliminates units that have noxious weeds present on roads within units from fire management proposals.

Please address the ecological, social and ascetic impact of current noxious weed infestations within the project area. Include an analysis of the impact of the actions proposed by this project on the long and short term spread of current and new noxious weed infestations. What treatment methods will be used to address growing noxious weed problems? What noxious weeds are currently and historically found within the project area? Please include a map of current noxious weed infestations which includes knapweed, Saint Johnswort, cheat grass, bull thistle, Canada thistle, hawkweed, hound's-tongue, oxeye daisy and all other Category 1, Category 2 and Category 3 weeds classified as noxious in the MONTANA COUNTY NOXIOUS WEED LIST. State-listed Category 2 noxious weed species yellow and orange hawkweeds are recently established (within the last 5 to 10 years) in Montana and are rapidly expanding in established areas. They can invade undisturbed areas where native plant communities are intact. These species can persist in shaded conditions and often grow underneath shrubs making eradication very difficult. Their stoloniferous (growing at the surface or below ground) habit can create dense mats that can persist and spread to densities of 3500 plants per square mile (Thomas and Dale 1975). Are yellow and orange hawkweeds present within the project area?

Please address the cumulative, direct and indirect effects of the proposed project on weed introduction, spread and persistence that includes how weed infestations have been and will be influenced by the following management actions: road construction including new permanent and temporary roads, and skid trails proposed within this project; opening and decommissioning of roads represented on forest service maps; ground disturbance and traffic on forest service template roads, mining access routes, and private roads; removal of trees through salvage logging. What open, gated, and decommissioned Forest Service roads within the project area proposed as haul routes have existent noxious weed populations and what methods will be used to assure that noxious weeds are not spread into the proposed action units?

Noxious weeds are not eradicated with single herbicide treatments. A onetime application may kill an individual plant but dormant seeds in the ground can still sprout after herbicide treatment.  Thus, herbicides must be used on consistent, repetitive schedules to be effective.

What commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area? What long term monitoring of weed populations is proposed?

When areas treated with herbicides are reseeded on national forest land, they are usually reseeded with exotic grasses, not native plant species.  What native plant restoration activities will be implemented in areas disturbed by the actions proposed in this project?  Will disturbed areas including road corridors, skid trails, and burn units be planted or reseeded with native plant species?

The scientific and managerial consensus is that prevention is the most effective way to manage noxious weeds. The Forest Service concedes that preventing the introduction of weeds into uninfested areas is “the most critical component of a weed management program.” The Forest Service’s national management strategy for noxious weeds also recommends “develop[ing] and implement[ing] forest plan standards . . . .” and recognizes that the cheapest and most effective solution is prevention. Which units within the project area currently have no noxious weed populations within their boundaries? What minimum standards are in the Beaverhead-Deerlodge National Forest Plan to address noxious weed infestations? Please include an alternative in the DEIS that includes land management standards that will prevent new weed infestations by addressing the causes of weed infestation. The failure to include preventive standards violates NFMA because the Forest Service is not ensuring the protection of soils and native plant communities. Additionally, the omission of an EIS alternative that includes preventive measures would violate NEPA because the Forest Service would fail to consider a reasonable alternative. Disclose the impact of the Project on noxious weed infestations and native plant communities;

## Rare Plants

The ESA requires that the Forest Service conserve endangered and threatened species of plants as well as animals. In addition to plants protected under the ESA, the Forest Service identifies species for which population viability is a concern as “sensitive species” designated by the Regional Forester (FSM 2670.44). The response of each of the sensitive plant species to management activity varies by species, and in some cases, is not fully known. Local native vegetation has evolved with and is adapted to the climate, soils, and natural processes such as fire, insect and disease infestations, and windthrow. Any management or lack of management that causes these natural processes to be altered may have impacts on native vegetation, including threatened and sensitive plants. Herbicide application – intended to eradicate invasive plants – also results in a loss of native plant diversity because herbicides kill native plants as well as invasive plants. Although native species have evolved and adapted to natural disturbance such as fire on the landscape, fires primarily occur in mid to late summer season, when annual plants have flowered and set seed. Following fall fires, perennial root-stocks remain underground and plants emerge in the spring. Spring and early summer burns could negatively impact emerging vegetation and destroy annual plant seed.

What threatened, endangered, rare and sensitive plant species and habitat are located within the proposed project area? What standards will be used to protect threatened, rare, sensitive and culturally important plant species and their habitats from the management actions proposed in this project? Describe the potential direct and indirect effect of the proposed management actions on rare plants and their habitat.

Whitebark Pine

Not all ecosystems or all Rocky Mountain landscapes have experienced the impacts of fire exclusion. In some wilderness areas, where in recent decades natural fires have been allowed to burn, there have not been major shifts in vegetation composition and structure (Keane et al. 2002). In some alpine ecosystems, fire was never an important ecological factor. In some upper subalpine ecosystems, fires were important, but their rate of occurrence was too low to have been significantly altered by the relatively short period of fire suppression (Keane et al. 2002). For example, the last 70 to 80 years of fire suppression have not had much influence on subalpine landscapes with fire intervals of 200 to several hundred years (Romme and Despain). Consequently, it is unlikely that fire exclusion has yet to significantly alter stand conditions or forest health within Rocky Mountain subalpine ecosystems.

The scoping notice says on page 5: “Opportunities exist to promote and expand the presence of whitebark pine by removing competition and creating openings for natural regeneration through thinning and regeneration treatments, both commercial and non-commercial. The use of fire is the most effective method for stimulating natural regeneration and is proposed as a potential treatment. Planting of rust-resistant seedlings is also an option in certain areas where site conditions are appropriate.”

Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of adequate seed source and dispersal mechanisms (Clarks Nutcracker or humans planting whitebark pine seedlings).

White pine blister rust, an introduced disease, has caused rapid mortality of whitebark pine over the last 30 to 60 years. Keane and Arno (1993) reported that 42 percent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of whitebark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed production.

Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark that show the potential for blister rust resistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees.

Are whitebark pine seedlings and saplings present in the subalpine forests proposed for burning and logging? In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is prospective rust resistant stock.

What surveys have been conducted to determine presence and abundance of whitebark pine re-generation? If whitebark pine seedlings and saplings are present, what measures will be taken to protect them? Please include an alternative that excludes burning in the presence of whitebark pine regeneration (consider 'Daylighting' seedlings and saplings as an alternative restoration method). Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace whitebark pine lost to fire activities? Have white pine blister rust surveys been accomplished? What is the severity of white pine blister rust in proposed action areas?

Pp. 56-57 of the EA states: "Restoration activities that support the regeneration of whitebark pine and reduce competing species are being supported by lead researchers (Keane and Parsons 2010), and include: wildland fire use, prescribed fire, planting of rust-resistant seedlings, silvicultural and mechanical treatments, or a combination of several treatments."

P. 58 of the EA states: "Commercial and clearcut treatments: Within commercial treatment units, trampling and removal of whitebark pine seedlings and saplings could occur as equipment and machinery remove desired trees. Whitebark pine individuals three inch DBH and greater would be avoided to the extent possible (see Appendix C, Design Features)."

Please disclose the failure rate of these practices as a technique for natural regeneration of whitebark pine under these conditions.

Please disclose or address the results of the Forest Service's only long-term study on the effects of tree cutting and burning on whitebark pine. This study, named "Restoring Whitebark Pine Ecosystems," included prescribed fire, "thinning", "selection cuttings," and "fuel enhancement cuttings" on multiple different sites. The results were that "[a]s with all the other study results, there was very little whitebark pine regeneration observed on these plots." See U.S. Forest Service, General Technical Report RMRS-GTR-232 (January 2010). These results directly undermine the representations the Forest Service makes in the EA and is therefore a violation of NEPA, NFMA, and the APA.

More specifically, the Forest Service's own research at RMRS-GTR-232 finds: "the whitebark pine regeneration that was expected to result from this [seed] caching [in new openings] has not yet materialized. Nearly all sites contain very few or no whitebark pine seedlings." Thus, even ten years after cutting and burning, regeneration was "marginal."

Moreover, as the Forest Service notes on its website: “All burn treatments resulted in high mortality in both whitebark pine and subalpine fir (over

Accordingly, the only proven method of restoration of whitebark pine is planting: “Manual planting of whitebark pine seedlings is required to adequately restore these sites.”

Why is the EA misleading the public that this project will benefit whitebark pine when the Forest Service’s own studies show that manual planting of whitebark pine is the only proven way to restore whitebark pine?

Please formally consult with the US FWS on the impact of the project on whitebark pine.

**WUI**

The current fuel/fire hazard situation on land of all ownerships within the WUI (at least the WUI that’s relevant to this area) must be displayed on a map. More importantly, the fuel/fire hazard situation post-project on land of all ownerships within the WUI must also be displayed on a map. Based on this mapping of current and projected conditions, please accurately disclose the threats to private structures and people under those scenarios, for all alternatives. It must be discernible why some areas are included for treatment and others are not.

Page 1 of the EA states: “Approximately 70 percent of the project area lies within the wildland urban interface (WUI), as identified by the Madison County community wildfire protection plan (CWPP). The Forest Service manages public lands on the Beaverhead-Deerlodge National Forest for multiple purposes and resources, in addition to those listed above.”

Did the Forest Service take public comment on boundaries of the wildland urban interface as required by NEPA?

Does the wildland urban interface (WUI), as identified by the Madison County community wildfire protection plan (CWPP) meet the definition of the wildland urban interface under the Healthy Forest Restoration Act (HFRA)?

The HFRA defines wildland urban interface as follows: “The term ‘wildland-urban interface’ means– (A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan . . . .” 16 U.S.C. § 6511 (16) (emphasis added). The HFRA defines “at-risk community” as follows:

The term “at-risk community” means an area-- (A) that is comprised of--

(i) an interface community as defined in the notice. . . (66 Fed. Reg. 753, January 4, 2001); or

(ii) a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land;

(B) in which conditions are conducive to a large-scale wildland fire disturbance event; and

(C) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

16 U.S.C. § 6511 (1) (emphases added). In turn, the cited Federal Register notice mandates: "The development density for an interface community is usually 3 or more structures per acre, with shared municipal services. . . . An alternative definition of the interface community emphasizes a population density of 250 or more people per square mile." 66 Fed. Reg at 753, 2001 WL 7426.

Please explain how the Madison County community wildfire protection plan (CWPP) defines the Wildland Urban Interface and if it complies with the Healthy Forest Restoration Act.

NEPA "requires a federal agency such as the Forest Service to prepare a detailed EIS for all 'major Federal actions significantly affecting the quality of the human environment.'" Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1211–12 (9th Cir. 1998) (citing 42 U.S.C. § 4332(2)(C)). "Major reinforces but does not have a meaning independent of significantly [].” 40 C.F.R. § 1508.18. “As a preliminary step, an agency may prepare an EA to decide whether the environmental impact of a proposed action is significant enough to warrant preparation of an EIS.” Id.; 40 C.F.R. § 1501.2. Before reaching the question of significance, however, there must be an analysis of whether there is “federal action.” See Envtl. Prot. Info. Ctr. v. USFS, 2003 WL 22283969 *9, n.10 (N.D. Cal. 2003).

The CEQ regulations state:

(b) Federal actions tend to fall within one of the following categories: .. .

(2) Adoption of formal plans, such as official documents prepared or approved by federal agencies which guide or prescribe alternative uses of Federal resources, upon which future agency actions will be based.

.. . 40 C.F.R. § 1508.18.

Furthermore, in general, CEQ regulations allow agencies to “tier” from a site-specific NEPA analysis to a programmatic analysis “to eliminate repetitive discussions of the same issues” by “incorporat[ing] discussions from the broader statement by reference. . . . .” 40 C.F.R. § 1502.20. “However, tiering to a document that has not itself been subject to NEPA review is not permitted, for it circumvents the purpose of NEPA.” Kern v. BLM, 284 F.3d 1062, 1073 (9th Cir. 2002)). The CEQ regulations are binding on the

Forest Service. See Trustees for Alaska v. Hodel, 806 F.2d 1378, 1382 (9th Cir. 1986). The Forest Service does not receive deference when implementing the CEQ regulations because those regulations were not issued by the Forest Service. See U.S. Dep't of Treasury, I.R.S. v. Fed. Labor Relations Auth., 996 F.2d 1246, 1250 (D.C. Cir. 1993)("We generally do not grant any deference to the [an agency's] interpretation of regulations promulgated by other agencies.")

In violation of NEPA, the Forest Service has not yet conducted a NEPA analysis for the Madison County Wildfire Plan. Other courts have found that other types of fire management plans adopted and implemented by the Forest Service are major federal actions under NEPA. For example, in People of Cal. ex rel. Lockyer v. USFS, the district court found "that the Fire Plan is a major federal action, and so defendant's decision not to conduct any environmental review was unreasonable." 2005 WL 1630020 *11 (N.D. Cal. 2005). Likewise, in Environmental Protection Information Center (EPIC) v. USFS, the district court held: "Defendant violated NEPA by failing to prepare an Environmental Assessment or an Environmental Impact Statement in connection with the issuance of the

Six Rivers National Forest Fire Management Plan." 2003 WL 22283969, at *13 (N.D. Cal. 2003). In EPIC, the district court addressed a relevant Ninth Circuit case, Port of Astoria v. Hodel, in which the Ninth Circuit addressed whether a "regional proposal for development and distribution of power" was a federal action under NEPA.

595 F.2d 467, 477–78 (9th Cir. 1979). The proposal was called "Phase 2" and resulted "from an agreement between [the agency], its direct-service industrial customers, and the public, cooperative, and investor-owned utilities in [the] region." Id. The agency argued that Phase 2 was not a federal program, but the Ninth Circuit rejected that argument: "although Phase 2 is a cooperative enterprise involving [the agency] and nonfederal participants, it is [the agency's] participation that integrates the entire program. . . . Without [the agency] it is doubtful that Phase 2 would ever have been developed or, if developed, would have become feasible." Id.

Similarly, in this case, although the Wildfire Plan was developed by the Madison County Steering Committee, which includes the Forest Service and other nonfederal participants, the bulk of the Wildfire Plan addresses fire management on National Forest lands in Madison County, and therefore, "it is doubtful that [the Wildfire Plan] would ever have been developed or, if developed, would have become feasible," i.e., implemented, without the Forest Service's participation.

Alternatively or additionally, even if the Wildfire Plan did not require NEPA analysis at the time it was created, once the wildland urban interface designation from the Plan was used to justify and authorize this site-specific project, NEPA analysis was required under the doctrine of "tiering." The seminal Ninth Circuit case on this issue is Kern v. BLM, 284 F.3d 1062 (9th Cir. 2002). In Kern, the Ninth Circuit addressed the BLM's adoption of guidelines for management of a fungus affecting Port Orford cedar trees. In an earlier case, the Ninth Circuit had denied a claim that the guidelines themselves were a major federal action that required NEPA analysis.

The FS must have a detailed long-term program for maintaining the allegedly safer conditions, including how areas will be treated in the future following proposed treatments, or how areas not needing treatment now will be treated as the need arises. The public at large and private landowners must know what the scale of the long-term efforts must be, including the amount of funding necessary, and the likelihood based on realistic funding scenarios for such a program to be adequately and timely funded.

The FS must assess the fuel and fire risk situation across land ownership boundaries to understand, and disclose to the public, the likely fire scenarios across the area's landscape. Only then can the context of your proposal be adequately weighed on its merits and evaluated on its merits.

The FS (Cohen, 1999) reviewed current scientific evidence and policy directives on the issue of fire in the wildland/urban interface and recommended an alternative focus on structure ignitability rather than extensive wildland fuel management:

The congruence of research findings from different analytical methods suggests that home ignitability is the principal cause of home losses during wildland fires… Home ignitability also dictates that effective mitigating actions focus on the home and its immediate surroundings rather than on extensive wildland fuel management.

[Research shows] that effective fuel modification for reducing potential WUI fire losses need only occur within a few tens of meters from a home, not hundreds of meters or more from a home. This research indicates that home losses can be effectively reduced by focusing mitigation efforts on the structure and its immediate surroundings. Those characteristics of a structure's materials and design and the surrounding flammables that determine the potential for a home to ignite during wildland fires (or any fires outside the home) will, hereafter, be referred to as home ignitability.

> The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more around homes is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions (Cohen, 1999)

That research also recognizes "the imperative to separate the problem of the wildland fire threat to homes from the problem of ecosystem sustainability due to changes in wildland fuels" (Ibid).

Please consider that thinning can result in faster fire spread than in the unthinned stand. Graham, et al., 1999a point out that fire modeling indicates:

> For example, the 20-foot wind speed must exceed 50 miles per hour for midflame wind speeds to reach 5 miles per hour within a dense Stand (0.1 adjustment factor). In contrast, in an open stand (0.3 adjustment factor), the same midflame wind speeds would occur at only a 16-mile-per-hour wind at 20 feet.

Graham, et al., 1999a also state:

> Depending on the type, intensity, and extent of thinning, or other treatment applied, fire behavior can be improved (less severe and intense) or exacerbated." … Fire intensity in thinned stands is greatly reduced if thinning is accompanied by reducing the surface fuels created by the cuttings. Fire has been successfully used to treat fuels and decrease the effects of wildfires especially in climax ponderosa pine forests (Deeming 1990; Wagel and Eakle 1979; Weaver 1955, 1957). In contrast, extensive amounts of untreated logging slash contributed to the devastating fires during the late 1800s and early 1900s in the inland and Pacific Northwest forests.

In their conclusion, Graham, et al., 1999a state:

> Depending on intensity, thinning from below and possibly free thinning can most effectively alter fire behavior by reducing crown bulk density, increasing crown base height, and changing species composition to lighter crowned and fire-adapted species. Such intermediate treatments can reduce the severity and intensity of wildfires for a given set of physical and weather variables. But crown and selection thinning would not reduce crown fire potential.

Since the scientific literature suggests that your thinning activities will actually increase the rate of fire spread, you need to reconcile such findings with the contradictory assumptions expressed in your scoping letter.

Please see the column below by Dr. Chad Hanson.

https://thehill.com/blogs/congress-blog/energy-environment/590415-logging-makes-forests-and-homes-more-vulnerable-to

**Logging makes forests and homes more vulnerable to wildfires**

**The West has seen some really big forest fires recently, particularly in California's Sierra Nevada and the Cascade Mountains of Oregon. Naturally, everyone is concerned and elected officials are eager to be seen as advancing solutions. The U.S. Senate is negotiating over the Build Back Better bill, which currently contains nearly $20 billion in logging subsidies for "hazardous fuel reduction" in forests. This term contains no clear definition but is typically employed as a euphemism for "thinning", which usually includes commercial logging of mature and old-growth trees on public lands. It often includes clearcut logging that harms forests and streams and intensifies wildfires.**

**Logging interests stand poised to profit, as they tell the public and Congress that our forests are overgrown from years of neglect. Chainsaws and bulldozers are**

**their remedy. Among these interests are agencies like the U.S. Forest Service that financially benefits from selling public timber to private logging companies.**

**In this fraught context, filled with a swirling admixture of panic, confusion, and opportunism, the truth and scientific evidence are all too often casualties. This, unfortunately, can lead to regressive policies that will only exacerbate the climate crisis and increase threats to communities from wildfire. We can no longer afford either outcome.**

**Many of the nation's top climate scientists and ecologists recently urged Congress to remove the logging subsidies from the Build Back Better bill. Scientists noted that logging now emits about as much carbon dioxide each year as does burning coal. They also noted that logging conducted under the guise of "forest thinning" does not stop large wildfires that are driven mainly by extreme fire-weather caused primarily by climate change. In fact, it can often make fires burn faster and more intensely toward vulnerable homes. Unprepared towns like Paradise and Grizzly Flats, Calif., unfortunately burned to the ground as fires raced through heavily logged surroundings.**

**Nature prepares older forests and large trees for wildfires. As trees age, they develop thick impenetrable bark and drop their lower limbs, making it difficult for fire to climb into the tree crowns. Older, dense forests used by the imperiled spotted owl burn in mixed**

**intensities that is good for the owl and hundreds of species that depend on these forests for survival. Our national parks and wilderness areas also burn in lower fire intensities compared to heavily logged areas.**

**Occasionally even some of the largest trees will succumb to a severe fire but their progeny are born again to rapidly colonize the largest and most severe burn patches. Dozens of cavity-nesting birds and small mammals make their homes in the fire-killed trees. Soon after fire in these forests, nature regenerates, reminiscent of the mythical phoenix, aided by scores of pollinating insects and seed carrying birds and mammals.**

**Wildfires are highly variable, often depending on what a gust of wind does at a given moment, and even the biggest fires are primarily comprised of lightly and moderately-burned areas where most mature trees survive. By chance, in any large fire there will always be some areas that were thinned by loggers that burned less intense compared to unthinned areas. Before the smoke fully clears, logging interests find those locations and take journalists and politicians to promote their agenda. What they fail to disclose are the many examples where managed forests burned hotter while older, unmanaged forests did the opposite.**

**This sort of self-serving show boating occurred after the 2020 Creek Fire in the Sierra National Forest in**

**California, as news stories echoed the logging industry's "overgrown forests" narrative based on a single low-intensity burn area. When all of the data across the entire fire were analyzed, it turned out that logged forests, including commercial "thinning" areas, actually burned the most intensely.**

**In Oregon, The Nature Conservancy has been conducting intensive commercial thinning on its Sycan Marsh Preserve. Based on satellite imagery, the northern portion of the 414,000-acre Bootleg Fire of 2021 swept through these lands. Within days, TNC began promoting its logging program, focusing on a single location around Coyote Creek, where a "thinned" unit burned lightly. They failed to mention that nearly all of the dense, unmanaged forests burned lightly too in that area. Well-intentioned environmental reporters were misled by a carefully picked example.**

**Billions of dollars are being wasted to further this false logging industry narrative—funds that instead should be used to prepare communities for more climate-driven wildfires. Congress can instead redirect much needed support to damaged communities so they can build back better and adopt proven fire safety measures that harden homes and clear flammable vegetation nearest structures.**

**The path forward is simple, with two proven remedies that work. Protect forests from logging so they can absorb more carbon dioxide from the atmosphere and**

**moderate fire behavior, and adapt communities to the new climate-driven wildfire era.**

**Chad Hanson, Ph.D., is a research ecologist with the John Muir Project and is the author of the 2021 book, "Smokescreen: Debunking Wildfire Myths to Save Our Forests and Our Climate." Dominick DellaSala, Ph.D., is chief scientist with Wild Heritage and the author of Conservation Science and Advocacy for a Planet in Peril: Speaking Truth to Power.**

**Please see the column below by Chad Hanson and myself.**

Opinion by **Chad Hanson** and
**Mike Garrity**
**https://www.washingtonpost.com/opinions/no-we-cant--and-shouldnt--stop-forest-fires/2017/09/26/64ff718c-9fbf-11e7-9c8d-cf053ff30921_story.html**
September 26, 2017

*Chad Hanson is a research ecologist with the John Muir Project and is co-editor and co-author of "The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix." Mike Garrity is executive director of the Alliance for the Wild Rockies.*

The American West is burning, Sen. Steve Daines (R-Mont.) tells us in his recent Post op-ed. He and officials in the Trump administration have described Western forest fires as catastrophes, promoting congressional action ostensibly to save our National Forests from fire by allowing widespread commercial logging on public lands. This, they claim, will reduce forest density and the fuel for wildfires.

But this position is out of step with current science and is based on several myths promoted by commercial interests.

The first myth is the notion that fire destroys our forests and that we currently have an unnatural excess of fire. Nothing could be further from the truth. There is a broad consensus among scientists that we have considerably less fire of all intensities in our Western U.S. forests compared with natural, historical levels, when lightning-caused fires burned without humans trying to put them out.

There is an equally strong consensus among scientists that fire is essential to maintain ecologically healthy forests and native biodiversity. This includes large fires and patches of intense fire, which create an abundance of biologically essential standing dead trees (known as snags) and naturally stimulate regeneration of vigorous new stands of forest. These areas of “snag forest habitat” are ecological treasures, not catastrophes, and many native wildlife species, such as the rare black-backed woodpecker, depend on this habitat to survive.

Fire or drought kills trees, which attracts native beetle species that depend on dead or dying trees. Woodpeckers eat the larvae of the beetles and then create nest cavities in the dead trees, because snags are softer than live trees. The male woodpecker creates two or three nest cavities each year, and the female picks the one she likes the best, which creates homes for dozens of other forest wildlife species that need cavities to survive but cannot create their own, such as bluebirds, chickadees, chipmunks, flying squirrels and many others.

More than 260 scientists wrote to Congress in 2015 opposing legislative proposals that would weaken environmental laws and increase logging on National Forests under the guise of curbing wildfires, noting that snag forests are "quite simply some of the best wildlife habitat in forests."

The FS must disclose its transparent, well thought-out long-term strategy for old-growth associated wildlife species viability in a properly-defined cumulative effects analysis area.

“The purpose of the Greenhorn Vegetation Project is to promote resiliency and ecological function by helping to restore and maintain the structure, function, composition and connectivity of Forest terrestrial systems.” EA p. 1.

Since Ecological restoration is the project's priority, the NEPA document must at least identify all the existing ecological liabilities caused by past management actions. This includes poorly located or poorly maintained roads, high-risk fuel situations caused by earlier vegetation manipulation projects, wildlife security problems by open motorized roads and trails plus those that are closed but violated—and include all those impacts in the analyses.

Any desire to keep a road in the project area WUI must be in harmony with the alleged priority goals (again, to reduce the chances that fire will destroy private structures and harm people), not driven by timber production goals. The analysis must show how all roads will in fact be in harmony with the priority goals.

Proposed activities could artificialize the forest ecosystem. Lodgepole pine is particularly subject to blowdown, once thinned. And any forest condition that is maintained through mechanical manipulation is not maintaining ecosystem function. The proposed management activities would not be integrated well with the processes that naturally shaped the ecosystem and resulted in a range of natural structural conditions. Thus, the need for standards guiding both the delineation of zones where artificializing fuel reduction actions may take place, and that also set snag and down woody debris retention amounts.

That brings us to myth No. 2: that eliminating or weakening environmental laws — and increasing logging — will somehow curb or halt forest fires. In 2016, in the largest analysis ever on this question, scientists found that forests with the fewest environmental protections and the most logging had the highest — not the lowest — levels of fire intensity. Logging removes relatively noncombustible tree trunks and leaves behind flammable "slash debris," consisting of kindling-like branches and treetops.

This is closely related to myth No. 3: that dead trees, usually removed during logging projects, increase fire intensity in our forests. A comprehensive study published in the Proceedings of the National Academy of Sciences thoroughly debunked this notion by showing that outbreaks of pine beetles, which can create patches of snag forest habitat, didn't lead to more intense fires in the area. A more recent study found that forests with high levels of snags actually burn less intensely. This is because flames spread primarily through pine needles and small twigs, which fall to the ground and soon decay into soil shortly after trees die.

Finally, myth No. 4: that we can stop weather-driven forest fires. We can no more suppress forest fires during extreme fire weather than we can stand on a ridgetop and fight the wind. It is hubris and folly to even try. Fires slow and stop when the weather changes. It makes far more sense to focus our resources on protecting rural homes and other structures from fire by creating “defensible space” of about 100 feet between houses and forests. This allows fire to serve its essential ecological role while keeping it away from our communities.

Lawmakers in Congress are promoting legislation based on the mythology of catastrophic wildfires that would largely eliminate environmental analysis and public participation for logging projects in our National Forests. This would include removing all or most trees in both mature forests and in ecologically vital post-wildfire habitats — all of which is cynically packaged as "fuel reduction" measures.

The logging industry’s political allies have fully embraced the deceptive “catastrophic wildfire” narrative to promote this giveaway of our National Forests to timber corporations. But this narrative is a scientifically bankrupt smoke screen for rampant commercial logging on our public lands. The American people should not fall for it.

Please see the letter from the 260 scientist to Congress which is mentioned in the column above, below.

Open Letter to U.S. Senators and President Obama from Scientists Concerned about Post-fire Logging and Clearcutting on National Forests

As professional scientists with backgrounds in ecological sciences and natural resources management, we are greatly concerned that legislation which passed the House in July 2015, H.R. 2647, would suspend federal environmental protections to expedite logging of both post- fire wildlife habitat and unburned old forests on national forest lands. This legislation would also effectively eliminate most analysis of adverse environmental impacts, and prevent enforcement of environmental laws by the courts.

A similar measure, S. 1691, currently proposed in the U.S. Senate, would override federal environmental laws to dramatically increase post-fire logging, increase logging and clearcutting of mature forests, eliminate analysis of environmental impacts for most logging projects, and effectively preclude enforcement of environmental laws. The bills propose these measures under the guise of "ecosystem restoration," ostensibly to protect national forests from fire.

Not only do these legislative proposals misrepresent scientific evidence on the importance of post-fire wildlife habitat and mature forests to the nation, they also ignore the current state of scientific knowledge about how such practices would degrade the ecological integrity of forest ecosystems on federal lands. We urge you to vote against this legislation, and urge President Obama to veto these bills if they are passed in some form by Congress.

National Forests were established for the public good and include most of the nation's remaining examples of intact forests. Our national forests are a wellspring of clean water for millions of Americans, a legacy for wildlife, sequester vast quantities of carbon important in climate change mitigation, and provide recreation and economic opportunities to rural communities if responsibly managed. Though it may seem at first glance that a post-fire landscape is a catastrophe, numerous scientific studies tell us that even in the patches where forest fires burn most intensely, the resulting wildlife habitats are among the most ecologically diverse on western forestlands and are essential to support the full richness of forest biodiversity.[1]

Post-fire conditions also serve as a refuge for rare and imperiled wildlife species that depend upon the unique habitat features created by intense fire. These include an abundance of standing dead trees, or "snags," which provide nesting and foraging habitat for woodpeckers and many other plant and wildlife species responsible for the rejuvenation of a forest after fire.

The post-fire environment is rich in patches of native flowering shrubs that replenish soil nitrogen and attract a diverse bounty of beneficial insects that aid in pollination after fire. Small mammals find excellent habitat in the shrubs and downed logs, providing food for foraging spotted owls. Deer and elk browse on post-fire shrubs and natural conifer regeneration. Bears eat and disperse berries and conifer seeds often found in substantial quantities after intense fire, and morel mushrooms, prized by many Americans, spring from ashes in the most severely burned forest patches.

1 See http://store.elsevier.com/The-Ecological-Importance-of-Mixed-Severity-Fires/Dominick-DellaSala/isbn- 9780128027493/.

September 2015

This post-fire renewal, known as “complex early seral forest,” or “snag forest,” is quite simply some of the best wildlife habitat in forests, and is an essential stage of natural processes that eventually become old-growth forests over time. This unique habitat is not mimicked by clearcutting, as the legislation incorrectly suggests. Moreover, it is the least protected of all forest habitat types, and is often as rare, or rarer, than old-growth forest, due to extensive fire suppression and damaging forest management practices such as those encouraged by this legislation. Much of the current scientific information on the ecological importance of post-fire habitat can be found in several excellent videos, including ways for the public to co-exist with fires burning safely in the backcountry.1,2

After a fire, the new forest is particularly vulnerable to logging disturbances that can set back the forest renewal process for decades. Post-fire logging has been shown to eliminate habitat for many bird species that depend on snags, compact soils, remove biological legacies (snags and downed logs) that are essential in supporting new forest growth, and spread invasive species that outcompete native vegetation and, in some cases, increase the flammability of the new forest.

While it is often claimed that such logging is needed to restore conifer growth and lower fuel hazards after a fire, many studies have shown that logging tractors often kill most conifer seedlings and other important re-establishing vegetation and actually increases flammable logging slash left on site. Increased chronic sedimentation to streams due to the extensive road network and runoff from logging on steep slopes degrades aquatic organisms and water quality.3

We urge you to consider what the science is telling us: that post-fire habitats created by fire, including patches of severe fire, are ecological treasures rather than ecological catastrophes, and that post-fire logging does far more harm than good to public forests. We urge Senators to vote against any legislation that weakens or overrides environmental laws to increase post-fire logging or clearcutting of mature forest as degrading to the nation's forest legacy. And, we urge President Obama to veto any such legislation that reaches his desk as inconsistent with science- based forest and climate change planning.

Sincerely (affiliations are listed for identification purposes only),

Dominick A. DellaSala, Ph.D. Chief Scientist

Geos Institute, Ashland, OR

Chad Hanson, Ph.D.

Research Ecologist

Earth Island Institute, Berkeley, CA

2http://www.fs.usda.gov/detail/r5/news-events/audiovisual/?cid=stelprdb5431394;

https://vimeo.com/75533376; http://vimeo.com/groups/future/videos/8627070; http://www.youtube.com/watch?v=iTl-naywNyY&list=PL7F70F134E853F520&index=15; http://www.youtube.com/watch?v=1BmTq8vGAVo&feature=youtu.be; http://vimeo.com/3428311

3Hutto, R. L. 2006. Toward meaningful snag-management guidelines for postfire salvage logging in North American conifer forests. Conservation Biology 20:984-993. Beschta, R.L. et al. 2004.

Postfire management on forested public lands of the western USA. Conservation Biology 18:957-967. Lindenmayer, D.B. et al. 2004. Salvage-harvesting policies after natural disturbance. Science 303:1303. Karr, J. et al. 2004. The effects of postfire salvage logging on aquatic ecosystems in the American West. Bioscience 54:1029-1033. DellaSala, D.A., et al. 2006. Post-fire logging debate ignores many issues. Science 314-51-52. Donato, D.C. et al. 2006. Post-wildfire logging hinders regeneration and increases fire risk. Science 311 No. 5759:352.



Reed Noss, Ph.D.

Provost's Distinguished Research Professor Dept. Biology, University Central Florida Orlando, FL

Derek E. Lee, Ph.D.

Principal Scientist, Wild Nature Institute Hanover, NH

Dennis Odion, Ph.D.

Earth Research Institute

Univ. California, Santa Barbara Ashland, OR

Additional signers:

Ronald Abrams, Ph.D. Dru Associates, Inc. Glen Cove, NY

Paul Alaback, Ph.D.

Professor Emeritus of Forest Ecology Univ. of Montana

Missoula, MT

John Alcock, Ph.D. Regents Professor Emeritus Arizona State University Tempe, AZ

Patrick Alexander, Ph.D.

New Mexico State University, Biology Las Cruces, NM

David Allen, Ph.D.

Assistant Professor of Biology Middlebury College Middlebury, VT

Peter Alpert, Ph.D.

Professor

University of Massachusetts, Amherst Amherst, MA

Richard, L. Hutto, Ph.D. University Montana, Div. Biol. Sci. Missoula, MT

Monica L. Bond, M.S.

Principal Scientist, Wild Nature Inst. Hanover, NH

Rick Halsey, M.S.

The California Chaparral Inst. Escondido, CA

William Anderson, Ph.D.

Professor Emeritus

Grice Marine Biological Laboratory Charleston, SC

W. Scott Armbruster, Ph.D. Principal Research Scientist University of Alaska Fairbanks Fairbanks, AK

Peter Auster, Ph.D. Research Professor Emeritus University of Connecticut Groton, CT

Peter Bahls, M.S.

Executive Director, Salmon Biologist Northwest Watershed Institute

Port Townsend, WA

Richard Baker, Ph.D. Professor Emeritus University of Iowa Iowa City, IA

William Baker, Ph.D. Professor Emeritus University of Wyoming Laramie, WY

September 2015

Bruce Baldwin, Ph.D.

Professor of Integrative Biology and Curator of the Jepson Herbarium University of California, Berkeley Berkeley, CA

Randy Bangert, Ph.D., Ecologist Cortez, CO

Jesse Barber, Ph.D.

Asst. Professor of Biology Boise State University Boise, ID

Linda Sue Barnes, Ph.D. Prof. Emeritus of Botany Methodist University Wade, NC

Roger Barry, Ph.D.

Distinguished Professor Emeritus

Univ. of Colo., Natl. Snow & Ice Data Ctr. Boulder, CO

Paul Bartelt, Ph.D. Professor of Biology Waldorf College Forest City, IA

Colden Baxter, Ph.D. Stream Ecology Center Idaho State University Pocatello, ID

Elizabeth Beck, M.S. Edmonton, Alberta

Craig Benkman, Ph.D.

Professor of Zoology & Physiology University of Wyoming

Laramie, WY

David Berg, Ph.D. Professor of Biology Miami University Oxford, OH

Robert Beschta, Ph.D.

Em. Prof. of Forest Ecosystems and Society Oregon State University

Corvallis, OR

Richard Bierregaard, Ph.D.

Research Associate

The Acad. of Natural Sci of Drexel Univ. Wynnewood, PA

Harvey Blankespoor, Ph.D. Professor Emeritus of Biology Hope College

Holland, MI

Katherine Bode, M.A.

Senior Botanist

Avila and Assoc. Consulting Engineers Austin, TX

Brian Bodenbender, Ph.D.

Chair, Geological and Env.Sciences Hope College

Holland, MI

Jim Boone, Ph.D.

Senior Scientist

Desert Wildlife Consultants, LLC Las Vegas, NV

Elizabeth Braker, Ph.D. Professor of Biology
Occidental College

Los Angeles, CA

John Bremer, MBA

Washington Native Plant Society Bellingham, WA

Holger Brix, Ph.D.

Asst. Researcher

University of California, Los Angeles Los Angeles, CA

September 2015

John Browne

Conservation Committee

WA Native Plant Society (Judd Creek Nursery)

Vashon, WA

Peter Brussard, Ph.D. Professor Emeritus University of Nevada, Reno Reno, NV

Brian Buma, Ph.D. Assistant Professor of Forest Ecosystem Ecology University of Alaska Juneau, AK

Harold Burstyn, Ph.D., J.D. Syracuse, NY

Alan Cady, Ph.D. Professor of Biology Miami University Middletown, OH

Philip Cantino, Ph.D. Emeritus Professor Ohio University Athens, OH

Ken Carloni, Ph.D.

Professor of Biology, Science Dept. Chair Umpqua Community College

Roseburg, OR

Ron Carroll, Ph.D.

Diistinguished Fellow, River Basin Center University of Georgia

Athens, GA

Donna Cassidy-Hanley, Ph.D. Cornell University

Ithaca, NY

Kai Chan, Ph.D.

Assoc. Professor & Canada Research Chair University of British Columbia

Vancouver, BC

F. Stuart Chapin, Ph.D. Professor

University of Alaska Fairbanks Fairbanks, AK

Donald Charles, Ph.D.

Professor

Drexel Univ. Academy of Natural Sciences Huntingdon Valley, PA

Eric Chivian, M.D.

Founder and Former Director

Center for Health and the Global Environment

Harvard Medical School

1985 Nobel Peace Prize, Co-Recipient

John Cigliano, Ph.D. Professor of Biology Cedar Crest College Allentown, PA

Malcolm Cleaveland, Ph.D. Professor Emeritus of Geosciences University of Arkansas Fayetteville, AR

Todd Cornish, DVM, Ph.D., DACVP Director, Wyoming Wildlife University of Wyoming

Laramie, WY

Jennifer Costanza, Ph.D.

North Carolina State University Raleigh, NC

Ericha Courtright, M.S.

Information Technology Specialist USDA Agricultural Research Service Las Cruces, NM



Patrick Crist, Ph.D.

Director, Conservation Planning NatureServe

Broomfield, CO

Alan Dickman, Ph.D.

Research Assoc. Prof., Biology and Env. University of Oregon

Eugene, OR

Andrew Dobson, D.Phil. Professor, Princeton University Princeton, NJ

Jim Dole, Ph.D.

Professor Emeritus of Biology California State Univ., Northridge Northridge, CA

Frito Dolisca, Ph.D. Orange, NJ

Michael Dorsey, M.S., Ph.D Washington, D.C.

Craig Downer, M.S. Wildlife Ecologist Andean Tapir Fund Minden, NV

Kathleeen Doyle, Ph.D. Environmental Studies Program Middlebury College Middlebury, VT

Ken Driese, Ph.D. Senior Lecturer University of Wyoming Laramie, WY

Marianne Edain

Brushfire Coordinator

Whidbey Environmental Action Network Langley, WA

Richard E. Edelmann, Ph.D. Professor of Biology

Miami University

Oxford, OH

Mark Egger, B.S.

Research Associate

Univ. of Washington Herbarium Seattle, WA

Robert Espinoza, Ph.D.

Professor

California State University, Northridge Northridge, CA

Suzanne Estes, Ph.D. Professor of Biology Portland State University Portland, OR

Gerald Estberg, Ph.D. Emeritus Professor of Physics University of San Diego

Port Angeles, W A

Donald Estberg, M.S. Redmond, W A

Daniel Evans, Ph.D.

Science Policy Fellow

American Assn. for Advancement of Science

Washington, DC

Jonathan Evans, Ph.D. Professor of Biology
University of the South Sewanee, TN

Philip Fischer, M.S. University of Idaho Moscow, ID



Daniel Fisher, Ph.D. Professor

University of Michigan Ann Arbor, MI

Thomas Fleischner, Ph.D.

Director, Natural History Institute, Professor
Prescott College

Prescott, AZ

Johannes Foufopoulos, Ph.D. Associate Professor
University of Michigan

Ann Arbor, MI

Lee Frelich, Ph.D.

Director, Center for Forest Ecology University of Minnesota

St. Paul, MN

Jerry Freilich, Ph.D. Research Coordinator Olympic National Park Port Angeles, WA

Jennifer Frey, Ph.D. Associate Professor

New Mexico State University Las Cruces, NM

Christopher Frissell, Ph.D.

Affiliate Research Professor

Flathead Lake Biol. Stn., Univ. of Montana Polson, MT

Robert Fuerstenberg, M.S. Ecologist (retired) Vashon, WA

Stephen Fuller, Ph.D.

Professor Emeritus of Biological Sciences University of Mary Washington Fredericksburg, VA

Jim Furnish, Consulting Forester

Former Deputy Chief, U.S. Forest Service Rockville, MD

Donald Geiger, Ph.D. Professor Emeritus University of Dayton Dayton, OH

Charlotte Germain-Aubrey, Ph.D. University of Florida

Gainesville, FL

John Gerwin, M.S.

Research Curator, Ornithology

N. Carolina Museum of Natural Sciences Raleigh, NC

Thomas Giesen, M.S. University of Oregon (retired) Eugene, OR

Jeffrey Gerwing, Ph.D.

Associate Professor

Environmental Science and Management Portland State University

Portland, OR

Barrie Gilbert, Ph.D.

Senior Scientist

Utah State University (retired) Logan, UT

Rachel Golden, M.S. Ph.D. student

George Mason University Silver Spring, MD

Robert Good, M.S., DVM USDA/APHIS (retired) Chester, MD

James Graves, Ph.D. Professor of Biology Green Mountain College Poultney, VT

September 2015



Steven Green, Ph.D.

Senior Professor of Biology University of Miami

Coral Gables, FL

Gregory Grether, Ph.D.

Prof. of Ecology and Evolutionary Biology University of California, Los Angeles Topanga, CA

Simon Gunner, M.S.

Field Botanist

Olofson Environmental, Inc. Berkeley, CA

Dom Hardin, Ph.D.

President

Suksdorfia Chap. / WA Native Plant Society White Salmon, WA

Stacey Harmer, Ph.D. Professor

University of California, Davis Davis, CA

Mark Harmon, Ph.D.

Richardson Chair and Professor

Oregon State University, Forest Science Corvallis, OR

Alan Heath, Ph.D. Professor Emeritus, Biology Virginia Tech.

Blacksburg, VA

Kenneth Helms, Ph.D.

Research Assistant Professor

Dept. of Biology, University of Vermont Burlington, VT

Nancy Hoalst-Pullen, Ph.D. Professor of Geography Kennesaw State University Kennesaw, GA

Håkon Holien, Ph.D.

Associate professor Nord-Trøndelag University College Steinkjer, Norway

Karen Holl, Ph.D.

Professor of Environmental Studies University of California, Santa Cruz Santa Cruz, CA

Richard Holmes, Ph.D.

Harris Professor of Env. Biology, Emeritus Dartmouth College

Hanover, NH

Andres Holz, Ph.D. Assistant Professor Portland State University Portland, OR

Elizabeth Horvath, M.S. Associate Professor of Biology Westmont College

Santa Barbara, CA

Malcolm Hunter, Ph.D.

Libra Professor of Conservation Biology University of Maine

Amherst, ME

Timothy Ingalsbee, Ph.D.

Executive Director

Firefighters United for Safety, Ethics, and

Ecology Eugene, OR

Mrill Ingram, Ph.D. Independent Scholar University of Arizona Madison, WI

David Inouye, Ph.D. Professor of Biology University of Maryland College Park, MD



David Janos, Ph.D.

Professor of Biology, Cooper Fellow University of Miami

Coral Gables, FL

Karl Jarvis, M.S.

Ph.D. Candidate

Northern Arizona Univ. School of Forestry Flagstaff, AZ

Mitchell Johns, Ph.D. Professor of Soil Science California State University Chico, CA

Jay Jones, Ph.D.

Professor of Biology and Biochemistry University of La Verne

La Verne, CA

Alan Journet, Ph.D.

Prof. Emeritus, Biology/Env. Science Southeast Missouri State University, Cape Girardeau

Jacksonville, OR

Walter Judd, Ph.D.

Professor of Biology

University of Florida, Dept. Biology Gainesville, FL

Jacob Kann, Ph.D. Aquatic Ecologist Ashland, OR

James Karr, Ph.D. Professor Emeritus University of Washington Sequim, WA

Cheryl Kassed, Ph.D.

Former Vice-President

Maryland Alliance for Greenway Improvement and Conservation Silver Spring, MD

Jason Koontz, Ph.D.

Associate Professor and Chair of Biology Augustana College

Rock Island, IL

Marni Koopman, Ph.D. Climate Change Scientist
Geos Institute

Ashland, OR

Sunil Kumar, Ph.D.

Research Scientist

Natural Resource Energy Lab Fort Collins, CO

Giar-Ann Kung, Entomologist

Natural History Museum of Los Angeles County

Los Angeles, CA

Steve LaDochy, Ph.D. Professor of Geography
California State Univ., L.A. Los Angeles, CA

Rick Landenberger, Ph.D. Assistant Professor

West Virginia University Morgantown, WV

Marc Lapin, Ph.D. Consulting Ecologist Middlebury
College Middlebury, VT

Geoff Lawrence, M.S.

Lecturer in Physics and Chemistry N. Hennepen
Community College Minneapolis, MN

Richard Lee, Ph.D.

University Distinguished Professor Miami University

Oxford, OH

Scott Lefler, Ph.D. Principal Lecturer Arizona State University Tempe, AZ

Jason A. Lillegraven, Ph.D. Arts & Sciences Distinguished Emeritus Professor

University of Wyoming Laramie, WY

Jay Lininger, M.S.

Senior Scientist

Center for Biological Diversity Ashland, OR

Frank Logiudice, M.S. Instructor

University of Central Florida Orlando, FL

Teresa Lorenz, Ph.D. Department of Fish and Wildlife University of Idaho

Moscow, ID

Kathryn Lowrey, Ph.D.

Natural Science & Math Division Chair Jefferson Community & Technical College Louisville, KY

Calvin Maginel, M.S. University of Missouri Columbia, MO

Luis Malaret, Ph.D.

Professor

Community College of Rhode Island Worcester, MA

James Marden, Ph.D. Professor of Biology Penn State University University Park, PA

Michael Marsh, Ph.D. Conservation Committee Washington Native Plant Society Seattle, WA

Travis Marsico, Ph.D.

Associate Professor and Associate Chair Arkansas State University

Jonesboro, AR

Patrick Martin, Ph.D.

Associate Professor of Landscape Ecology Colorado State University

Fort Collins, CO

John Marzluff, Ph.D. Professor of Wildlife Science University of Washington Seattle, WA

Gina Massoni, M.S. Seattle, WA

Glenn Matlack, Ph.D.

Associate Professor, Forest Ecology Ohio University

Athens, OH

Kathleen McCarthy, M.S. Ecologist

New York, NY

Carl McDaniel, Ph.D.

Professor Emeritus, Visiting Professor Oberlin College, Rensselaer Polytechnic Institute

Oberlin, OH

Aleta McKeage, M.S.

Plant Ecologist

GreenWays Center for Environment and Community

Belfast, ME

Robert Meese, Ph.D.

Staff Research Associate IV University of California, Davis Davis, CA

Gary Meffe, Ph.D. Adjunct Professor, Retired University of Florida Gainesville, FL

Vicky Meretsky, Ph.D. Professor

Indiana University Bloomington, IN

Julie Messier, M.S. University of Arizona Tucson, AZ

John Morse, Ph.D. Professor Emeritus Clemson University Clemson, SC

Ellen Moyer, Ph.D., P.E. Greenvironment, L.L.C. Montgomery, MA

Peter Moyle, Ph.D. Distinguished Professor University of California, Davis Davis, CA

Nancy Muleady-Mecham, Ph.D. Adjunct Professor of Biology Northern Arizona University Arnold, CA

Dennis Murphy, Ph.D. Research Professor University of Nevada, Reno Reno, NV

K. Murray, Ph.D. Professor of Biology Hope College Holland, MI

Philip Myers, Ph.D. Professor Emeritus University of Michigan Ann Arbor, MI

Charles R. Neal, B.S. Ecologist

U.S. Dept. of Interior (retired) Cody, WY

Andrew Nelson, Ph.D.

Professor Emeitus of Biological Sciences SUNY Oswego

Oswego, NY

Gerald Niemi, Ph.D.

Professor

Natural Resources Research Institute Duluth, MN

Barry Noon, Ph.D.

Professor of Wildlife Ecology Colorado State University Fort Collins, CO

Gretchen North, Ph.D. Professor of Biology Occidental College Los Angeles, CA

Richard Nyhof, Ph.D. Professor of Biology Calvin College Grand Rapids, MI

David Olson, Ph.D. Conservation Biologist Conservation Earth Consulting Los Angeles, CA

Theodore Papenfuss, Ph.D. Research Scientist

Museum of Vertebrate Zoology University of California, Berkeley Berkeley, CA

Michael Parker, Ph.D.

Professor and Chair, Dept. of Biology Southern Oregon University

Ashland, OR

Geoffrey Patton, Ph.D.

Former President

Maryland Alliance for Greenway Improvement and Conservation Silver Spring, MD

Stuart Pimm, Ph.D.

Doris Duke Chair of Conservation Duke University

Durham, NC

Ralph Powell, Ph.D.

Faculty Emeritus

Eastern Michigan University Ann Arbor, MI

Jessica Pratt, M.S., Ecologist University of California, Irvine Irvine, CA

Riley Pratt, Ph.D. Restoration Ecologist Irvine Ranch Conservancy Irvine, CA

Thomas Power, Ph.D. Professor Emeritus University of Montana Missoula, MT

Robert Pyle, Ph.D. Founder

Xerces Society Gray's River, WA

Gurcharan Rahi, Ph.D. Professor

Fayetteville State University Fayetteville, NC

Eric Rechel, Ph.D. Adjunct Professor Colorado Mesa University Grand Junction, CO

Michael Reed, Ph.D. Professor of Biology Tufts University Medford, MA

Pauline Reetz, M.S.

Conservation Chairman

Audubon Society of Greater Denver Denver, CO

Barbara Reynolds, Ph.D.

Professor of Environmental Studies Univ. of North Carolina, Asheville Asheville, NC

Tina Rhea, M.S. Greenbelt, MD

Ann Rhoads, Ph.D.

Senior Botanist, retired

Univ. of Pennsylvania, Morris Arboretum Philadelphia, PA

Fred M. Rhoades, Ph.D.

Instructor of Biology and Mycology Western Washington University (retired) Bellingham, WA

Jon Rhodes, M.S. Hydrologist

Planeto Azul Hydrology Portland, OR

Jennifer Riddell, Ph.D.

Science and Technology Policy Fellow Amer. Assn. for Advancement of Science Ukiah, CA

John Robinson, Ph.D.

Chief Conservation Officer Wildlife Conservation Society Bronx, NY

Garry Rogers, Ph.D.

President

Agua Fria Open Space Alliance, Inc. Dewey-Humboldt, AZ

Steven Rogstad, Ph.D. Professor of Biology University of Cincinnati Cincinnati, OH

Thomas Rooney, Ph.D.

Associate Professor of Biological Sciences Wright State University

Dayton, OH

Jon Rosales, Ph.D. Associate Professor

St. Lawrence University Canton, NY

John Rosenfeld, Ph.D. Geological Society of America Los Angeles, CA

Michael Ross, Ph.D.

Assoc. Prof. of Environmental Studies Florida International University Miami, FL

Eric Routman, Ph.D. Professor of Biology

San Francisco State University San Francisco, CA

Barbara Roy, Ph.D. Professor of Ecology University of Oregon Eugene, OR

Edwin Royce, Ph.D., Associate Department of Plant Sciences University of California, Davis Davis, CA

Matthew Rubino, M.S.

Conservation Biologist

NC State Univ. Dept. of Applied Ecology Raleigh, NC

Scott Russell, Ph.D.

George Lynn Cross Research Professor University of Oklahoma

Norman, OK

Nicanor Saliendra, Ph.D. Ecologist

American Geophysical Union Mandan, ND

Robin Salter, Ph.D. Associate Professor Oberlin College Oberlin, OH

Scott Samuels, Ph.D. Professor of Biology University of Montana Missoula, MT

Melissa Savage, Ph.D.

Assoc. Professor Emerita of Geography University of California, Los Angeles Los Angeles, CA

Paul Schaeffer, Ph.D. Associate Professor Miami University Oxford, OH

Paula Schiffman, Ph.D.

Professor of Biology

California State Univ., Northridge Los Angeles, CA

Joseph Schiller, Ph.D. Professor

Austin Peay State University Clarksville, TN

Fiona Schmiegelow, Ph.D.

Professor and Program Director University of Alberta/Yukon College Whitehorse, Yukon

Karl Schneider, M.S.

Research and Mgmt. Coordinator Alaska Dept. of Fish and Game (ret.) Fritz Creek, AK

Kate Schoeneker, Ph.D.

Ecologist

USGS and Colorado State Univeristy Fort Collins, CO

Fred Schreiber, Ph.D.

Emeritus Professor of Biology California State University, Fresno Fresno, CA

Brant Schumaker, DVM, MPVM, Ph.D. Laramie, WY

Kathy Schwager, M.S. Ecologist

Yaphank, NY

Mark Shapley, Ph.D. Research Assistant Professor Idaho State University Pocatello, ID

Rosemary Sherriff, Ph.D.

Associate Professor, Dept. of Geography Humboldt State University

Arcata, CA

Thomas W. Sherry, Ph.D. Professor

American Ornithologists' Union New Orleans, LA

Steve Shippee, Ph.D. Conservation Biologist

Marine Wildlife Response, LLC Mary Esther, FL

Rodney Siegel, Ph.D.

Executive Director

The Institute for Bird Populations Point Reyes Station, CA

Ann Sloat, Ph.D. University of Hawaii Oahu, HI

Ben Solvesky, M.S. Wildlife Ecologist Sierra Forest Legacy Placerville, CA

Michael Soule, Ph.D. Professor Emeritus UC Santa Cruz Paonia, CO

Wayne Spencer, Ph.D.

Director of Conservation Assessment Conservation Biology Institute

San Diego, CA

Timothy Spira, Ph.D. Professor Emeritus Clemson University Clemson, SC

Peter Stacey, Ph.D. Research Professor University of New Mexico Albuquerque, NM

Alan Stemler, Ph.D.

Professor Emeritus

University of California, Davis Davis, CA

Christopher Still, Ph.D.

Associate Professor of Geography University of California, Santa Barbara Santa Barbara, CA

Michael Swift, Ph.D. Assistant Professor St. Olaf College Northfield, MN

Alexandra Syphard, Ph.D. Senior Research Ecologist Conservation Biology Institute Corvallis, OR

Andrew Szasz, Ph.D.

Professor of Environmental Studies University of California, Santa Cruz Santa Cruz, CA

Gary Tabor, M.S., VMD

Executive Director

Center for Large Landscape Conservation Bozeman, MT

John Taylor, Ph.D.

Professor of Plant and Microbial Biology University of California, Berkeley Berkeley, CA

Stephen Tettelbach, Ph.D. Professor of Biology

Long Island University, Post Brookville, NY

Morgan Tingley, Ph.D. Wildlife Biologist University of Connecticut Storrs, CT

Vicki Tripoli, Ph.D. Environmental Scientist Â Retired

Moorpark, CA

Julie Tuttle, M.S.

Ph.D. Candidate

Univ. of N. Carolina, Chapel Hill, & Duke Chapel Hill, NC

Anna Tyler, Ph.D. Research Fellow Jackson Laboratory Bar Harbor, ME

James Valentine, Ph.D.

Professor of Integrative Biology, Emeritus Univ. of California, Berkeley

Berkeley, CA

Pete Van Hoorn, M.S. Range Ecologist Livermore, CA

Mike Vandeman, Ph.D. San Ramon, CA

Thomas Veblen, Ph.D. Professor

University of Colorado Boulder, CO

John Vickery, M.S. Natural Areas Specialist Denver Natural Areas Denver, CO

Marlene Wagner, M.S. Ph.D. Candidate

Simon Fraser University Petersburg, AK

David Wake, Ph.D.

Professor of Integrative Biology University of California, Berkeley Berkeley, CA

Donald Waller, Ph.D.

J.T. Curtis Professor, Dept. of Botany University of Wisconsin

Madison, WI

Glenn Walsberg, Ph.D.

Professor Emeritus of Life Science Arizona State University

Tempe, AZ

Denis Wang, Ph.D.

Research Ecologist and Educator, retired Northport, ME

Gerald Wasserburg, Ph.D.

MacArthur Prof. of Geology/Geophysics California Institute of Technology Pasadena, CA

Vicki Watson, Ph.D.

Professor of Environmental Studies University of Montana

Missoula, MT

Frank Wegscheider, M.A.

Wildlife Biologist

California State University Fullerton Placentia, CA

Judith Weis, Ph.D.

Professor of Biological Sciences Rutgers University

Newark, NJ

John Weishampel, Ph.D. Professor of Biology University of Central Florida Orlando, FL

Hart Welsh, Ph.D.

Research Wildlife Ecologist USDA Forest Service
Arcata, CA

Janet Westbrook, M.A. Professor Emeritus of
Biology Cerro Coso College Ridgecrest, CA

David Whitacre, Ph.D.

Instructor

Treasure Valley Math and Science Center Boise, ID

Edward Whitesell, Ph.D. Member of the Faculty

The Evergreen State College Olympia, WA

Cathy Whitlock, Ph.D.

Professor of Earth Sciences

Co-Director, MT Institute on Ecosystems Montana
State University

Bozeman, MT

James Williams, Ph.D. Fisheries Biologist

U.S. Dept. of Interior (ret.) Gainesville, FL

Norris Williams, Ph.D. Curator, University of
Florida Gainesville, FL

Edward O. Wilson, Ph.D. Professor, Harvard University Museum of Comparative Zoology Cambridge, MA

Colleen Wisinski, M.S. Senior Research Technician

San Diego Zoo, Institute for Conservation Research

Poway, CA

Shaye Wolf, Ph.D.

Climate Science Director Center for Biological Diversity Oakland, CA

Marianna Wood, Ph.D. Associate Professor of Biology Bloomsburg University Bloomsburg, PA

George Wuerthner, M.S.

Sr. Scientist and Ecological Projects Director

Foundation for Deep Ecology Bend, OR

Charlotte Zampini, Ph.D. Emeritas Professor Framingham State University Framingham, MA

Veblen (2003) questions the premises the FS often puts forth to justify "uncharacteristic vegetation patterns" discussions, that being to take management activities to alter vegetation patterns in response to fire suppression:

> The premise behind many projects aimed at wildfire hazard reduction and ecological restoration in forests of the western United States is the idea that unnatural fuel buildup has resulted from suppression of formerly frequent fires. This premise and its implications need to be critically evaluated by conducting area-specific research in the forest ecosystems targeted for fuels or ecological restoration projects. Fire regime researchers need to acknowledge the limitations of fire history methodology and avoid over-reliance on summary fire statistics such as mean fire interval and rotation period. While fire regime research is vitally important for informing decisions in the areas of wildfire hazard mitigation and ecological restoration,

> there is much need for improving the way researchers communicate their results to managers and the way managers use this information.

Since disruption of fire cycles is identified, the BDNF needs to take a hard look at its fire policies. The development of approved fire management plans in compliance with the Federal Wildland Fire Policy was the number one policy objective intended for immediate implementation in the Implementation Action Plan Report for the Federal Wildland Fire Management Policy and Program Review. In general, the FS lags far behind other federal land management agencies that have already invested considerable amounts of time, money, and resources to implement the Fire Policy. Continued mismanagement of national forest lands and FS refusal to fully implement the Fire Policy puts wildland firefighters at risk if and when they are dispatched to wildfires. This is a programmatic issue, one that the current Forest Plan does not adequately consider. Please see Ament (1997) as comments on this proposal, in terms of fire policy and Forest Planning.

Many adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with thinning. (Ercelawn, 1999; Ercelawn, 2000.) For example: "Salvage or thinning operations that remove dead or decayed trees or coarse woody debris on the ground will reduce the availability of forest structures used by fishers and lynx." (Bull et al., 2001.)

Please see the attached University of Montana Thesis: Correlates of Canada Lynx Reproductive Success in Northwestern Montana by Megan K. Kosterman.

Kosterman finds that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. This contradicts the agency's assumption in the Lynx Amendment that 30% of lynx habitat can be clearcut, and that no specific amount of mature forest needs to be conserved. It is now the best available science out there that describes lynx habitat in the Northern Rockies related to lynx viability and recovery. Kosterman's study demonstrates that the Lynx Amendment standards are not adequate for lynx viability and recovery, as previously assumed by the Forest Service.

Since this is now the best available science we are hereby formally requesting that the Forest Service write a supplemental EIS for the Northern Rockies Lynx Management Direction and reinitiate consultation with the FWS for the Lynx Amendment to publicly disclose and address the findings of this study, and to allow for further public comment on this important issue of lynx recovery.

## Monitoring

For every project proposal, it is important that the results of past monitoring be incorporated into planning. All Interdisciplinary Team Members should be familiar with the results of all past monitoring pertinent to the project area, and any deficiencies of monitoring that have been previously committed to. For that reason, we expect that the following be included in the NEPA documents or project files:

- A list of all past projects (completed or ongoing) implemented in the proposed project area watersheds.
- The results of all monitoring done in the project area as committed to in the NEPA documents of those past projects.
- The results of all monitoring done in the proposed project area as a part of the Forest Plan monitoring and evaluation effort.
- A description of any monitoring, specified in those past project NEPA documents or the Forest Plan for proposed project area, which has yet to be gathered and/or reported.

Please disclose the names of all other past projects (implemented during the life of the Forest Plan) whose analysis area(s) encompass the areas to be "treated" under this proposal. Please disclose if the FS has performed all of the monitoring and mitigation required or recommended in any NEPA documents, and the results of the monitoring.

For the proposal to be consistent with the Forest Plan, enough habitat for viable populations of old-growth dependent wildlife species is needed over the landscape. Considering potential difficulties of using population viability analysis at the project analysis area level (Ruggiero, et. al., 1994), the cumulative effects of carrying out multiple projects simultaneously across the BDNF makes it imperative that population viability be assessed at least at the forestwide scale (Marcot and Murphy, 1992). Also, <u>temporal</u> considerations of the impacts on wildlife population viability from implementing something with such long duration as a Forest Plan must be considered (id.) but this has never been done by the BDNF. It is also of paramount importance to monitor population during the implementation of the Forest Plan in order to validate assumptions used about long-term species persistence i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993).

The U.S. District Court in Montana ruled in Native Ecosystems Council vs. Kimbell on the Keystone Quartz project that the Forest Service presented no hard data to support or demonstrate the biological impact on old-growth species viability across the forest of further reducing Douglas-fir old-growth habitat below minimum forest plan standards, which themselves may be inadequate in light of more recent scientific information. Species in the Northern Region, including the BDNF, thought to prefer old-growth habitat for breeding or feeding include northern goshawk, flammulated owl, pileated woodpecker, black-backed woodpecker (after wildfire or beetle epidemic), fisher, marten, Canada lynx, and wolverine.

For the BDNF, sensitive old-growth dependent species include the northern goshawk and flammulated owl. According to official FS policy, the BDNF "must develop conservation strategies for those sensitive species whose continued existence may be negatively affected by the forest plan or a proposed project." FSM 2670.45. These strategies would address the forest-wide and range-wide conditions for the affected species, allowing site-specific viability analysis to be tiered to the forest-wide viability analysis, and would establish quantifiable objectives for the affected species. These strategies must be adopted prior to implementation of projects that would adversely impact sensitive species habitat. FSM 2622.01, 2670.45.

Please demonstrate that this project will leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks.  Loggers are required to follow OSHA safety standards.  Will these standards require snags to be cut down?  After snags are cut down for safety for OSHA requirements will there still be enough snags left for old growth sensitive species?

Specifically how will the Greenhorn Project affect Flammulated owls, cavity-nesters usually associated with mature stands of ponderosa pine and Douglas-fir?  Among other habitat characteristics, flammulated owls benefit from an abundance of large snags and a relatively dense understory.  The flammulated owl is a sensitive species in Region One, and is largely dependent on old ponderosa pine forests.  According to a 2002 Region-wide assessment, not referenced in the 2003 FEIS for the Project, such forests only occur at 12-16% of their former, pre-fire suppression/pre-logging (that is, “historic”) levels, and thus species viability has been determined to be at risk.  The Northern Region also recognizes that its strategy for restoring habitat for the flammulated owl and found in the Island South project that “in no way guarantees that flammulated owls will be restored to viable levels."

Snag densities recommended by experts to support cavity-nesting birds range from 2.1 to 11 snags per acre of greater than 9" dbh. Please note that the fact that more recent science has called into question the lower snag densities cited in the earlier research, and the more recent science implies that about 4 snags per acre may be the minimum required to insure viability.

What surveys has the BDNF specifically designed to detect flammulated owls? The FS has not developed a conservation strategy for the flammulated owl in the BDNF, or in the Northern Rockies. Absent an appropriate landscape management strategy for insuring their viability, based upon the best available science, it is arbitrary and capricious to dismiss potential impacts on the ground where the FS has failed to conduct the kind of comprehensive surveys that would reveal their presence. This convenient excuse for not protecting for a species that is becoming exceedingly rare, a strategy of managing for extinction (since protection premised on detection affords greatest protection to the species that least need it) has been condemned by the FS's own leading expert in the northern region, Mike Hillis:

> With the exception of the Spotted Owl…, the U.S. Forest Service has not given much emphasis to owl management. This is contrary to the National Forest

> Management Act of 1976 (NFMA) which mandates that all wildlife species be managed for viable populations. However, with over 500 vertebrate species this would be difficult for any organization. Recognizing the absence of detailed information on owl habitat, the apparent association of owls with snags, mature, and old-growth timber (both rapidly declining), it seems inconsistent that the U.S. Forest Service has placed little emphasis on owl management. One might conclude that the agency's painful experiences with the Spotted Owl in Oregon and Washington have evolved into a 'hear no evil, see no evil' approach for other forest owls as well.

The NPCNF's Lolo Insect & Disease DEIS states: "The nest tree is the most important variable to estimate breeding habitat use by the pileated woodpecker (Kirk and Naylor 1996, Giese and Cuthbert 2003) …The mean DBH of nest trees was 33 inches. …Nest trees averaged 28 inches DBH." (Emphases added.)

Bull et al., 2007 compare the effects of natural disturbance with large-scale logging on pileated woodpeckers. Also see Bull et al., 1992, Bull and Holthausen, 1993, and Bull et al., 1997 for biology of pileated woodpeckers and the habitats they share with cavity nesting wildlife.

Lorenz et al., 2015 state:

> Our findings suggest that higher densities of snags and other nest substrates should be provided for PCEs

> (primary cavity excavators) than generally recommended, because past research studies likely overestimated the abundance of suitable nest sites and underestimated the number of snags required to sustain PCE populations. Accordingly, the felling or removal of snags for any purpose, including commercial salvage logging and home firewood gathering, should not be permitted where conservation and management of PCEs or SCUs (secondary cavity users) is a concern (Scott 1978, Hutto 2006).

The implication is clear: managers know little about how many snags per acre are needed to sustain populations of cavity nesting species. Only the birds themselves have the capability to decide if a tree is suitable for excavating. The EA and Forest Plan fails to recognize this scientific finding.

On the same subject, Hutto 2006, notes from the scientific literature: "The most valuable wildlife snags in green-tree forests are relatively large, as evidenced by the disproportionate number of cavities in larger snags (Lehmkuhl et al. 2003), and are relatively deteriorated (Drapeau et al. 2002)."

Spiering and Knight (2005) examined the relationship between cavity-nesting birds and snag density in managed ponderosa pine stands and examined if cavity-nesting bird use of snags as nest sites was related to the following snag characteristics (DBH, snag height, state of decay, percent bark cover, and the presence of broken top), and if evidence of foraging on snags was related to the following snag characteristics: tree species, DBH, and state of decay. Spiering and Knight (2005) state:

> "Many species of birds are dependent on snags for nest sites, including 85 species of cavity-nesting birds in North America (Scott et al. 1977). Therefore, information of how many and what types of snags are required by cavity-nesting bird species is critical for wildlife biologists, silviculturists, and forest managers."
>
> "Researchers across many forest types have found that cavity-nesting birds utilize snags with large DBH and tall height for nest trees (Scott, 1978; Cunningham et al., 1980; Mannan et al., 1980; Raphael and White, 1984; Reynolds et al., 1985; Zarnowitz and Manuwal, 1985; Schreiber and deCalesta, 1992)."

Spiering and Knight (2005) found the following.

> Larger DBH and greater snag height were positively associated with the presence of a cavity, and advanced stages of decay and the presence of a broken top were negatively associated with the presence of a cavity. Snags in larger DBH size classes had more evidence of foraging than expected based on abundance.
>
> Percent bark cover had little influence on the presence of a cavity. Therefore, larger and taller snags that are not heavily decayed are the most likely locations for cavity-nesting birds to excavate cavities.

> The association of larger DBH and greater height of snags with cavities is consistent with other studies (Scott, 1978; Cunningham et al., 1980; Mannan et al., 1980; Raphael and White, 1984; Reynolds et al., 1985; Zarnowitz and Manuwal, 1985; Schreiber and deCalesta, 1992).

Spiering and Knight (2005) state that the "lack of large snags for use as nest sites may be the main reason for the low densities of cavity-nesting birds found in managed stands on the Black Hills National Forest. ...The increased proportion of snags with evidence of foraging as DBH size class increased and the significant goodness-of-fit test indicate that large snags are the most important for foraging."

Tingley et al., 2016 note the diversity of habitats following a fire is related to <u>the diversity of burn severities:</u> "(W)ithin the decade following fire, different burn severities represent unique habitats whose bird communities show differentiation over time… Snags are also critical resources for many bird species after fire. Increasing densities of many bird species after fire—primarily wood excavators, aerial insectivores, and secondary cavity nesters—can be directly tied to snag densities…"

One issue that arises is the abundance of the large snags and down wood remaining from past logging, firewood gathering, and other management, following the proposed logging, and—<u>the nuance ignored in this EA</u>—through time as recruitment becomes practically nil after a few years in logged areas due to most or all of the large trees being removed and/or downed. Since the EA suggests that beyond the analysis area (the entire Forest and to the Region) adequate habitat values would remain, the agency is obligated to provide the numbers and conduct a scientifically sound cumulative effects analysis—including the impacts of past logging, firewood gathering, etc. The FS has not done this. The project area was logged in the past, which obviously has affected recruitment of large snags. As we discuss above, the nesting tree needs of the pileated woodpecker is of a larger size than the FS acknowledges or analyzes. And the EA makes no commitment towards assuring retention of the largest tree habitat at the unit, project area, or any landscape scale.

Mealey, 1983 stated: "Well distributed habitat is the amount and location of required habitat which assure that individuals from demes, distributed throughout the population's existing range, can interact. Habitat should be located so that genetic exchange among all demes is possible." That document also provides guidance for pileated woodpecker habitat distribution.

Northern goshawk
The EA fails to include a cumulative effects analysis considering past and ongoing impacts in a logical cumulative effects analysis area for goshawks.

Crocker-Bedford (1990) investigated changes in northern goshawk habitat utilization following logging. He noted:

> After partial harvesting over extensive locales around nest buffers, reoccupancy decreased by an estimated 90% and nestling production decreased by an estimated 97%. Decreases were probably due to increased competition from open-forest raptors, as well as changes in hunting habitat and prey abundance.

Clough (2000) noted that in the absence of long-term monitoring data, a very conservative approach to allowing logging activities near active goshawk nest stands should be taken to ensure that goshawk distribution is not greatly altered. This indicates that the full 180-acre nest area management scheme recommended by Reynolds et al. (1992) should be used around any active goshawk nest on the Forest. Removal of any large trees in the 180-acre nesting area would contradict the Reynolds et al. (1992) guidelines.

The EA doesn't explain how the FS would be managing in considerations of Reynolds et al. (1992) scientific recommendations. Reynolds, et al. 1992, calls for protecting northern goshawk nest areas around 3 nests and 3 alternative nests against adverse impacts in each home range. However, the EA does not invoke best available science to maintain any nest areas, or accurately disclosed how the approved activities might impact such areas.

Reynolds et al. 1992 calls for ratios of (20%/20%/20%) each in the mid-aged forest, mature forest, and old forest

Vegetative Structural Stage (VSS) classes for, in this case hypothetical post-fledging family areas (PFAs) and foraging areas.

In addition, Reynolds et al. 1992 calls for agency-created openings of no more than 2 acres in size or less in the PFAs, depending on forest type, and agency-created opening of no more than 1-4 acres or less in size in the foraging areas, depending on forest type.

Along with Reynolds et al., 1992, another conservation strategy for the goshawk is Graham, et al., 1999. Research suggests that it is essential to viability of goshawks that 20-50% of old growth within their nesting areas be maintained (Suring et al. 1993, Reynolds et al. 1992). USDA Forest Service (2000b) recommends that forest opening greater than 50-60 acres be avoided in the vicinity of goshawks. At least five years of monitoring is necessary to allow for effective estimates of habitat quality (USDA Forest Service, 2000b). Research suggests that a localized distribution of 50% old growth should be maintained to allow for viability of goshawks (Suring et al. 1993).

Moser and Garton (2009) reported that all goshawk nests examined in their study area were found in stands whose average diameter of overstory trees was over 12.2 inches and all nest stands had ≥ 70% overstory tree canopy. They described their findings as being similar to those described by Hayward and Escano (1989), who reported that nesting habitat "may be described as mature to overmature conifer forest with a closed canopy (75-85% cover)…."

The EA fails to recognize goshawk long-term fidelity to nest stands.

Also please consider Beier and Drennan (1997), Crocker-Bedford (1990), Greenwald et al. (2005), Hayward and Escano (1989), La Sorte, et al. (2004), USDA Forest Service (2000b) and Patla (1997) as best available science for northern goshawk biology.

Please disclose the frequency and geographic extent of goshawk nest searches during the past 10 years in the project area.

The FS did not utilize goshawk survey methodology consistent with the best available science. For example the recent and comprehensive protocol, "Northern Goshawk Inventory and Monitoring Technical Guide" by Woodbridge and Hargis, 2006. Also, USDA Forest Service 2000b state:

> A common thread in the interviews was the lack of a landscape approach in providing goshawk habitat well distributed across the Forest (Squires, Reynolds, Boyce). Reynolds was deeply concerned that both alternatives focus only on 600 acres around known goshawk nests. He was concerned that this direction could be keeping the goshawk population artificially low. Because goshawks move around within their

> territories, they are very difficult to find (Reynolds). There might be more goshawks on the Forest than currently known (Squires). One or two years of goshawk surveys is not enough (Reynolds). Some pairs may not lay eggs for five years (Reynolds). To get confidence in identifying nesting goshawk pairs, four to six years of surveys are needed (Reynolds). (Emphasis added.)

The FS's Samson (2006a) reports says that 110 breeding individuals (i.e. 55 pairs) are necessary for a viable goshawk population in R1. Attachment 1 is a map showing the results from the 2005 R1 region-wide goshawk survey using their Woodbridge and Hargis goshawk monitoring protocol, which is published as a USFS technical report. The 2005 detection map says there were 40 detections in 2005 in Region 1. So the results of this survey essentially show that the population in Region 1 is not viable according to the agency's own science (only 40 instead of 55). And some of the detections may have been individuals using the same nest, so the number of nests (and therefore number of breeding pairs) could be even lower than 40.

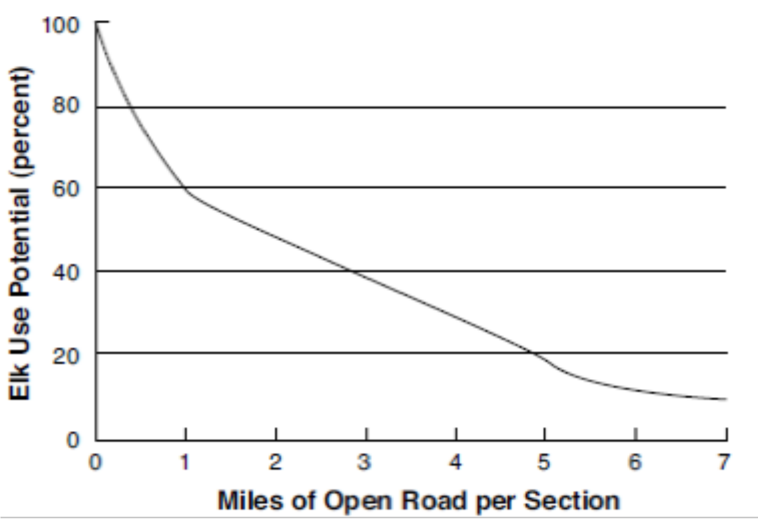
<u>Elk and other Big game</u>
The EA does not present an adequate quantitative or qualitative analysis of security and thermal cover.

The EA does not demonstrate consistency with all forest plan direction. The EA does not present an analysis explaining how meeting the big game security direction in the Forest Plan assures that population viability is maintained, or maintains quality hunting opportunities.

The science is clear that motorized access via trail, road, or oversnow adversely impact habitat for the elk. Servheen, et al., 1997 indicate that motorized trails increase elk vulnerability and reduce habitat effectiveness, and provide scientific management recommendations.

Christensen, et al. (1993) is a Region One publication on elk habitat effectiveness. Meeting a minimum of 70% translates to about 0.75 miles/sq. mi. in key elk habitat, as shown in their graph:

5. Levels of habitat effectiveness:




Carnefix and Frissell, 2009 make a very strong scientific rationale for including ecologically-based road density standards:

Roads have well-documented, significant and widespread ecological impacts across multiple scales, often far beyond the area of the road "footprint". Such impacts often create large and extensive departures from the natural conditions to which organisms are adapted, which increase with the extent and/or density of the road network. Road density is a useful metric or indicator of human impact at all scales broader than a single local site because it integrates impacts of human disturbance from activities that are associated with roads and their use (e.g., timber harvest, mining, human wildfire ignitions, invasive species introduction and spread, etc.) with direct road impacts. Multiple, convergent lines of empirical evidence summarized herein support two robust conclusions: 1) no truly "safe" threshold road density exists, but rather negative impacts begin to accrue and be expressed with incursion of the very first road segment; and 2) highly significant impacts (e.g., threat of extirpation of sensitive species) are already apparent at road densities on the order of 0.6 km per square km (1 mile per square mile) or less. Therefore, restoration strategies prioritized to reduce road densities in areas of high aquatic resource value from low-to-moderately-low levels to zero-to-low densities (e.g., <1 mile per square mile, lower if attainable) are likely to be most efficient and effective in terms of both economic cost and ecological benefit. By strong inference from these empirical studies of systems and species sensitive to humans' environmental impact, with limited exceptions, investments that only reduce high road

> density to moderate road density are unlikely to produce any but small incremental improvements in abundance, and will not result in robust populations of sensitive species.

<u>Black-backed woodpecker</u>
The EA fails to consider best available science for the Sensitive black-backed woodpecker analysis, and includes inadequate cumulative effects analysis.

The EA does not analyze or disclose the quality of habitat based on prefire management activities that scientific research has found affects postfire woodpecker utilization.

The Sensitive species black-backed woodpecker is a primary cavity nester, and also the closest thing to an indicator for species depending upon the process of wildland fire in the ecosystem. Cherry (1997) states:

> The black-backed woodpecker appears to fill a niche that describes everything that foresters and fire fighters have attempted to eradicate. For about the last 50 years, disease and fire have been considered enemies of the 'healthy' forest and have been combated relatively successfully. We have recently (within the last 0 to 15 years) realized that disease and fire have their place on the landscape, but the landscape is badly out of balance with the fire suppression and insect and disease reduction activities (i.e. salvage logging) of the last 50 years. Therefore, the black-backed woodpecker is likely not to be abundant as it once was, and continued fire

> suppression and insect eradication is likely to cause further decline.

The FS manages against severely burned forests. The viability of black-backed woodpeckers is threatened by the FS's fire suppression and other "forest health" policies which specifically attempt to prevent its habitat from developing. "Insect infestations and recent wildfire provide key nesting and foraging habitats" for the black-backed woodpecker and "populations are eruptive in response to these occurrences" (Wisdom et al. 2000). The timber sale would reduce habitat the black-backed woodpecker biologically relies on. Viability of a species cannot be assured, if habitat suppression is a forestwide policy.

Cherry (1997) notes:

> Woodpeckers play critical roles in the forest ecosystem. Woodpeckers are primary cavity nesters that excavate at least one cavity per year, thus making these sites available to secondary cavity nesters (which include many species of both birds and mammals). Black-backed and three-toed woodpeckers can play a large role in potential insect control. The functional roles of these two woodpecker species could easily place them in the 'keystone' species category—a species on which other species depend for their existence.
>
> Wickman (1965) calculated that woodpeckers may eat up to 50 larvae per day that were each about 50 mm in length. The predation on these larvae is significant. It

has been estimated that individual three-toed woodpeckers may consume thousands of beetle larvae per day, and insect outbreaks may attract a many-fold increase in woodpecker densities (Steeger et al. 1996). The ability of woodpeckers in to help control insect outbreaks may have previously been underestimated.

Black-backed woodpeckers preferred foraging in trees of 34 cm (16.5 in) diameters breast height and (63 ft) 19 m height (Bull et al. 1986). Goggans et al. (1987) found the mean dbh of trees used for foraging was 37.5 cm (15 in) and the mean dbh of trees in the lodgepole pine stands used for foraging was 35 cm (14 in). Steeger et al. (1996) found that both (black-backed and three-toed) woodpecker species fed in trees from 20-50 cm (8-20 in) dbh.

Black-backed woodpeckers excavate their own cavities in trees for nesting. Therefore, they are referred to as primary cavity nesters, and they play a critical role in excavating cavities that are later used by many other species of birds and mammals that do not excavate their own cavity (secondary cavity nesters). Black-backed woodpeckers peel bark away from the entrance hole and excavate a new cavity every year. Other woodpeckers sometimes take over their cavities (Goggans et al. 1987).

Also, FS biologists Goggans et al., 1989 studied black-backed woodpecker use of unburned stands in the

Deschutes NF in Oregon. They discovered that the black-backed woodpeckers used unlogged forests more than cut stands. In other words, effects to the black-backed woodpecker accrue from logging forest habitat that has not been recently burned.

FS biologists Hillis et al., 2002 note that "In northern Idaho, where burns have been largely absent for the last 60 years, black-backed woodpeckers are found amid bark beetle outbreaks, although not at the densities found in post-burn conditions in Montana." Those researchers also state, "The greatest concerns for this species, however, are decades of successful fire suppression and salvage logging targeted at recent bark beetle outbreaks." Hillis et al., 2002 also state:

> Black-backed woodpeckers occupy forested habitats that contain high densities of recently dead or dying trees that have been colonized by bark beetles and woodborer beetles (Buprestidae, Cerambycidae, and Scolytidae). These beetles and their larvae are most abundant within burned forests. In unburned forests, bark beetle and woodborer infested trees are found primarily in areas that have undergone natural disturbances, such as wind-throw, and within structurally diverse old-growth forests (Steeger and Dulisse in press, Bull et al. 1986, Goggans et al. 1987, Villard 1994, Hoffman 1997, Weinhagen 1998).

Hutto, 1995 states: "Fires are clearly beneficial to numerous bird species, and are apparently necessary for some." (Emphasis added.) Hutto, 1995 whose study keyed on forests burned in 1988, noted:

> Contrary to what one might expect to find immediately after a major disturbance event, I detected a large number of species in forests that had undergone stand-replacement fires. Huff et al. (1985) also noted that the density and diversity of bird species in one- to two-year-old burned forests in the Olympic Mountains, Washington, were as great as adjacent old-growth forests…
>
> …Several bird species seem to be relatively restricted in distribution to early post-fire conditions… I believe it would be difficult to find a forest-bird species more restricted to a single vegetation cover type in the northern Rockies than the Black-backed Woodpecker is to early [first 6 years] post-fire conditions. (Emphases added.)

USDA Forest Service 2011c states:

> Hutto (2008), in a study of bird use of habitats burned in the 2003 fires in northwest Montana, found that within burned forests, there was one variable that exerts an influence that outstrips the influence of any other variable on the distribution of birds, and that is fire severity. Some species, including the black-backed woodpecker, were relatively abundant only in the high-severity patches. Hutto's preliminary results also suggested burned forests that were harvested fairly intensively (seed tree cuts, shelterwood cuts) within a

> decade or two prior to the fires of 2003 were much less suitable as post-fire forests to the black-backed woodpecker and other fire dependent bird species. Even forests that were harvested more selectively within a decade or two prior to fire were less likely to be occupied by black-backed woodpeckers.

Also see the agency's Fire Science Brief, 2009, which states, "Hutto found that Black-backed Woodpeckers fared best on sites unharvested before fire and poorest in the heavily harvested sites."

How will the Greenhorn project effect black-backed woodpeckers?

Hutto, 2008 states, "severely burned forest conditions have probably occurred naturally across a broad range of forest types for millennia. These findings highlight the fact that severe fire provides an important ecological backdrop for fire specialists like the Black-backed Woodpecker, and that the presence and importance of severe fire may be much broader than commonly appreciated."

Hutto, 2006 states:

> The profound failure of many decision makers to appreciate the ecological value of burned forests stems from their taking too narrow a view of what forests provide. …Land managers, politicians, and the public-at-large need to gain a better appreciation of the unique nature of burned forests as ecological communities, …

> and how important the legacy of standing deadwood is to the natural development of forests (Franklin et al. 2000).

Bond et al., 2012a explain the need for a conservation strategy for the black-backed woodpecker:
In California, the Black-backed Woodpecker's strong association with recently burned forest, a habitat that is ephemeral, spatially restricted, and often greatly modified by post-fire logging, as well as the species' relative rarity, may make the woodpecker vulnerable to declines in the state. Additionally, Black-backed Woodpeckers in California are affected by the management of unburned forests – both because pre-fire stand conditions affect the suitability of post-fire habitat for the species, and because a substantial proportion of California's Black-backed Woodpeckers nest and forage at a low population density in unburned forests. Conserving the Black-backed Woodpecker in California likely requires appropriate management and stewardship of the habitat where this species reaches its highest density – recently burned forest – as well as appropriate management of 'green' forests that have not burned recently

The EA does not disclose the quantity and quality of habitat that is necessary to sustain the viability of the black-backed woodpecker, or an explanation of the FS's methodology for measuring this habitat.

Holt and Hillis, "Current Status and Habitat Associations of Forest Owls in Western Montana" (1987).

State-of-the-art conservation biology and the principles that underlie the agency's policy of "ecosystem management" dictate an increasing focus on the landscape-scale concept and design of large biological reserves accompanied by buffer zones and habitat connectors as the most effective (and perhaps only) way to preserve wildlife diversity and viability (Noss, 1993).

The FS has stated: "Well distributed habitat is the amount and location of required habitat which assure that individuals from demes, distributed throughout the population's existing range, can interact. Habitat should be located so that genetic exchange among all demes is possible." (Mealey 1983.)

The FS has acknowledged that viability is not merely a project area consideration, that the scale of analysis must be broader:

> Population viability analysis is not plausible or logical at the project level such as the scale of the Dry Fork Vegetation and Recreation Restoration EA. Distributions of common wildlife species as well as species at risk encompass much larger areas than

> typical project areas and in most cases larger than National Forest boundaries. No wildlife species that presently occupy the project area are at such low numbers that potential effects to individuals would jeopardize species viability. No actions proposed under the preferred alternative would conceivably lead to loss of population viability. (Lewis and Clark NF, Dry Fork EA Appendix D at p. 9.)

The FS should firmly establish that the species that exist, or historically are believed to have been present in the analysis area are still part of viable populations. Since Forest Plan monitoring efforts have failed in this regard, it must be a priority for project analyses. Identification of viable populations is something that must be done at a specific geographic scale. The analysis must cover a large enough area to include a cumulative effects analysis area that would include truly viable populations. Analysis must identify viable populations of MIS, TES, at-risk, focal, and demand species of which the individuals in the analysis area are members in order to sustain viable populations.

Unfortunately, region-wide the FS has failed to meet Forest Plan old-growth standards, does not keep accurate old-growth inventories, and has not monitored population trends in response to management activities as required by Forest Plans and NFMA (Juel, 2003).

Please disclose how stands to be treated compare to Forest Plan or Regional old-growth criteria. In order to disclose such information, please provide all the details, in plain language, of these areas' forest characteristics (the various tree components' species, age and diameter of the various tree components, canopy closure, snag density by size class, amounts of down logs, understory composition, etc.).

One of the biggest problems with the FS's failure to deal forthrightly with the noxious weed problem on a forest wide basis is that the long-term costs are never adequately disclosed or analyzed. The public is expected to continuously foot the bill for noxious weed treatments—the need for which increases yearly as the BDNF continues the large-scale propagation of weeds, and fails to monitor the effectiveness of all its noxious weed treatment plans to date. There is no guarantee that the money needed for the present management direction will be supplied by Congress, no guarantee that this amount of money will effectively stem the growing tide of noxious weed invasions, no accurate analysis of the costs of the necessary post-treatment monitoring, and certainly no genuine analysis of the long-term costs beyond those incurred by site specific weed control actions.

The Economic section states the project will cost taxpayers $563,000. Does this include the cost of weed control?

Does this include the money the Forest Service or the Forest Service Foundation has paid the collaborative groups to support this project?

How much has the Forest Service or the Forest Service Foundation paid the collaborative groups support this project in the last 10 years?

Our goals for the area include fully functioning stream ecosystems that include healthy, resilient populations of native trout. The highest priority management actions in the project area are those that remove impediments to natural recovery. We request the FS design a restoration/access management plan for project area streams that will achieve recovery goals. The task of management should be the reversal of artificial legacies to allow restoration of natural, self-sustaining ecosystem processes. If natural disturbance patterns are the best way to maintain or restore desired ecosystem values, then nature should be able to accomplish this task very well without human intervention (Frissell and Bayles, 1996).

Please utilize the NEPA process to clarify any roadless boundary issues. It is not adequate to merely accept previous, often arbitrary roadless inventories—unroaded areas adjacent to inventoried areas were often left out.

Additionally, there is a lot of public support for adding unroaded areas as small as 1,000 acres in size to the roadless inventory. Please examine if these unroaded areas adjacent to roadless areas have wilderness qualities.

Page 10 of the EA states: "No commercial timber harvest, road construction or reconstruction is proposed within the boundaries of the Sheep Mountain Inventoried Roadless Area. Vegetation objectives are met through prescribed burning and hand slashing or non-commercial thinning. Prescribed burning treatments are proposed in lowland sagebrush habitats. Hand slashing and non-commercial thinning is proposed in sagebrush grasslands and aspen stands to reduce conifer encroachment."

This is a violation of the roadless rule.

The Roadless Rule states in part:
Prohibition on timber cutting, sale, or removal in inventoried roadless areas.
(a) Timber may not be cut, sold, or removed in inventoried roadless areas of the National Forest System, except as provided in paragraph (b) of this section.
(b) Notwithstanding the prohibition in paragraph (a) of this section, timber may be cut, sold, or removed in inventoried roadless areas if the Responsible Official determines that one of the following circumstances exists. The cutting, sale, or removal of timber in these areas is expected to be

infrequent.

(1) The cutting, sale, or removal of generally small diameter timber is needed for one of the following purposes and will maintain or improve one or more of the roadless area characteristics as defined in § 294.11.

(i) To improve threatened, endangered, proposed, or sensitive species habitat; or

(ii) To maintain or restore the characteristics of ecosystem composition and structure, such as to reduce the risk of uncharacteristic wildfire effects, within the range of variability that would be expected to occur under natural disturbance regimes of the current climatic period;

(2) The cutting, sale, or removal of timber is incidental to the implementation of a management activity not otherwise prohibited by this subpart;

(3) The cutting, sale, or removal of timber is needed and appropriate for personal or administrative use, as provided for in 36 CFR part 223; or

(4) Roadless characteristics have been substantially altered in a portion of an inventoried roadless area due to the construction of a classified road and subsequent timber harvest. Both the road construction and subsequent timber harvest must have occurred after the area was designated an inventoried roadless area and

prior to January 12, 2001. Timber may be cut, sold, or removed only in the substantially altered portion of the inventoried roadless area.

36 C.F.R. § 294.13 (2005).
219. The Roadless Rule further explains subsection (b)(2) as follows: "Paragraph

(b)(2) allows timber cutting, sale, or removal in inventoried roadless areas when incidental to implementation of a management activity not otherwise prohibited by this rule. Examples of these activities include, but are not limited to trail construction or maintenance; removal of hazard trees adjacent

to classified road for public health and safety reasons; fire line construction for wildland fire suppression or control of prescribed fire; survey and maintenance of property boundaries; other authorized activities such as ski runs and utility corridors; or for road construction and reconstruction where allowed by this rule." 66 Fed. Reg. 3258 (Jan. 12, 2001)

For over 15 years, the Roadless Rule was the subject of litigation. See e.g. Kootenai Tribe of Idaho v. Veneman, 313 F.3d 1094, 1126 (9th Cir. 2002); California ex rel. Lockyer v. U.S. Dep't of Agric., 575 F.3d 999, 1007 (9th Cir. 2009); Wyoming v. U.S. Dep't of Agric., 661 F.3d 1209, 1272 (10th Cir. 2011); Organized Vill. of Kake v. U.S. Dep't of Agric., 795 F.3d 956, 962 (9th Cir. 2015) (en banc); Alaska v. United States Dep't of Agric., 273 F. Supp. 3d 102, 108–12 (D.D.C. 2017). Nonetheless, the Roadless Rule is still in effect.

Why is the project violating the roadless rule?

This is big game winter range as per the Forest Plan. The EA failed to define what the specific habitat objectives are for this winter range, including hiding and thermal cover, as well as forage. Juniper and sagebrush are key forage plants for big game on winter ranges. What are the objectives for these forage species? The Forest Plan direction for this management area is binding. If the agency is going to claim that the Forest Plan is being implemented, you need to specifically define how this is being done, instead of simply claiming that juniper and shrub removal is improvement on big game winter range. Also, the science and monitoring behind this claim need to be provided. Currently mule deer populations have been in decline across the western U.S.. We haven't seen any science that reported increases of mule deer populations following removal of juniper and shrubs on their winter ranges.

One issue that is generally ignored in the scoping document is what shrubs are present, and will be targeted for masticating and burning. Do these control efforts include sagebrush? There is extensive documentation that sagebrush is highly valuable to both elk and deer on winter ranges (Wambolt 1998, Petersen 1993). Removing sagebrush to increase grasses on winter range, as is suggested in the EA, does not promote mule deer and elk. Sagebrush has a high protein content of almost 13% in the winter, while dormant grasses have a protein content of less than 4% (Peterson 1993). There can be no valid reason to remove sagebrush and replace it with grasses for big game winter forage. The actual replacement species the agency claims are going to be managed for are never identified. But at a minimum, the rationale for removing shrubs and replacing them with grasses on winter range needs to be documented, as is required by the NEPA.

The claim that this project will increase diversity is pure unsupported rhetoric. There is no definition as to what constitutes diversity. What criteria are being used to measure diversity, and why isn't this information provided to the public? For example, what is the criteria for a diversity of age classes in juniper woodlands or sagebrush, and what is this based on? The NEPA requires that the agency provide reliable, valid information to the public on projects. This claim that removing juniper and shrubs will improve diversity is a clear violation of the NEPA, as there is no actual basis for it. Worse, it is not clear why eliminating trees and shrubs increases diversity as per the standard definitions. What science claims that a grassland has higher habitat diversity than a woodland or forest, or shrubland? One likely factor driving the proposed project is not promotion of big game species and wildlife, but instead is being done for livestock. This may be why there is no actual discussion in the scoping notice of current livestock grazing practices in this landscape.

The claim that thinning and removing juniper will increase resiliency of this area is highly questionable. First, these forests are not highly flammable as per the current science. Second, thinning will likely increase flammability by increasing wind speeds and vegetation drying due to a reduction of shade. Third, flammability will surely be increased over current conditions due to an increase of grasses, including exotic species as cheatgrass. The scoping notice did not provide any actual science to indicate that thinning will reduce fires, and thereby increase “resiliency” of this winter range.

The EA did not provide any monitoring data on the effect of the fire on adjacent areas for use by big game as winter range, or how this fire affected the extent of exotic vegetation, such as cheatgrass and other weeds. Since the proposed actions will be somewhat similar in effect, it would seem to be important for the agency to provide this information to the public.

The EA never provides any monitoring data, or references any current science, as to what the specific problems are in this landscape for wildlife. How did the agency determine that the current conditions are causing problems for wildlife? In general, one would not expect trees to be a problem for wildlife, especially juniper which is a highly valuable resource for wildlife, not just for forage, including berries, but as hiding and thermal cover. How has the agency determined that hiding cover are too high in this winter range? What are the objectives for hiding and thermal cover which are the target for management intervention?

The proposed action is very extensive for conclusions that it will not significantly change and degrade conditions for wildlife. It is not clear how this was determined.

The EA lacks some important information, such as what species of shrubs are going to be slashed and burned. Why aren't these shrubs being used by wildlife? There is no formation as to what these plant species are, and why they will have more value to wildlife than the existing shrubs and juniper that are to be removed.

Overall, the EA is a huge violation of the NEPA because the public is provided essentially no information as to why this project will benefit wildlife. At a minimum, the agency needs to demonstrate to the public that this is in fact the case. The scoping notice also did not provide any information as to how the resource specialists determined that the project will not lead to any significant effects on wildlife. These conclusions need to be documented for the public, including criteria that were used and evaluated to measure levels of significant impact. As just one question, if the Forest Plan standard to manage this area to promote big game species on their winter range is not being followed, this would most likely trigger significant impacts. It seems like that this is Forest Plan violation to promote livestock grazing over wildlife in this landscape. Juniper removal has been a long- standing practice to promote livestock grazing, not wildlife. The scoping notice did not discuss the current grazing use of this area by livestock.

This information needs to be included as important information to the public.

Overall, the EA is devoid of any useful information to the public as to why this project enhances wildlife habitat, or is needed to maintain natural ecosystem processes within an IRA. Iff juniper is so flammable, it is not clear why it has to be slashed before it can be burned. It is clear that this project requires much more information to be provided to the public, and much more documentation to justify vegetation management within the Elkhorn Mountain IRA. And as previously noted, the criteria which the resource specialists used to estimate the level of impact needs to be provided, as well, to the public. It seems readily apparent that this project requires at a minimum an environmental assessment in order to comply with the NEPA, including the provision of valid, reliable information to the public when the Forest Service is planning resource management activities.

Please see the attached paper by Dr. William Baker titled: "Are High-Severity Fires Burning at Much Higher Rates Recently than Historically in Dry-Forest Landscapes of the Western USA?"

Dr. Baker writes: "Programs to generally reduce fire severity in dry forests are not supported and have significant adverse ecological impacts, including reducing habitat for native species dependent on early-suc- cessional burned patches and decreasing landscape heterogeneity that confers resilience to climatic change."

Dr. Baker concluded: “Dry forests were historically renewed, and will continue to be renewed, by sudden, dramatic, high-intensity fires after centuries of stability and lower-intensity fires.”

The purpose of this project is to improve big game and grouse habitat and to make the forest more resilient and plan for a more historic fire regime. Based on Dr. Baker’s paper, the proposed action will not meet the purpose and need of the project.

Dr. Baker’s paper is the best available science. Please explain why this project is not following the best available science.

Please explain include a discussion of the following:

1. Baker and Shinneman. 2004. Fire rotation for high-severity fire in juniper is estimated at 400-480 years.

2. Floyd and others. 2004. Stand replacing fires in juniper 400 years or longer.

3. Bauer and Weisberg. 2009. The fire cycle in pinyon-juniper was estimated at 427 years.

What evidence do you have that shows fire has been suppressed in the area?

Baker and Shinneman (2004), Bauer and Weisberg (2009), and Floyd et al. 2004) that demonstrate that the fire cycle in juniper woodlands is very long, up to 400 years or longer, and has not been impacted by any fire suppression actions since settlement. In addition, Coop and Magee (Undated) noted that low-severity fire is not generally considered to have played an important role in shaping patterns of pre-settlement pinyon-juniper woodland structure, where fire regimes were mostly characterized by rare stand-replacing fire; as a result, they noted that direct management interventions such as thinning or fuel reductions may not represent ecological restoration.

We request a careful analysis of the impacts to fisheries and water quality, including considerations of sedimentation, increases in peak flow, channel stability, risk of rain-on-snow events, and increases in stream water temperature. Please disclose the locations of seeps, springs, bogs and other sensitive wet areas, and the effects on these areas of the project activities. Where livestock are permitted to graze, we ask that you assess the present condition and continue to monitor the impacts of grazing activities upon vegetation diversity, soil compaction, stream bank stability and subsequent sedimentation.  This watershed has been proposed as bull trout critical habitat.  How will the project effect arctic grayling and their habitat?

Please disclose in the NEPA document the results of up-to-date monitoring of fish habitat and watershed conditions and how this project will affect the fish in the project area.

It is extremely important the FS disclose the environmental <u>baseline</u> for watersheds.  Generally, this means their condition <u>before</u> development or resource exploitation was initiated.  For example, the baseline condition of a stream means the habitat conditions for fish and other aquatic species prior to the impacts of road building, logging, livestock grazing, etc. Therefore, proper disclosure of baseline conditions would mean estimates of stream stability, pool frequency conditions, and water temperature range—essentially the values of Riparian Management Objectives along with such parameters as sediment levels. When such information is provided, comparison with the current conditions (after impacts of development) will aid in the assessment of cumulative effects of all alternatives.

Mechanical treatments may adversely affect soil productivity. NFMA requires the FS to "not allow significant or permanent impairment of the productivity of the land." [36 C.F.R. § 219.27(a)(1).] NFMA requires the Forest Service to "ensure that timber will be harvested from National Forest System lands only where—soil, slope, or other watershed conditions will not be irreversibly damaged." [16 U.S.C. 1604 (g)(3)(E).]

The Sheep Creek Salvage FEIS (USDA Forest Service, 2005a) states at p. 173:

> Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (Centaurea biebersteinii D.C.) impacts phosphorus levels at sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).

Please disclose how the productivity of the land been affected in the project area and forestwide due to noxious weed infestations, and how that situation is expected to change in the coming years and decades.

Harvey et al., 1994 state:

The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant. Nitrogen and carbon have been mentioned and are probably the most important. Although the movement and cycling of many others are mediated by microbes, sulfur phosphorus, and iron compounds are important examples.

The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of

> plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.)

Lacy, 2001 examines the importance of soils for ecosystem functioning and points out the failure of most regulatory mechanisms to adequately address the soils issue. From the Abstract:

> Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients. While there are dozens of federal environmental laws protecting and addressing a wide range of natural resources and issues of environmental quality, there is a significant gap in the protection of the soil resource. Despite the critical importance of maintaining healthy and sustaining soils, conservation of the soil resource on public lands is generally relegated to a diminished land management priority. Countless activities, including livestock grazing, recreation, road building, logging, and mining, degrade soils on public lands. This article examines the

> roots of soil law in the United States and the handful of soil-related provisions buried in various public land and natural resource laws, finding that the lack of a public lands soil law leaves the soil resource under protected and exposed to significant harm. To remedy this regulatory gap, this article sketches the framework for a positive public lands soil protection law. This article concludes that because soils are critically important building blocks for nearly every ecosystem on earth, an holistic approach to natural resources protection requires that soils be protected to avoid undermining much of the legal protection afforded to other natural resources.

The article goes on:

> Countless activities, including livestock grazing, recreation, road building, logging, mining, and irrigation degrade soils on public lands. Because there are no laws that directly address and protect soils on the public lands, consideration of soils in land use planning is usually only in the form of vaguely conceived or discretionary guidelines and monitoring requirements. This is a major gap in the effort to provide ecosystem-level protection for natural resources.

The rise of an "ecosystem approach" in environmental and natural resources law is one of the most significant aspects of the continuing evolution of this area of law and policy. One writer has observed that there is a

> fundamental change occurring in the field of environmental protection, from a narrow focus on individual sources of harm to a more holistic focus on entire ecosystems, including the multiple human sources of harm within ecosystems, and the complex social context of laws, political boundaries, and economic institutions in which those sources exist.

As federal agencies focus increasingly on addressing environmental protection from an holistic perspective under the current regime of environmental laws, a significant gap remains in the federal statutory scheme: protection of soils as a discrete and important natural resource. Because soils are essential building blocks at the core of nearly every ecosystem on earth, and because soils are critical to the health of so many other natural resources—including, at the broadest level, water, air, and vegetation—they should be protected at a level at least as significant as other natural resources. Federal soil law (such as it is) is woefully inadequate as it currently stands. It is a missing link in the effort to

> protect the natural world at a meaningful and effective ecosystem level.
>
> … This analysis concludes that the lack of a public lands soil law leaves the soil resource under-protected and exposed to significant harm, and emasculates the environmental protections afforded to other natural resources.

(Emphasis added.) The problems Lacy (2001) identifies of regulatory mechanisms exist in Regional and Forest-level standards and other guidance applicable for the proposed project.

Please provide estimates of current detrimental disturbance in all previously established activity areas in the watersheds affected by the proposal.

Please disclose the link between current and cumulative soil disturbance in project area watersheds to the current and cumulative impacts on water quantity and quality. Please disclose if there are any WQLS streams or TMDL streams in the project area.

Please disclose measures of, or provide scientifically sound estimates of, detrimental soil disturbance or soil productivity losses (erosion, compaction, displacement, noxious weed spread) attributable to off-road vehicle use.

Please disclose the results monitoring of weed treatments on the BDNF that have been projected to significantly reduce noxious weed populations over time, or prevent spread. This is an ongoing issue of land productivity.

Please disclose how the proposed "treatments" would be consistent with Graham, et al., 1994 recommendations for fine and coarse woody debris, a necessary consideration for sustaining long-term soil productivity.

It has been well-established that site-specific Biological Evaluations (BEs) or Biological Assessments (BAs) must be prepared for all actions such as this. Further, the Forest Service Manual requires that BEs/BAs consider cumulative effects. The Forest Service Manual states that project BEs/BAs must contain "a discussion of cumulative effects resulting from the planned project in relationship to existing conditions and other related projects" [FSM 2672.42(4)]. "Existing conditions" obviously are the current conditions of the resources as a result of past actions.

Published scientific reports indicate that climate change will be exacerbated by logging due to the loss of carbon storage.  Additionally, published scientific reports indicate that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Project). The former indicates that the Pintler Project may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Project. Therefore, the Forest Service must candidly disclose, consider, and fully discuss the published scientific papers discussing climate change in these two contexts.  At least the Forest Service should discuss the attached following studies:

- Depro, Brooks M., Brian C. Murray, Ralph J. Alig, and Alyssa Shanks. 2008.  Public land, timber harvests, and climate mitigation: quantifying carbon sequestration potential on U.S. public timberlands. Forest Ecology and Management 255: 1122-1134.

- Harmon, Mark E. 2001. Carbon sequestration in forests: addressing the scale question.  Journal of Forestry 99:4: 24-29.

- Harmon, Mark E, William K. Ferrell, and Jerry F. Franklin. 1990. Effects of carbon storage of conversion of old-growth forest to young forests. Science 247: 4943: 699-702

- Harmon, Mark E, and Barbara Marks. 2002. Effects of silvicultural practices on carbon stores in Douglas-fir – western hemlock forests in the Pacific Northwest, USA: results from a simulation model. Canadian Journal of Forest Research 32: 863-877.

- Homann, Peter S., Mark Harmon, Suzanne Remillard, and Erica A.H. Smithwick. 2005. What the soil reveals: potential total ecosystem C stores of the Pacific Northwest region, USA. Forest Ecology and Management 220: 270-283.

- McKenzie, Donald, Ze'ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. Conservation Biology 18:4: 890 -902.

We continuously hear from the FS and politicians, the suggestion that beetle kill is causing larger wildfires. But the scientific evidence suggests otherwise. At least in my experience many collaborates also seldom challenge the FS assertions that we need to thin or log lodgepole pine forests to reduce beetle kill and/or remove beetle kill trees due to the presumed increase in wildfires that might result. Yet if you look at the research on this subject, you will find that beetle kill is unlikely to affect fire and in some cases may reduce fire spread.

In the paper: Relative importance of climate and mountain pine beetle outbreaks on the occurrence of large wildfires in the western US

Authors

Nathan Mietkiewicz,

Dominik KulakowskiAbstract

Abstract: Extensive outbreaks of bark beetles have killed trees across millions of hectares of forests and woodlands in western North America. These outbreaks have led to spirited scientific, public and policy debates about consequential increases in fire risk, especially in the wildland-urban interface (WUI), where homes and communities are at particular risk from wildfires. At the

same time, large wildfires have become more frequent across this region. Widespread expectations that outbreaks increase extent, severity and/or frequency of wildfires are based partly on visible and dramatic changes in foliar moisture content and other fuel properties following outbreaks, as well as associated modeling projections. A competing explanation is that increasing wildfires are driven primarily by climatic extremes, which are becoming more common with climate change. However, the relative importance of bark beetle outbreaks versus climate on fire occurrence has not been empirically examined across very large areas and remains poorly understood. The most extensive outbreaks of tree-killing insects across the western United States have been of mountain pine beetle (MPB; Dendroctonus ponderosae), which have killed trees over > 650,000 km2, mostly in forests dominated by lodgepole pine (Pinus contorta). Here we show that outbreaks of MPB in lodgepole pine forests of the western United States have been less important than climatic variability for the occurrence of large fires over the past 29 years. In lodgepole pine forests in general, as well as those in the WUI, occurrence of large fires was determined m co-occurrence of wildfires and outbreaks are due to a common climatic driver rather than interactions between these disturbances. Reducing wildfire risk hinges on addressing the underlying climatic drivers, rather than treating beetle-affected forests.

Why is the Forest Service ignoring the Kosterman threshold for clearcutting (no more than 15% per LAU) and the mature forest conservation requirement (conserve it all in- cluding at least 50% per LAU)?

Kosterman finds that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. This contradicts the agency's assumption in the Lynx Amendment that 30% of lynx habitat can be clearcut, and that no specific amount of mature forest needs to be conserved. It is now the best available science out there that describes lynx habitat in the Northern Rockies related to lynx viability and recovery. Kosterman's study demonstrates that the Lynx Amendment standards are not adequate for lynx viabili- ty and recovery, as previously assumed by the Forest Service.

Kosterman's Thesis says that clearcutting more than 10-15% of a lynx home range results in declines in reproduction. Many National Forests allows more clearcut- ting than this. The Lynx Amendment allows up to 30% clearcutting in a home range, which means that habitat has declined and is declining from the levels nec- essary for reproduction and therefore survival and recovery.

Kosterman's Thesis recommends conserving mature/old growth forest and main- taining 50% mature/old growth in each lynx home range. No National Forest is complying with that due to past and current logging, which means that habitat has declined and is declining from the levels necessary for reproduction and therefore survival and recovery.

Squires says that lynx avoid clearcuts.

FWS has no idea what the population of lynx is because they don't do lynx popula- tion monitoring. In light of the government's failure to monitor lynx population trends, it would be disingenuous for FWS to argue that "there is no evidence of population decline" because the reason that "there is no evidence" is because the government refuses to conduct monitoring. In light of the government's failure to monitor and document populations and population trends, the Forest Service and the FWS must apply the precautionary principle and assume that the effects of al- lowing logging that does not comply with Kosterman and Squires findings is re- sulting in population declines.

Since this is now the best available science we are hereby formally requesting that the Forest Service write a supplemental EIS for the Northern Rockies Lynx Man- agement Direction and reinitiate consultation with the FWS for the Lynx Amendment to publicly disclose and address the findings of this study, and to allow for further public comment on this important issue of lynx recovery.

Page 93 of the 2016 Fleecer EA states: "In July, 2013 the U.S. Fish and Wildlife Service updated the "Threatened, Endangered and Candidate Species for the Beaverhead-Deerlodge National Forest" and the Canada lynx was added to the BDNF list as "Transient; secondary/peripheral lynx habitat"; where it remains (USDI Fish and Wildlife Service 2016)."

The Forest straddles the mountains of the Continental Divide and contains nationally renowned trout streams, elk populations, and some of last wild refuges for many threatened, endangered, and sensitive fish and wildlife species.

In particular, the Forest and Project area provide habitat for grizzly bears, wolverines, Canada lynx, gray wolves, and westslope cutthroat trout.

Ruggiero et al (1999), the Forest Service's General Technical Report "Ecology and Conservation of Lynx in the United States," states that lynx are present in the Forest.

Ruediger et al (2000), the agencies' "Canada lynx conservation assessment and strategy," considers the Forest within the geographic extent of the strategy.

The Montana Department of Fish, Wildlife, and Parks has compiled a database of lynx occurrences and distribution throughout Montana from 1977 -1998. This information was mapped on pages 244 and 247 of Ruggiero et al (1999) and shows numerous occurrences in the Forest.

In Squires (2003), the Forest Service documents: "Discussions with local trappers and biologists indicate that lynx were present in the Pioneer Mountains prior to the late 1990's, and had been detected during winter track surveys as recently as 2000 (Forkan 2000). This fact is substantiated by the number of trapped lynx from this area in the 1970s." Elsewhere, the report notes "[f]rom 1977 to 1994, 39 lynx oc- currences were recorded in the Pioneer Mountains, including 13 harvested individ- uals (McKelvey et al. 2000). Snow-track surveys performed as recently as 2000 indicated that lynx were present along the Scenic Byway (Forkan 2000)."

In Squires (2003), the Forest Service documented the results of winter tracking surveys. The record indicates two (2) sets of lynx tracks were found in the Forest near the Project area, within the Big Hole landscape area

(which is the analysis area for wildlife security for the Project). The report con- cludes that "lynx were either absent or at very low densities during our study." (emphasis added).

The U.S. Fish and Wildlife Service's final map (2003) for lynx shows that the For- est is within the range of both resident and dispersing lynx.

Berger (2009) found one set of potential lynx tracks in the Forest during winter tracking surveys, as well as one set outside the Forest boundary that was heading towards the Forest boundary.

In Devineau (2010), the State of Colorado Division of Wildlife documented loca- tions of radio-collared lynx released in Colorado. The record shows multiple lynx traveling in the Forest (approximately four (4) individuals), including at least two individual lynx traveling in the Project area. One of the individuals inhabited the Madison Range for approximately two weeks.

In litigation over lynx critical habitat in 2010, the U.S. Fish and Wildlife Service admitted that the Forest is occupied for the purpose of designating lynx critical habitat. Alliance for Wild Rockies v. Lyder, 728 F.Supp.2d 1126, 1133 (D. Mont. 2010)("Plaintiffs take exception to the Service's failure to designate the Beaver- head-Deerlodge [and certain other National Forests] as lynx critical habitat. [FN4] . . . In response, the government acknowledges the record shows such forests to be occupied . . . .")

The Forest Service's Fleecer Mountains Watershed Assessment (2009) indicates that lynx are "potentially" "likely to be present" in the Project area. It also states "f]rom 1988 to 1999 there are 72 reports of lynx being trapped or observed in the Pioneers, Big Hole Mountains and Fleecer Range."

The Project area contains agency-designated "linkage areas" for the Canada lynx: one on the north end of the Project area heading northwest to the Anaconda Mountains and Anaconda-Pintler Wilderness, and one to the southwest heading to the Pi- oneer Mountains.

The Project analysis and impacts on ESA-listed Canada lynx violate the ESA, NEPA, and NFMA.

The Federal District Court of Montana recently ordered the USFWS to reconsult on lynx critical habitat because they did not base lynx critical habitat on where lynx were at the time of listing in 2000. Lynx were in the project area at the time of listing so the Forest Service needs to consult with the FWS to see if this project could effect lynx critical habitat.

The Forest Plan analysis and impacts on ESA-listed lynx violate ESA, NFMA, and NEPA.

The Forest Service's failure to take a hard look at lynx presence and the Forest Plan's potential impacts on lynx, using the best available science, including the agency's failure to assess the Forest Plan's impacts on lynx travel/ linkage corri- dors, violates NEPA. See Pacific Rivers Council v. U.S.

Forest Service, --- F.3d ----, 2012 WL 336133 (9th Cir. 2012).

The Forest Service's failure to include binding legal standards aimed at conserving and recovering ESA-listed lynx on the Forest in the Forest Plan violates NFMA.

The FS approval and implementation of the Lynx Management Direction is arbi- trary and capricious, violates NEPA's hard look requirement and scientific integrity mandate and fails to apply the best available science necessary to conserve lynx. The Lynx Direction contains no protection or standard for conservation of winter lynx habitat (old growth forests). This project allows the logging of thousands of

acres of old growth without any analysis of whether that forest is necessary for conservation as winter lynx habitat. Please take a hard look at this factor. By failing to include a provision to protect winter lynx habitat, the Lynx Direction fails to apply the best available science and implement the measures necessary for lynx conservation, as required by the ESA. The Lynx

Direction also arbitrarily exempts WUI lands from lynx habitat protection. If this exemption did not exists, the project could not proceed because the logging autho- rized by the projects violates at least one of the protection for lynx habitat.

The Lynx Amendment and its Biological Opinion/ Incidental Take Statement allow unrestricted logging in the wildland urban interface, which the agencies estimate to compose approximately 6% of the lynx habitat on National Forests. The EA nor the DN explain where the WUI is in relation to the projects and the LAUs but merely state that the entire project lies within the WUI bounder. EA p. 164, foot note 11. Also, it is not clear why the project does not utilize the Lynx Amendment wildland urban interface map to define WUI, the correct definition for WUI, but instead uses the definition in the Healthy Forest Restoration Act. If the projects were to use the correct definition of WUI, the project could not proceed. The failure to comply with logging restrictions outside the WUI violates NFMA. The failure to adequate- ly address this issue in the EA and demonstrate compliance with the Lynx Amend- ment violates NEPA.

The analysis of the impacts to lynx in the EA and the DN is extremely limited and it inappropriately uses an LAU that excessively large, allowing the impacts to be minimized. The current best science suggests that female lynx home range as about 10,000 acres. The project area is almost 10 times the size. The analysis in the EA is invalid.

The current science demonstrates that lynx must travel between areas of high hare densities and resist traveling through low cover areas in winter. The EA fails to identify the amount of non or low cover areas that will be created from the project. The project fails to use the best available science in regard to lynx habitat. The best available science is now Kosterman's masters Thesis, "Correlates of Canada Lynx Reproductive Success in Northwestern Mon- tana" This study finds that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. This contradicts the agency's assumption in the Lynx Amendment that 30% of lynx habitat can be clearcut, and that no specific amount of mature forest needs to be conserved. It is now the best available science out there that describes lynx habitat in the Northern Rockies related to lynx viability and recovery. Kosterman's study demonstrates that the Lynx Amendment standards are not adequate for lynx viability and recovery, as assumed by the Forest Service

The current best science indicates that lynx winter foraging habitat is critical to lynx persistence (Squires et al. 2010), and that this habitat should be "abundant and well-distributed across lynx habitat." (Squires et al. 2010; Squires 2009.) Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006.)

Lynx winter habitat, provided only in older, multi-storied forests, is critical for lynx preservation. (Squires et al. 2010.) Winter is the most constraining season for lynx in terms of resource use; starvation mortality has been found to be the most com- mon during winter and early spring. (Squires et al. 2010.) Prey availability for lynx is highest in the summer. (Squires et al. 2013.)

Squires et al. (2013) noted in their research report that some lynx avoided crossing highways; in their own report, they noted that only 12 of 44 radio- tagged lynx with home ranges including 2- lane highways crossed them. Openings, whether

small in uneven-aged management, or large with clearcutting, remove lynx winter travel habitat on those affected acres, since lynx avoid openings in the winter. (Squires et al. 2010.)

Squires et al., 2010 reported that lynx winter habitat should be “abundant and spa- tially well- distributed across the landscape. Those authors also noted that in heavi- ly managed landscapes, retention and recruitment of lynx habitat should be a prior- ity.

The Northern Rockies Lynx Management Direction is inadequate to ensure con- servation and recovery of lynx. The amendments fail to use the best available sci- ence on necessary lynx habitat elements, including but not limited to, failing to in- clude standards that protect key winter habitat. The

Endangered Species Act requires the FS to insure that the project is not likely to result in the destruction or adverse modification of critical habitat. 16 U.S.C. §1536(a)(2). Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably re- duces the conservation value of critical habitat for lynx. 74 Fed. Reg. 8644.

The Northern Rockies Lynx Management Direction (NRLMD) as applied in the project violates the ESA by failing to use the best available science to insure no adverse modification of critical habitat. The NRLMD carves out exemptions from Veg Standards S1, S2, S5, and S6. In particular, fuel treatment projects may occur in the WUI even though they will not meet standards Veg S1, S2, S5, or S6, pro- vided they do not occur on more than 6% of lynx habitat on each National Forest. See NRLMD ROD, Attachment 1, pages 2-3. Allowing the agency to destroy or adversely modify any lynx critical habitat has the potential to appreciably reduce the conservation value of such habitat. The agency cannot simply set a cap at 6% forest-wide without looking at the individual characteristics of each LAU to determine whether the project has the potential to appreciably reduce the conservation value. The ESA requires the use of the best available science at the site-specific level. It does not allow the agencies to make a gross determination that allow- ing lynx critical habitat to be destroyed forest-wide while not appreciably reduce the conservation value.

Standard S2 prohibits projects that do regenerate more than 15% of lynx habitat on NFS lands within an LAU in a 10-year period. The EA and DN do not provide the number of acres with in the LAU that have been harvested within the last 10-years and fails to take previous project in account in regards to Veg Standard S2.

The FS violated NEPA by applying the above-mentioned exception without analyz- ing the impacts to lynx in the individual LAUs. The Project violates the NFMA by failing to insure the viability of lynx. According to the 1982 NFMA regulations, fish and wildlife must be managed to maintain viable populations of Canada lynx in the planning area. 36 C.F.R. 219.19. The FS has not shown that lynx will be well-distributed in the planning area. The FS has not addressed how the project's adverse modification of denning and foraging habitat will impact distribution. This is important because the agency readily admits that the LAUs already contain a "relatively large percentage of un-suitable habitat." The NRLMD ROD at 40 states that: The national forests subject to this new direction will provide habitat to maintain a viable population of lynx in the northern Rockies by maintaining the current distribution of occupied lynx habitat, and maintaining or enhancing the quality of that habitat."

A big problem with the Forest Plan (including the NRLMD) is that it allows with few exceptions the same level of industrial forest management activities that oc-curred prior to Canada lynx ESA listing.

The Northern Rockies Lynx Management Direction appeal decision requires the FS to consult with the US Fish and Wildlife Service regarding LAUs andd lynx critical habitat. The Wildlife Report, Frost 2017, states that the effects determination for lynx is "may affect, likely to adversely affect. This means that listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure.

The project does not have a take permit from the USFWS and is in violation of the ESA, NFMA, the APA and NEPA. The ESA (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct". The USFWS further defines "harm" as "significant habitat modifi- cation or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "ha- rass" as "actions that create the likelihood of injury to listed species to such an ex- tent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering". The project will harm lynx.

Squires found that lynx avoid clearcuts for up to 50 years. A big problem with the Forest Plan and the NRLMD is that it allows with few exceptions the same level of industrial forest management activities that occurred prior to Canada lynx ESA listing. The FS approval and implementation of the NRLMD and the revised Beaverhead-DeerlodgeNational Forest Forest Plan is arbitrary and capricious, violates NEPA's hard look requirement and scientific integrity mandate and fails to apply the best available science necessary to conserve lynx. The NRLMD or the revised BDNF Forest Plan contain no protection or standard for conservation of winter lynx habitat (old growth forests).

Please disclose if the FS conducted lynx occurrence surveys of habitat in the LAUs.

Please disclose if surveys target snowshoe hare occurrence data in these stands newly considered unsuitable for lynx.

Also, the EA doesn't indicate if the FS surveyed any areas (proposed for logging and/or burning or not) thought to not be lynx habitat based on mapping or stand data were surveyed to confirm unsuitable habitat conditions.

The current science demonstrates that lynx must travel between areas of high hare densities and resist traveling through low cover areas in winter. The EA fails to identify the amount of non-cover or low-cover areas that will be created from the project.

It appears the FS doesn't have a coherent strategy for recovering lynx from their Threatened status, including linking currently populated areas with each other through important linkages such as project area LAUs.

Please analyze and disclose cumulative impacts of recreational activities on lynx, such as snowmobiles. As the KNF's Galton FEIS states, "The temporal occurrence of forest uses such ... winter (skiing and snowmobiling) ... may result in a temporary displacement of lynx use of that area..."

Please quantify and disclose the cumulative effects on Canada lynx due to trapping or from use of the road and trail networks in the project area.

Please analyze and disclose how lynx habitat capacity for denning will be impaired by project activities.

The USFWS listed the Canada lynx as a threatened species under the Endangered Species Act in 2000 due to "lack of guidance for conservation of lynx and snowshoe hare habitat..." and subsequent authorization of actions that may cumulatively adversely affect the lynx. Relatively little is known about lynx in the contiguous United States. Historically, lynx inhabited states spanning from Maine to Washington, but it is unknown how many lynx remain.

Lynx are highly mobile and generally move long distances [greater than 60 mi. (100 km.)]; they disperse primarily when snowshoe hare populations decline; subadult lynx disperse even when prey is abundant, presumably to establish new home ranges; and lynx also make exploratory movements outside their home ranges. 74 Peg. Reg. at 8617. The contiguous United States is at the southern edge of the boreal forest range, resulting in limited and patchy forests that can support snowshoe hare and lynx populations.

Lynx subsist primarily on a prey base of snowshoe hare, and survival is highly dependent upon snowshoe hare habitat, forest habitat where young trees and shrubs grow densely. In North America, the distribution and range of lynx is nearly "coincident" with that of snowshoe hares, and protection of snowshoe hares and their habitat is critical in lynx conservation strategies.

Since more often than not when the FS conducts logging projects in LAUs surveys of stands for lynx habitat result in less suitable habitat than previously assumed, the FS needs to take a few steps backward and consider that its range-wide Canada lynx suitable habitat estimations were too high.

Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity. The importance of maintaining lynx linkage zones is also recognized by the FS's Lynx Conservation Assessment and Strategy (LCAS), as revised in 2013, which stresses that landscape connectivity should be maintained to allow for movement and dispersal of lynx.

Squires et al. (2013) noted in their research report that some lynx avoided crossing highways; in their own report, they noted that only 12 of 44 radio-tagged lynx with home ranges including 2- lane highways crossed them.

The current best science indicates that lynx winter foraging habitat is critical to lynx persistence (Squires et al. 2010), and that this habitat should be "abundant and well-distributed across lynx habitat." (Squires et al. 2010; Squires 2009.) Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006a.)

Lynx winter habitat, provided only in older, multi-storied forests, is critical for lynx preservation. (Squires et al. 2010.) Winter is the most constraining season for lynx in terms of resource use; starvation mortality has been found to be the most common during winter and early spring. (Squires et al. 2010.) Prey availability for lynx is highest in the summer. (Squires et al. 2013.)

Openings, whether small in uneven-aged management, or large with clearcutting, remove lynx winter travel habitat on those affected acres, since lynx avoid openings in the winter. (Squires et al. 2010.)

Squires et al., 2010 reported that lynx winter habitat should be “abundant and spatially well- distributed across the landscape.” Those authors also noted that in heavily managed landscapes, retention and recruitment of lynx habitat should be a priority.

The LCAS (Ruediger et al. 2000) recommends, until conclusive information is developed concerning lynx management, the agencies retain future options; that is, choose to err on the side of maintaining and restoring habitat for lynx and their prey. To err on the side of caution, the KNF would retain all remaining stem exclusion forests for recruitment into lynx winter habitat, so that this key habitat would more closely resemble historic conditions.

As early as 2000, the LCAS noted that lynx seem to prefer to move through continuous forest (1- 4); lynx have been observed to avoid large openings, either natural or created (1-4); opening and open forest areas wider than 650 feet may restrict lynx movement (2-3); large patches with low stem densities may be functionally similar to openings, and therefore lynx movement may be disrupted (2-4). Squires et al. 2006a reported that lynx tend to avoid sparse, open forests and forest stands dominated by small-diameter trees during the winter. Squires et al. 2010 again reported that lynx avoid crossing clearcuts in the winter; they generally avoid forests composed of small diameter saplings in the winter; and forests that were thinned as a silvicultural treatment were generally avoided in the winter.

Squires et al. 2010 show that the average width of openings crossed by lynx in the winter was 383 feet, while the maximum width of crossed openings was 1240 feet.

Recent scientific findings undermine the Forest Plan/ NRLMD direction for management of lynx habitat. This creates a scientific controversy the FS fails to resolve, and in fact it essentially ignores it.

For one, Kosterman, 2014 found that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. Young regenerating forest should occur only on 10-15% of a female lynx home range, i.e. 10-15% of an LAU. This renders inadequate the agency's assumption in the Forest Plan/NRLMD that 30% of lynx habitat can be open, and that no specific amount of mature forest needs to be conserved. Kosterman, 2014 demonstrates that Forest Plan/NRLMD standards are not adequate for lynx viability and recovery.

Also, the Forest Plan essentially assumes that persistent effects of vegetation manipulations other than regeneration logging and some intermediate treatments are essentially nil. However, Holbrook, et al., 2018 “used univariate analyses and hurdle regression models to evaluate the spatio-temporal factors influencing lynx use of treatments.” Their analyses “indicated ...there was a consistent cost in that lynx use was low up to ~10 years after all silvicultural actions.” (Emphasis added.) From their conclusions:

First, we demonstrated that lynx clearly use silviculture treatments, but there is a ~10 year cost of implementing any treatment (thinning, selection cut, or regeneration cut) in terms of resource use by Canada lynx. This temporal cost is associated with lynx preferring advanced regenerating and mature structural stages (Squires et al., 2010; Holbrook et al., 2017a) and is consistent with previous work demonstrating a negative effect of precommercial thinning on snowshoe hare densities for ~10 years (Homyack et al., 2007). Second, if a treatment is implemented, Canada lynx used thinnings at a faster rate post- treatment (e.g.,~20 years posttreatment to reach 50% lynx use) than either selection or regeneration cuts (e.g., ~34–40 years post-treatment to reach 50% lynx use). Lynx appear to use regeneration and selection cuts similarly over time suggesting the difference in vegetation impact between these treatments made little difference concerning the potential impacts to lynx (Fig. 4c). Third, Canada lynx tend to avoid silvicultural treatments when a preferred structural stage (e.g., mature, multi-storied forest or advanced regeneration) is abundant in the surrounding landscape, which highlights the importance of considering landscape-level composition as well as recovery time. For instance, in an area with low amounts of mature forest in the neighborhood, lynx use of recovering silvicultural treatments would be higher versus treatments surrounded by an abundance of mature forest (e.g., Fig. 3b). This scenario captures the importance of post-treatment recovery for Canada lynx when the landscape context is generally composed of lower quality habitat. Overall, these three items emphasize that both the spatial arrangement and composition as well as recovery time are central to balancing silvicultural actions and Canada lynx conservation.

So Holbrook et al., 2018 fully contradict Forest Plan assumptions that clearcuts/regeneration can be considered useful lynx habitat as early as 20 years post-logging.

Results of a study by Vanbianchi et al., 2017 also conflict with Forest Plan/NRLMD assumptions: "Lynx used burned areas as early as 1 year postfire, which is much earlier than the 2–4 decades postfire previously thought for this predator." The NRLMD erroneously assumes clearcutting/ regeneration logging have basically the same temporal effects as stand-replacing fire as far as lynx re-occupancy.

Kosterman, 2014, Vanbianchi et al., 2017 and Holbrook, et al., 2018, Holbrook 2019 demonstrate that Forest Plan direction is not adequate for lynx viability and recovery, as the FS assumes. Holbrook 2019 such all lynx habitat must be surveyed.  You have not done this.

The Forest Plan/FEIS fail to describe the quantity and quality of habitat that is necessary to sustain the viability of the Canada lynx.

Significantly, in the 2018 order, this Court explained that consultation on the Northern Rockies Lynx Management Direction, commonly referred to as the “Lynx Amendment,” was not sufficient in part because the Lynx Amendment only applies to mapped “lynx habitat” on the Forest. Id. at 1070. Thus, areas on the Forest where lynx “may be present” that are not mapped as “lynx habitat” are not covered by the Lynx Amendment consultation. Id. Accordingly, the primary purpose of the 2018 remand was for the agencies to consult on the entire Forest, including areas of the Forest that are not mapped as “lynx habitat” but where lynx nonetheless “may be present.” See id.

On August 24, 2021, the agencies filed a second motion to dissolve the injunction. The agencies provide the Court with a new 2021 Biological Assessment and Biological Opinion for the Forest Plan. Doc. 93-9 (Biological Assessment); Doc. 93-1 (Biological Opinion). However, this new consultation suffers from the same flaw that the Court found with the Lynx Amendment consultation in its 2018 order – the analysis is incomplete because it addresses mapped “lynx habitat” where the Lynx Amendment applies, instead of all areas where lynx “may be present” on the Forest. For this reason, the motion to dissolve the injunction should be denied. Alternatively, or in addition, dissolution is not equitable at this time because the agencies have unlawfully stripped legal protections for lynx from 1.1 million acres during the remand in this case. Accordingly, this Project should not move forward until the agencies comply with their legal obligations under the ESA, NEPA, and NFMA regarding this de facto Forest Plan amendment that removed lynx protections on almost one-third of the Forest.

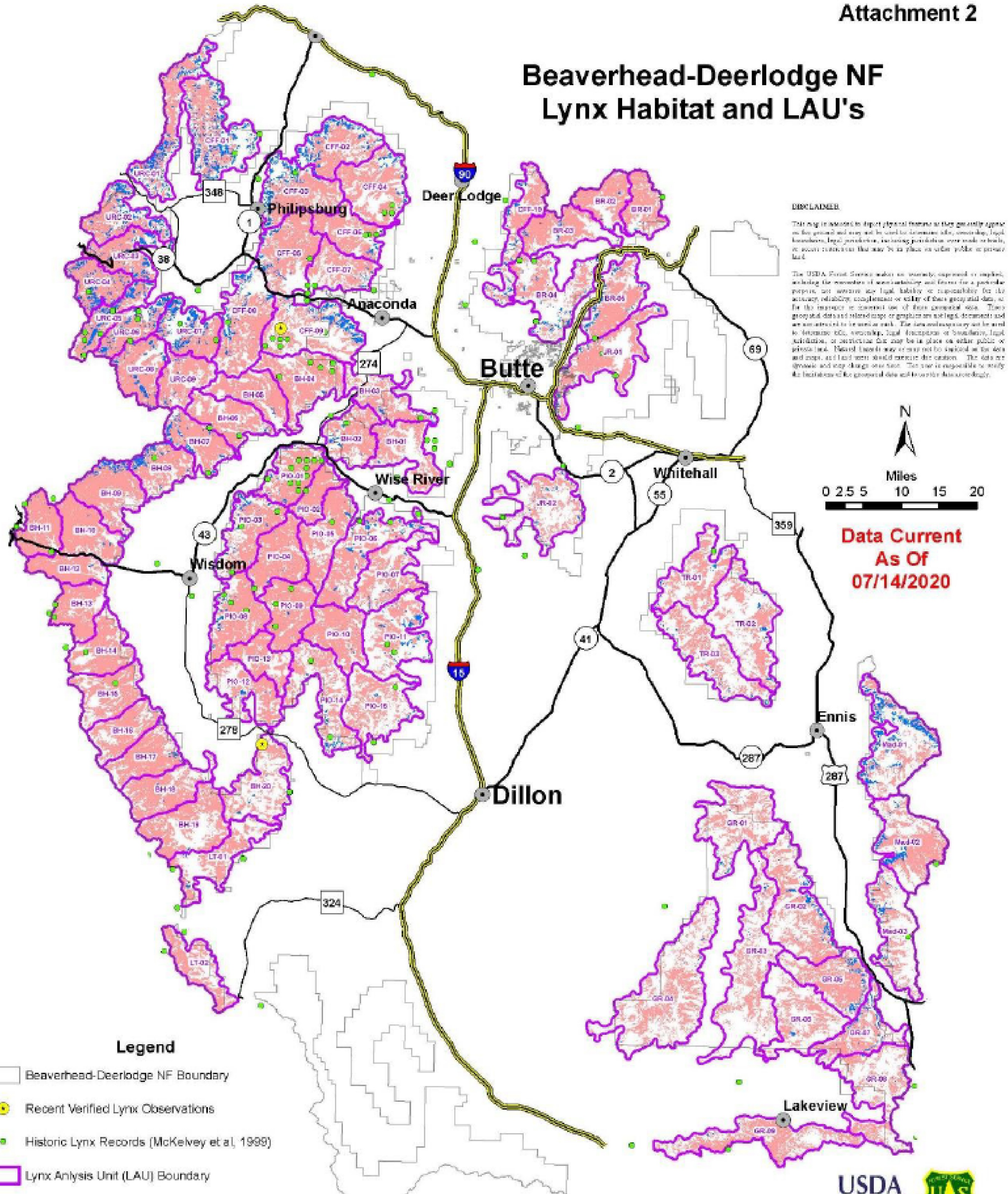
As set forth below in more detail, this case is similar to Native Ecosystems in that the agencies engaged in a new ESA consultation on remand, but the consultation does not contain the analysis ordered by the Court in its 2018 remand order. Thus, in this case, as in Native Ecosystems, the motion to dissolve the injunction should be denied. Furthermore, during the remand for this case, the Forest Service has effectively issued a programmatic Forest Plan amendment with its decision to strip away protections for lynx from 1.1 million acres of the Forest. This removal of protections for lynx applies to the Fleecer Project. However, the agencies did not conduct any NEPA or NFMA analysis or ESA consultation for this de facto Forest Plan amendment. Thus, for this additional reason, dissolution of the injunction may be denied because the dissolution is not equitable under these circumstances.

The new Forest Plan consultation addresses effects to lynx within mapped "lynx habitat," but does not address the effects to lynx in areas that are not mapped "lynx habitat" but where lynx "may be present," which was the purpose of the remand.

The Beaverhead-Deerlodge National Forest covers approximately 3.4 million acres. Doc. 93-9 at 10.[1] In 2020, the agencies mapped approximately 1.5 million acres of the Forest as "lynx habitat." Doc. 93-9 at 17 (Table 5). The agencies consider these areas of mapped "lynx habitat" to be "occupied" by lynx. Doc. 93-9 at 6. However, these areas of mapped "lynx habitat" do not directly correspond to areas of known lynx detections, both historic and recent. Doc. 93-9 at 100. The map below shows area of mapped "lynx habitat" in color, with green and yellow circles to indicate known historic and recent detections:

Attachment 2

# Beaverhead-Deerlodge NF Lynx Habitat and LAU's




## Legend

Beaverhead-Deerlodge NF Boundary

Recent Verified Lynx Observations

Historic Lynx Records (McKelvey et al, 1999)

Lynx Anlysis Unit (LAU) Boundary

Lynx Habitat

| | | |
|---|---|---|
| Primary Vegetation | | 1,509,146 acres |
| Secondary Vegetation | | 116,660 acres |
| | Total | 1,625,806 acres |

MXD Location

Pdf file Location

**Lynx Habitat Definitions**

**Primay** Vegetation Habitat:
- abla1, abla2, abla3, abla4, abla5, picea habitat types
- Snow depth greater than 50 cm

**Secondary** Vegetation Habitat:
- psme2, abgr2, abgr3 Habitat Types
- Snow depth greater than 50 cm
- Distance to primary habitat 300 meters or less

USDA

*USDA is an equal opportunity provider, employer, and lender.*

Beaverhead-Deerlodge NF
7/14/2020

Map Created By: J. ONeil

This map replaces all versions of same title printed with prior dates.

As noted above, the agencies have determined that lynx "may be present" across the entire Forest. Krueger, 348 F.Supp.3d at 1068. Thus, while approximately 1.5 million acres of the Forest is mapped "lynx habitat," Doc. 93-9 at 17, another 1.9 million acres (more than half the Forest) is not mapped "lynx habitat," but still constitutes an area where lynx "may be present, " see Doc. 93-9 at 10; Krueger, 348 F.Supp.3d at 1068.

In its 2018 remand order in this case, this Court held:

Because there are provisions of the Forest Plan other than the Lynx Amendment that "may affect" lynx outside of the areas protected by the Lynx Amendment, and because the FWS determined that lynx "may be present" throughout the forest, a plaintiff may still bring a section 7 consultation claim to the broader Forest Plan itself. See Native Ecosystems Council v. Marten, 334 F.Supp.3d 1124, 1131, 2018 WL 3831339, at *4 (D. Mont. Aug. 13, 2018) (stating that "the Lynx Amendment only applies to mapped lynx habitat on National Forest System land presently occupied by Canada lynx" and holding that a forest-wide determination that lynx "may be present" arguably requires consultation of an agency action that "may affect" lynx but where "compliance with the Lynx Amendment is not required.") Such is the case here.

The Forest Service must complete an ESA consultation for the Forest Plan that includes an analysis of how lynx may be affected on areas of this Forest that are not mapped "lynx habitat" but nonetheless are areas where lynx "may be present." Id. As noted above, that area is 1.9 million acres. The agencies have not complied with the remand order in this case because they have not yet provided this analysis.

In the January 4, 2021, Forest Plan Biological Assessment, the Forest Service uses "the 2020 updated lynx habitat model to disclose potential effects and set the current existing conditions."

As the agency summarizes: "Impacts to lynx and their habitat have been considered in the context of the modeled lynx habitat on the Forest, vegetation conditions, anticipated amount and distribution of forest activities (e.g., timber projects, recreation expansion), and guidance within the Forest Plan and the Northern Rockies Lynx Management Direction. Since all areas of modeled lynx habitat are considered occupied, lynx are presumed to be present, including both resident or dispersing." Furthermore, regarding cumulative impacts, the Forest Service discloses: "[f]or this analysis, the cumulative effects boundary consists of all 2020 modeled lynx habitat both within and outside of the [Beaverhead-Deerlodge National Forest]."

Similarly, the FWS's responsive 2021 Forest Plan Biological Opinion states: "In order to fully address effects of implementing the 2009 Revised Forest Plan, the Forest provided lynx habitat information. The information provided consists of a broad scale estimate of lynx habitat across the Forest intended to provide an overall picture of the current status of lynx habitat." Doc. 93-1 at 9 (emphases added). FWS then summarizes the analysis of effects to mapped lynx habitat set forth in the Forest Service Biological Assessment. FWS also provides an analysis of only those portions of existing projects that "occur within mapped lynx habitat . . . ." Doc. 93-1 at 29.

Both the Forest Plan Biological Assessment and Forest Plan Biological Opinion limit their analyses to effects to mapped lynx habitat, which is now considered to be "occupied." However, in the Fleecer case, the federal district court remanded to the agencies to address all potential effects to lynx across the entire Forest, specifically including those areas that are not mapped as "lynx habitat." As noted above, the areas that are not mapped as "lynx habitat" where lynx nonetheless "may be present" constitute approximately 1.9 million acres across the Forest.

The federal district court denied a motion to dissolve under similar circumstances in the Fleecer project. In that case, this Court "enjoined Defendants from proceeding with their project until Defendants conducted a site-specific biological opinion for both Canada lynx and grizzly bear." Subsequently, the Forest Service "submitted a new biological opinion for both grizzly bear and Canada lynx. . . [and sought] dissolution of the injunction." Id. This Court then held:

"The Court's order required the new biological opinion to analyze "all logging associated activities." . . . The new biological opinion fails to contemplate any effects on grizzly bear from the logging activity itself . . . . Defendants have failed to comply, therefore, with this Court's order to conduct a new biological opinion that analyzes the impacts to grizzly bears of "all logging associated activities."'

The Court further enjoined the Fleecer project until the Forest Service conducted a new biological opinion that analyzed project impacts on Canada lynx. The previous first-tier biological opinion required a site-specific biological opinion to consider whether assumptions made in the original biological opinion were valid. . . . The Forest Service failed to consider, however, whether these vegetation treatment projects are affecting lynx in the way anticipated by the 2007 Biological Opinion. Without that analysis, the second-tier Biological Opinion fails to perform the role anticipated in the first-tier biological opinion.

The same is true here. The Forest Service failed to conduct the biological opinion ordered by the Court in the Fleecer project. Thus, the motion to dissolve was denied. The agencies must prepare a consultation that analyzes potential effects on lynx on the entire 3.4 million acre Forest – not just mapped lynx habitat on less than half the Forest.

The Forest Service and the FWS have not yet analyzed effects on lynx across the entire Forest as required by the 2018 remand order; instead, their consultation addresses mapped lynx habitat. However, mapped lynx habitat is less than half of the Forest, and there are still another 1.9 million acres of Forest that are not mapped lynx habitat but nonetheless satisfy the "may be present" threshold. Thus, the agencies have not yet provided Plaintiffs with all of the relief they seek.

The agencies' decision to remap "lynx habitat" in order to remove Lynx Amendment protections from 1.1 million acres on the Forest is a Forest Plan amendment under NFMA, a major federal action under NEPA, and an agency action under the ESA. Thus, NEPA analysis and ESA consultation must occur for this change in management – and the Forest Service must issue a Forest Plan amendment that complies with the 2012 NFMA planning regulations – before the Greenhorn  Project may move forward.

The Forest Service unlawfully stripped legal protections from lynx across 1.1 million acres of the Forest without conducting the legally required analyses. Both the District of Idaho and District of Oregon hold that the remapping of lynx habitat requires analysis under NFMA, NEPA, and/or the ESA. Oregon Nat. Res. Council Fund v. Forsgren, 252 F.Supp.2d 1088, 1104 (D. Or. 2003)(addressing NFMA and NEPA); Native Ecosystems Council & All. for the Wild Rockies v. U.S. Forest Serv. ex rel. Davey, 866 F.Supp.2d 1209, 1231 (D. Id. 2012)(addressing ESA and NEPA).

Accordingly, this Project should not move forward until the agencies comply with their legal obligations under the ESA, NEPA, and NFMA regarding this de facto Forest Plan amendment that removed lynx protections on almost one-third of the Forest during the remand in this case. This Court may address this issue in its equitable discretion.

However, if it declines to do so, Plaintiffs will file a new action and request injunctive relief in that action.

NEPA requires an agency to prepare an EIS for all “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. §4332(2)(C). Major federal actions include “new or revised agency . . . plans, policies, or procedures” including “official documents prepared or approved by Federal agencies which prescribe alternative uses of Federal resources, upon which future agency actions will be based.” 40 C.F.R. §1508.1 (q)(2), (3)(ii).

The remapping of “lynx habitat” is a major federal action under NEPA that requires either an EIS or an EA. Oregon Nat. Res. Council Fund, 252 F.Supp.2d at 1104-07; Native Ecosystems Council, 866 F.Supp.2d at 1231.

Furthermore, ESA consultation is required for “any agency action” that “may affect” a listed species in an area where a listed species “may be present.”
16 U.S.C. §1536(c). The ESA defines agency action as “any action authorized, funded, or carried out by [a federal] agency.” 16 U.S.C. §1536(a)(2). In Karuk Tribe of California v USFS, the en banc Ninth Circuit held that “[t]here is ‘little doubt’ that Congress intended agency action to have a broad definition in the ESA . . . .” 681 F.3d 1006,1020-21 (9th Cir.2012)(citations omitted). Thus, the “‘agency action’ inquiry is two-fold. First, we ask whether a federal agency affirmatively authorized, funded, or carried out the underlying activity. Second, we determine

whether the agency had some discretion to influence or change the activity for the benefit of a protected species." Id. The remapping of "lynx habitat" is an agency action that requires ESA consultation. Native Ecosystems Council, 866 F.Supp.2d at 1232-33.

Finally, NFMA requires a forest plan amendment for any actions that "add, modify, or remove one or more [forest] plan components, or [] change how or where one or more plan components apply to all or part of the [forest] plan area (including management areas or geographic areas)." 36 C.F.R. §219.13(a). Remapping "lynx habitat" requires a forest plan amendment. Oregon Nat. Res. Council Fund, 252 F.Supp.2d at 1101-04.

Regardless of whether a forest plan amendment is deemed "significant" in the NFMA context, see 16 U.S.C. §1604 (f)(4), the Forest Service must provide for public participation, public notification, and NEPA compliance in conjunction with the amendment, 36 C.F.R. §219.13(b)(2)-(3). "The appropriate NEPA documentation for an amendment may be an [EIS], an environmental assessment, or a categorical exclusion, depending upon the scope and scale of the amendment and its likely effects." 36 C.F.R. §219.13(b)(3).

Furthermore, regardless of whether a forest plan amendment is "significant" under NFMA, any substantive protections in the 2012 NFMA planning regulations that are "directly relevant" to the forest plan amendment must be applied. 36 C.F.R. §219.13(b)(5); see Sierra Club, Inc. v. USFS, 897 F.3d 582, 601 (4th Cir. 2018)(remanding for application of substantive protections of the 2012 planning regulations to a non-significant forest plan amendment).

Finally, a de facto forest plan amendment cannot be lawfully categorized and dismissed as a mere "administrative change" unless it involves only "corrections of clerical errors to any part of the plan, conformance of the plan to new statutory or regulatory requirements, or changes to other content in the plan (§ 219.7(f))." 36 C.F.R. §219.13(c). "Changes to other content in the plan" is a term of art that includes only watershed identification, the plan's roles and contributions in the broader landscape, the monitoring program, proposed and possible actions, and potential management approaches or strategies and partnership opportunities or coordination activities." 36 C.F.R. §219.7(f).

During the remand in the Fleecer case, the agencies determined that the Beaverhead-Deerlodge National Forest is now "occupied" by lynx. This change in status means that compliance with the Lynx Amendment is now mandatory for all site-specific projects on the Forest, but only within the lands that are mapped as "lynx habitat."

Accordingly, in 2020, the agencies remapped "lynx habitat" on the Forest.

The result of the remapping was that the agencies removed approximately 1.1 million acres from the "lynx habitat" designation, and thereby removed the protections of the

Lynx Amendment standards from those 1.1 million acres of Forest:

**Table 4. Comparison of lynx habitat acres, number of lynx analysis units, and the range of habitat within lynx analysis units between mapping efforts.**

| Metric | 2001 mapping effort | 2020 mapping effort | Difference |
|---|---|---|---|
| Lynx habitat (acres) | 2,711,422 | 1,625,806 | -1,085,616 |
| Lynx analysis units (number) | 509 | 78 | -431 |
| Range of lynx habitat within LAUs (acres) | 0-24,101 | 12,603 - 29,880 | Minimum +12,603<br>Maximum +5,779 |

Additionally, the agencies reduced the number of "Lynx Analysis Units" from 509 to 78, and increased the size of individual Lynx Analysis Units so that more acres can be logged before the percentage limits for logging in each unit are reached..

As both the District of Idaho and District of Oregon have already held, the remapping of "lynx habitat" constitutes a major federal action under NEPA, which requires either an EA or EIS. Oregon Nat. Res. Council Fund, 252 F.Supp.2d at 1104-07; Native Ecosystems, 866 F.Supp.2d at 1231. In the Greenhorn  Project as well, the new mapping recategorizes thousands of acres of "lynx habitat" out of existence and thereby paves the way for future projects to authorize logging and other activities in those areas, even if those activities would have been previously prohibited in those same areas under the Lynx Amendment. This is not a minor change: instead, this changes strips away Lynx Amendment protections from approximately 1.1 million acres across the Forest. \

This significant change in management of the Forest requires a complete analysis under NEPA. Native Ecosystems, 866 F.Supp.2d at 1231. As the District of Idaho held:

"The 2005 map was a document officially approved by the Forest Service. . . .There also seems to be little room for debate over whether the 2005 map ultimately governs "uses of Federal resources, upon which future agency actions will be based." []. Without the adoption of the 2005 map—and the attendant elimination of nearly 400,000 acres of land within [Lynx Analysis Units] —the Project area would have been subject to the restrictions contained in the Lynx [Amendment] . . . . With the adoption of the 2005 map, the 390,900 acres of previously restricted land was opened for uses that were not available without the adoption of the map."

The 2005 map . . . eliminated almost 400,000 acres of land that was previously subject to greater environmental restrictions under the Lynx [Amendment]. . . . the map was never subjected to independent NEPA review, which would have required an analysis of the potential [e]ffects . . . on the lynx, its habitat, and the habitat of the snowshoe hare. Such analysis is absent in this case. The absence of such analysis violates NEPA's procedural requirements . . . .

Similarly in the BDNF,"[w]ith the adoption of the [2020] map, the [1.1 million] acres of previously restricted land was opened for uses that were not available without the adoption of the map.”. “ [T]he map was never subjected to independent NEPA review, which would have required an analysis of the potential [e]ffects . . . on the lynx, its habitat, and the habitat of the snowshoe hare. Such analysis is absent in this case. The absence of such analysis violates NEPA’s procedural requirements . . . .”

And, as the District of Oregon similarly held:

“Defendants have substantially minimized the effects of the new mapping direction. The new mapping direction was far more than the result of day-to-day inventory-taking. It significantly changed the nature and the extent of lynx habitat, and the consequences to the lynx may be far-reaching. It has been used by the [Forest Service] to reduce the recognized primary lynx habitat within the Forest by thousands of acres . . . . The Court finds Defendants, at the least, were required under NEPA to prepare an Environmental Assessment with public involvement to determine whether the new mapping direction might significantly affect the lynx in the Forest and whether Defendants should prepare an EIS.

Oregon Nat. Res. Council Fund, 252 F.Supp.2d at 1105. The same result is required in this case.”

The remapping of “lynx habitat” requires ESA consultation.

In addition to requiring NEPA analysis, the remapping of lynx habitat also requires ESA consultation. The remapping of lynx habitat on the Forest is an agency action under the ESA because it was “authorized, funded, or carried out by

[a federal] agency." 16 U.S.C. §1536(a)(2). Additionally, "the agency had some discretion to influence or change the activity for the benefit of a protected species." Karuk Tribe, 681 F.3d at 1021.
In Native Ecosystems, the District of Idaho found that ESA consultation was required to address the impacts on lynx from the remapping decision. 866 F.Supp.2d at 1231-33. The court held: "Defendants argue that, because a jeopardy determination was made for the standards contained in the Lynx [Amendment], and those standards were used in revising the [ Unit] map in 2005, the agencies satisfied their obligations under the ESA. The Court does not agree." Id. at 1232. The court found that the Lynx Amendment "biological opinion from 2007 does not assess the validity of the 2005 map" and that the agencies should have evaluated whether "the elimination of 390,900 acres of land within the boundaries of [Lynx Analysis Unit]s in the 2005 map would adversely affect the lynx or its habitat." Id.

Similarly, in this case, the agencies must prepare an ESA consultation that the evaluates whether "the elimination of [1.1 million] acres of land within the boundaries of [Lynx Analysis Unit]s in the [2020] map would adversely affect the lynx or its habitat." See id.

The remapping of "lynx habitat" requires a Forest Plan amendment. The amendment to the BDNF Forest Plan that you added is inadequate.

The remapping of "lynx habitat" is a Forest Plan amendment that requires analysis under NFMA. More specifically, the remapping of lynx habitat "change[s] how or where" the Lynx Amendment protections apply to this Forest because these protections no longer apply to 1.1 million acres of the Forest. Furthermore, stripping Forest Plan protections from 1.1 million acres – approximately one-third of the Forest – could not be reasonably construed as a mere "administrative change" because such an action does not fall with the narrow regulatory definition of "administrative change." 36 C.F.R. §§219.13(c), 219.7(f).

Please explain why there is an absence of lynx in parts of the BDNF in relation to the massive deforestation occurring in BDNF in the last half of the past century and the explosion of motorized recreation.

Please also analyze what Forest Plan Standards must be established to identify, restore and maintain linkages and connecting habitats for lynx.

The BDNF states that the FWS and FS will jointly identify 'occupied lynx habitat' as a subset of mapped lynx habitat. The identification of occupied lynx habitat will include consideration, as appropriate, of the Science Report, the LCAS, FWS's final listing decision documents, any information used to designate critical habitat, and new scientific information regarding the ecology and distribution of lynx, and population data. (BA:85).

The Lynx Conservation Assessment and Strategy identities 17 lynx risk factors in 4 different categories - factors affecting lynx productivity, lynx mortality, lynx movements, and other large-scale risk factors. Risk factors identified activities or existing conditions that could adversely affect either individual or groups of lynx. (BA:85).

Factors identified include timber management; wildland fire management; recreation; forest/backcountry roads and trails; livestock grazing; other human developments; trapping; predator control; incidental or illegal shooting; competition and predation as influenced by human activities; highways (vehicular collisions); highway, railroad and utility corridors; land ownership patterns; ski areas and large resorts; fragmentation and degradation of lynx refugia; lynx movement and dispersal across shrub steppe habitats; and habitat degradation by non-native invasive plant species. (BA:85).

The Final Rule listing Canada lynx as threatened was enacted in 2000.[2] The National Lynx Survey took place in that same time frame.[3] Despite evidence that lynx persisted over historical times, the "unoccupied" status results from failing to find current evidence of lynx long after habitats have been fragmented by mines, high road density, an explosion in motorized recreation, timber and fuel reduction projects, and including habitat alteration by livestock grazing. (Where do the major areas of disturbance by invasive plants come from across the landscape except disturbance and removal of natives by livestock that lead to the invasive species?)

The problem with this concept of "occupied habitat" is that it makes optional the application of the Northern Rockies Lynx Management Direction in "unoccupied habitat". The direction only says it "should be 'considered''. In our experience in such places as the Forest Service Region One and Region Four. in linkage and peripheral habitat, but habitat historically used by lynx, it is met with deflection and no analysis. Meanwhile the practices listed above as detrimental to lynx proceed apace.

As an example, after a huge amount of deforestation between about 1950 and today. A time when lynx observations were declining across much of the Rocky Mountains, and they were no longer being observed in some areas. But to recover lynx, the Forest Service needs to start protecting lynx habitat instead of continuing to destroy it and then after all of the lynx are gone claim it is not longer lynx habitat.

Kosterman finds that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. This contradicts the agency's assumption in the Lynx Amendment that 30% of lynx habitat can be clearcut, and that no specific amount of mature forest needs to be conserved. It is now the best available science out there that describes lynx habitat in the Northern Rockies related to lynx viability and recovery. Kosterman's attached study demonstrates that the Lynx Amendment standards are not adequate for lynx viability and recovery, as previously assumed by the Forest Service.

Kosterman's Thesis says that clearcutting more than 10-15% of a lynx home range results in declines in reproduction. Many National Forests allows more clearcutting than this. The Lynx Amendment allows up to 30% clearcutting in a home range, which means that habitat has declined and is declining from the levels nec- essary for reproduction and therefore survival and recovery.

Kosterman's Thesis recommends conserving mature/old growth forest and maintaining 50% mature/old growth in each lynx home range.  No National Forest is complying with that due to past and current logging, which means that habitat has declined and is declining from the levels necessary for reproduction and therefore survival and recovery.

Squires says that lynx avoid clearcuts. Please develop an alternative that prohibits clearcutting and also prohibits logging of mature and old growth forests in Lynx analysis units.

FWS has no idea what the population of lynx is because they don't do lynx population monitoring. In light of the government's failure to monitor lynx population trends, it would be disingenuous for FWS to argue that "there is no evidence of population decline" because the reason that "there is no evidence" is because the government refuses to conduct monitoring. In light of the government's failure to monitor and document populations and population trends, the Forest Service and the FWS must apply the precautionary principle and assume that the effects of allowing logging that does not comply with Kosterman, Holbrook, and Squires findings is resulting in population declines.

Since this is now the best available science we are hereby formally requesting that the Forest Service also write a supplemental EIS for the Northern Rockies Lynx Management Direction and reinitiate consultation with the FWS for the Lynx Amendment to publicly disclose and address the findings of this study, and to allow for further public comment on this important issue of lynx recovery.

Page 227 of the Pintler Face EA states: "Linkage is defined as "Route that permits movement of individual plants (by dispersal) and animals from a Landscape Unit and/or habitat type to another similar Landscape Unit and/or habitat type". Linkage areas for Canada lynx were identified for the Northern Rockies Planning Area. Linkages mapped through the Anaconda Pintler mountains. These linkages are hypothetical and not substantiated by empirical data on lynx movement."

This is false. It is a violation of NEPA to put incorrect information in the EA.

Lynx are listed and threatened under the ESA. The duty of the federal government is to recover lynx and the ecosystems that they depend on. To recover lynx the BDNF cannot eleminate 1.1 million acres of lynx habitat while still ensuring that lynx will be able to connect with other lynx in the greater Yellowstone ecosystem and lynx in the Bitterroot and Northern Continental Divide Ecossytem.

Page 93 of the 2016 Fleecer EA states: “In July, 2013 the U.S. Fish and Wildlife Service updated the “Threatened, Endangered and Candidate Species for the Beaverhead-Deerlodge National Forest” and the Canada lynx was added to the BDNF list as “Transient; secondary/peripheral lynx habitat”; where it remains (USDI Fish and Wildlife Service 2016).”

The Forest straddles the mountains of the Continental Divide and contains nationally renowned trout streams, elk populations, and some of last wild refuges for many threatened, endangered, and sensitive fish and wildlife species.

In particular, the Forest and Project area provide habitat for grizzly bears, wolverines, Canada lynx, gray wolves, and westslope cutthoat trout.

Ruggiero et al (1999), the Forest Service’s General Technical Report “Ecology and Conservation of Lynx in the United States," states that lynx are present in the Forest.

Ruediger et al (2000), the agencies' "Canada lynx conservation assessment and strategy," considers the Forest within the geographic extent of the lynx strategy.

The Montana Department of Fish, Wildlife, and Parks has compiled a database of lynx occurrences and distribution throughout Montana from 1977 -1998. This in- formation was mapped on pages 244 and 247 of Ruggiero et al (1999) and shows numerous lynx occurrences in the Forest.

In Squires (2003), the Forest Service documents: "Discussions with local trappers and biologists indicate that lynx were present in the Pioneer Mountains prior to the late 1990's, and had been detected during winter track surveys as recently as 2000 (Forkan 2000). This fact is substantiated by the number of trapped lynx from this area in the 1970s." Elsewhere, the report notes "[f]rom 1977 to 1994, 39 lynx occurrences were recorded in the Pioneer Mountains, including 13 harvested individ- uals (McKelvey et al. 2000). Snow-track surveys performed as recently as 2000 indicated that lynx were present along the Scenic Byway (Forkan 2000)."

In the attached, "Combining resource selection and movement behavior to predict corridors for Canada lynx at their southern range periphery," Squires et al. 2013, the Forest Service documented the results of winter tracking surveys. The record indicates two (2) sets of lynx tracks

were found in the BDNF within the Big Hole landscape area. The report concludes that “lynx were either absent or at very low densities during our
study.”

Did the BDNF follow the best avialble science when it surveyed for lynx Please find attached Squires et al. 2004 for the best available science on how to survey for lynx.

The U.S. Fish and Wildlife Service’s final map (2003) for lynx shows that the BDNF is within the range of both resident and dispersing lynx.

Berger (2009) found one set of potential lynx tracks in the Forest during winter tracking surveys, as well as one set outside the Forest boundary that was heading towards the Forest boundary.

In Devineau (2010), the State of Colorado Division of Wildlife documented locations of radio-collared lynx released in Colorado. The record shows

multiple lynx traveling in the Forest (approximately four (4) individuals), including at least two individual lynx traveling in the BDNF. One of the individuals inhabited the Madison Range for approximately two weeks.

In litigation over lynx critical habitat in 2010, the U.S. Fish and Wildlife Service admitted that the Forest is occupied for the purpose of designating lynx critical habitat. Alliance for Wild Rockies v. Lyder, 728 F.Supp.2d 1126, 1133 (D. Mont. 2010)(“Plaintiffs take exception to the Service's failure to designate the Beaver- head-Deerlodge [and certain other National Forests] as lynx critical habitat. [FN4] . . . In response, the government acknowledges the record shows such forests to be occupied . . . .")

The Forest Service's Fleecer Mountains Watershed Assessment (2009) indicates that lynx are "potentially" "likely to be present" in the Project area. It also states "f]rom 1988 to 1999 there are 72 reports of lynx being trapped or observed in the Pioneers, Big Hole Mountains and Fleecer Range."

The Federal District Court of Montana ordered the USFWS to reconsult on lynx critical habitat because they did not base lynx critical habitat on where lynx were at the time of listing in 2000. Lynx were in the project area at the time of listing so the Forest Service needs to consult with the FWS to see if this project could effect lynx critical habitat.

The Forest Plan analysis and impacts on ESA-listed lynx violate ESA, NFMA, and NEPA.

Please take a hard look at lynx presence and the Forest Plan's potential impacts on lynx, using the best available science, including the agency's failure to assess the Forest Plan's impacts on lynx travel/linkage corridors

Forest Service, --- F.3d ----, 2012 WL 336133 (9th Cir. 2012).

Please  include binding legal standards aimed at conserving and recovering ESA-listed lynx on the Forest in the Forest Plan. To not do so is a violation of NFMA, NEPA, the APA and th ESA.

Please include in the amendment protections or standards for conservation of winter lynx habitat (old growth forests). To not do so would allow the logging of thousands of acres of old growth without any analysis of whether that forest is necessary for conservation as winter lynx habitat. Please take a hard look at this factor as required by NEPA. If the BDNF fails to include a provision to protect winter lynx habi- tat, the Lynx amendment would fails to apply the best available science and implement the measures necessary for lynx conservation, as required by the ESA.

Will the amendment remove LAUs that are in WUI lands?

The Lynx Amendment and its Biological Opinion/ Incidental Take Statement allow unrestricted logging in the wildland urban interface, which the agencies estimate to compose approximately 6% of the lynx habitat on National Forests. Please explain where WUI  lands are is in relation to requirement to recover lynx and the ecosystems upon which they depend.

Is the Forest Service using the definition of a WUI in the Healthy Forest Restoration Act? The failure to adequately address this issue with the Lynx Amendment violates NEPA.

The current science demonstrates that lynx must travel between areas of high hare densities and resist traveling through low cover areas in winter. Please identify the amount of non or low cover areas that will be designated as LAUs. The best available science is now Kosterman's masters Thesis, "Correlates of Canada Lynx Reproductive Success in Northwestern Montana" Please find Kosterman attached.

This study finds that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. This contradicts the agency's assumption in the Lynx Amendment that 30% of lynx habitat can be clearcut, and that no specific amount of mature forest needs to be conserved. It is now the best available science out there that describes lynx habitat in the Northern Rockies related to lynx viability and recovery. Kosterman's study demonstrates that the Lynx Amendment standards for LAUs are not adequate for lynx viability and recovery, as assumed by the Forest Service.

The current best science indicates that lynx winter foraging habitat is critical to lynx persistence (Squires et al. 2010) attached, and that this habitat should be "abundant and well-distributed across lynx habitat." (Squires et al. 2010; Squires 2009.) Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006.)

Lynx winter habitat, provided only in older, multi-storied forests, is critical for lynx preservation. (Squires et al. 2010.) Winter is the most constraining season for lynx in terms of resource use; starvation mortality has been found to be the most common during winter and early spring. (Squires et al. 2010.) Prey availability for lynx is highest in the summer. (Squires et al. 2013.)

Squires et al. (2013) noted in their research report that some lynx avoided crossing highways; in their own report, they noted that only 12 of 44 radio- tagged lynx with home ranges including 2- lane highways crossed them. Openings, whether small in uneven-aged management, or large with clearcutting, remove lynx winter travel habitat on those affected acres, since lynx avoid openings in the winter. (Squires et al. 2010.)

Squires et al., 2010 reported that lynx winter habitat should be "abundant and spatially well-distributed across the landscape." Those authors also noted that in heavily managed landscapes, retention and recruitment of lynx habitat should be a priority. Please explain how getting rid of LAUs follows the best available science.

The Northern Rockies Lynx Management Direction is inadequate to ensure conservation and recovery of lynx. The amendments fail to use the best available science on necessary lynx habitat elements, including but not limited to, failing to include standards that protect key winter habitat. Please include an alternative to increase the amount of LAUs in the BDNF.

The Endangered Species Act requires the FS to insure that the amendment is not likely to result in the destruction or adverse modification of critical habitat. 16 U.S.C. §1536(a)(2). Activities that may destroy or adversely modify critical habitat are those that alter the physical and biological features to an extent that appreciably re- duces the conservation value of critical habitat for lynx. 74 Fed. Reg. 8644. Please analyze what LAUs should be designated as lynx critical habitat.

The Northern Rockies Lynx Management Direction (NRLMD) as applied by the BDNF violates the ESA by failing to use the best available science to insure no adverse modification of critical habitat. The NRLMD carves out exemptions from Veg Standards S1, S2, S5, and S6. In particular, fuel treatment projects may occur in the WUI even though they will not meet standards Veg S1, S2, S5, or S6, pro- vided they do not occur on more than 6% of lynx habitat on each National Forest. See NRLMD ROD, Attachment 1, pages 2-3. Allowing the agency to destroy or adversely modify any lynx critical habitat has the potential to appreciably reduce the conservation value of such habitat. The agency cannot simply set a cap at 6% forest-wide without looking at the individual characteristics of each LAU to determine whether the project has the potential to appreciably reduce the conservation value. The ESA requires the use of the best available science at the site- spe- cific level. It does not allow the agencies to make a gross determination that allow- ing lynx critical habitat to be destroyed forest-wide while not appreciably reduce the conservation value.

Standard S2 prohibits projects that do regenerate more than 15% of lynx habitat on NFS lands within an LAU in a 10-year period. Please provide the number of acres with in the LAU that that the BDNF wants to eliminate have been harvested within the last 20-years.

The amendment will violates the NFMA and the ESA if it fails to insure the viability of lynx. How is the amendment insure the viability of lynx? Please show that lynx will be well-distributed in the BDNF. Please addressed how eliminating LAUs will impact lynx distribution. This is important because the agency readily admits that the LAUs currently contain a "relatively large percentage of un-suitable habitat." The NRLMD ROD at 40 states that: The national forests subject to this new direction will provide habitat to maintain a viable population of lynx in the northern Rockies by maintaining the current distribution of occupied lynx habitat, and maintaining or enhancing the quality of that habitat."

A big problem with the Forest Plan (including the NRLMD) is that it allows with few exceptions the same level of industrial forest management activities that oc-curred prior to Canada lynx ESA listing.

Please formally consult with the FWS and get a take permit from the USFWS. To not do so is in violation of the ESA, NFMA, the APA and NEPA. The ESA (Section 3) defines take as "to harass, harm, pursue, hunt, shoot, wound, trap, capture, collect or attempt to engage in any such conduct". The USFWS further defines "harm" as "significant habitat modifi- cation or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering", and "ha- rass" as "actions that create the likelihood of injury to listed species to such an ex- tent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering". The project will harm lynx.

A big problem with the Forest Plan amendment and the NRLMD is that it allows with few exceptions the same level of industrial forest management activities that occurred prior to Canada lynx ESA listing. The FS approval and implementation of the NRLMD and the revised Beaverhead-Deerlodge National Forest Forest Plan is arbitrary and capricious, violates NEPA's hard look requirement and scientific integrity mandate and fails to apply the best available science necessary to conserve lynx. The NRLMD or the revised BDNF Forest Plan contain no protection or standard for conservation of winter lynx habitat (old growth forests).

Please disclose if and when the FS conducted lynx occurrence surveys of habitat in the LAUs.

Please disclose if surveys target snowshoe hare occurrence data in these stands newly considered unsuitable for lynx. Also, please indicate if the FS surveyed any areas thought to not be lynx habitat based on mapping or stand data were surveyed to confirm unsuitable habitat conditions.

The current science demonstrates that lynx must travel between areas of high hare densities and resist traveling through low cover areas in winter. Please identify the amount of non-cover or low-cover areas that will be designated as LAUs.

It appears the FS doesn't have a coherent strategy for recovering lynx from their Threatened status, including linking currently populated areas with each other through important linkages such as project area LAUs.

Please analyze and disclose cumulative impacts of recreational activities on lynx, such as snowmobiles. As the KNF's Galton FEIS states, "The temporal occurrence of forest uses such ... winter (skiing and snowmobiling) ... may result in a temporary displacement of lynx use of that area..."

Please quantify and disclose the cumulative effects on Canada lynx due to trapping or from use of the road and trail networks in the project area.

Please analyze and disclose cumulative effects of eliminating LAUs.

Please demonstrate that there will be sufficient sync denning habitat occurs in the BDNF, and explain how it arrived at that conclusion.

The USFWS listed the Canada lynx as a threatened species under the Endangered Species Act in 2000 due to “lack of guidance for conservation of lynx and snowshoe hare habitat...” and subsequent authorization of actions that may cumulatively adversely affect the lynx. Relatively little is known about lynx in the contiguous United States. Historically, lynx inhabited states spanning from Maine to Washington, but it is unknown how many lynx remain.

Lynx are highly mobile and generally move long distances [greater than 60 mi. (100 km.)]; they disperse primarily when snowshoe hare populations decline; subadult lynx disperse even when prey is abundant, presumably to establish new home ranges; and lynx also make exploratory movements outside their home ranges. 74 Peg. Reg. at 8617. The contiguous United States is at the southern edge of the boreal forest range, resulting in limited and patchy forests that can support snowshoe hare and lynx populations.

Lynx subsist primarily on a prey base of snowshoe hare, and survival is highly dependent upon snowshoe hare habitat, forest habitat where young trees and shrubs grow densely. In North America, the distribution and range of lynx is nearly “coincident” with that of snowshoe hares, and protection of snowshoe hares and their habitat is critical in lynx conservation strategies.

Since more often than not when the FS conducts logging projects in LAUs surveys of stands for lynx habitat result in less suitable habitat than previously assumed, the FS needs to take a few steps backward and consider that its range-wide Canada lynx suitable habitat estimations were too high.

Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity. The importance of maintaining lynx linkage zones is also recognized by the FS's Lynx Conservation Assessment and Strategy (LCAS), as revised in 2013, which stresses that landscape connectivity should be maintained to allow for movement and dispersal of lynx.

Squires et al. (2013) noted in their research report that some lynx avoided crossing highways; in their own report, they noted that only 12 of 44 radio-tagged lynx with home ranges including 2- lane highways crossed them.

The current best science indicates that lynx winter foraging habitat is critical to lynx persistence (Squires et al. 2010), and that this habitat should be "abundant and well-distributed across lynx habitat." (Squires et al. 2010; Squires 2009.) Existing openings such as clearcuts not yet recovered are likely to be avoided by lynx in the winter. (Squires et al. 2010; Squires et al. 2006a.)

LAUs, provided only in older, multi-storied forests, is critical for lynx preservation. (Squires et al. 2010.) Winter is the most constraining season for lynx in terms of resource use; starvation mortality has been found to be the most common during winter and early spring. (Squires et al. 2010.) Prey availability for lynx is highest in the summer. (Squires et al. 2013.)

Openings, whether small in uneven-aged management, or large with clearcutting, remove lynx winter travel habitat on those affected acres, since lynx avoid openings in the winter. (Squires et al. 2010.)

Squires et al., 2010 reported that lynx winter habitat should be "abundant and spatially well- distributed across the landscape." Those authors also noted that in heavily managed landscapes, retention and recruitment of lynx habitat should be a priority.

The LCAS (Ruediger et al. 2000) recommends, until conclusive information is developed concerning lynx management, the agencies retain future options; that is, choose to err on the side of maintaining and restoring habitat for lynx and their prey. To err on the side of caution, the BDNF would retain all remaining stem exclusion forests for recruitment into lynx winter habitat, so that this key habitat would more closely resemble historic conditions.

As early as 2000, the LCAS noted that lynx seem to prefer to move through continuous forest (1- 4); lynx have been observed to avoid large openings, either natural or created (1-4); opening and open forest areas wider than 650 feet may restrict lynx movement (2-3); large patches with low stem densities may be functionally similar to openings, and therefore lynx movement may be disrupted (2-4). Squires et al. 2006a reported that lynx tend to avoid sparse, open forests and forest stands dominated by small-diameter trees during the winter. Squires et al. 2010 again reported that lynx avoid crossing clearcuts in the winter; they generally avoid forests composed of small diameter saplings in the winter; and forests that were thinned as a silvicultural treatment were generally avoided in the winter.

Squires et al. 2010 show that the average width of openings crossed by lynx in the winter was 383 feet, while the maximum width of crossed openings was 1240 feet.

Recent scientific findings undermine the Forest Plan/ NRLMD direction for management of lynx habitat. This creates a scientific controversy the FS fails to resolve, and in fact it essentially ignores it.

For one, Kosterman, 2014 found that 50% of lynx habitat must be mature undisturbed forest for it to be optimal lynx habitat where lynx can have reproductive success and no more than 15% of lynx habitat should be young clearcuts, i.e. trees under 4 inched dbh. Young regenerating forest should occur only on 10-15% of a female lynx home range, i.e. 10-15% of an LAU. This renders inadequate the agency’s assumption in the Forest Plan/NRLMD that 30% of lynx habitat can be open, and that no specific amount of mature forest needs to be conserved. Kosterman, 2014 demonstrates that Forest Plan/NRLMD standards are not adequate for lynx viability and recovery.

Also, the Forest Plan essentially assumes that persistent effects of vegetation manipulations other than regeneration logging and some intermediate treatments are essentially nil. However, Holbrook, et al., 2018 “used univariate analyses and hurdle regression models to evaluate the spatio-temporal factors influencing lynx use of treatments.” Their analyses “indicated ...there was a consistent cost in that lynx use was low up to ~10 years after all silvicultural actions.” (Emphasis added.) From their conclusions:

First, we demonstrated that lynx clearly use silviculture treatments, but there is a ~10 year cost of implementing any treatment (thinning, selection cut, or regeneration cut) in terms of resource use by Canada lynx. This temporal cost is associated with lynx preferring advanced regenerating and mature structural stages (Squires et al., 2010; Holbrook et al., 2017a) and is consistent with previous work demonstrating a negative effect of precommercial thinning on snowshoe hare densities for ~10 years (Homyack et al., 2007). Second, if a treatment is implemented, Canada lynx used thinnings at a faster rate post- treatment (e.g.,~20 years posttreatment to reach 50% lynx use) than either selection or regeneration cuts (e.g., ~34–40 years post-treatment to reach 50% lynx use). Lynx appear to use regeneration and selection cuts similarly over time suggesting the difference in vegetation impact between these treatments made little difference concerning the potential impacts to lynx (Fig. 4c). Third, Canada lynx tend to avoid silvicultural treatments when a preferred structural stage (e.g., mature, multi-storied forest or advanced regeneration) is abundant in the surrounding landscape, which highlights the importance of considering landscape-level composition as well as recovery time. For instance, in an area with low amounts of mature forest in the neighborhood, lynx use of recovering silvicultural treatments would be higher versus treatments surrounded by an abundance of mature forest (e.g., Fig. 3b). This scenario captures the importance of post-treatment recovery for Canada lynx when the landscape context is generally composed of lower quality habitat. Overall, these three items emphasize that both the spatial arrangement and composition as well as recovery time are central to balancing silvicultural actions and Canada lynx conservation.

So Holbrook et al., 2017, 2018, 2019 fully contradict Forest Plan assumptions that clearcuts/regeneration can be considered useful lynx habitat as early as 20 years post-logging. Please find Holbrook attached.

Results of a study by Vanbianchi et al., 2017 also conflict with Forest Plan/NRLMD assumptions: "Lynx used burned areas as early as 1 year postfire, which is much earlier than the 2–4 decades postfire previously thought for this predator." The NRLMD erroneously assumes clearcutting/regeneration logging have basically the same temporal effects as stand-replacing fire as far as lynx re-occupancy.

Kosterman, 2014, Vanbianchi et al., 2017 and Holbrook, et al., 2018, Holbrook 2019 demonstrate that Forest Plan direction is not adequate for lynx viability and recovery, as the FS assumes. Holbrook 2019 such all lynx habitat must be surveyed.  Have not done this?

Please describe the quantity and quality of habitat that is necessary to sustain the viability of the Canada lynx.

Please analyze how eliminating LAUs will effect climate change.The NEPA requires a “hard look” at climate issues, including cumulative effects of the “treatments” in the proposed project when added to the heat, drought, wind and other impacts associated with in- creased climate risk. Regeneration/Restocking failure following wildfire, prescribed fire and/or mechanical tree-killing has not been analyzed or disclosed. There is a considerable body of science that suggests that regeneration following fire is increasingly problematic.

ELK

The Project and Forest Plan analysis and impacts on elk violate NFMA and NEPA.

In a NEPA analysis, the Forest Service must assess direct, indirect, and cumulative effects of a proposed action.

In a project analysis, the Forest Service must apply the best available science.

The Revised Forest Plan and best available science define “elk security area” as “comprised of contiguous 250 acre blocks of forested habitat .5 miles or more from open roads with these blocks encompassing 30% or more of the area.”

The 2016 EA does not comply with this definition in the analysis of elk.

As the Montana District Court wrote in the order on the Fleecer case:

Christensen et al. (1993) does not support the exclusion of temporary roads. See Native Ecosystems Council, 848 F. Supp. 2d at 1219. While the study does not speak specifically to "temporary" roads except to advise that the Forest Service "[i]dentify temporary roads where they are an option," temporary roads are not ex- cepted from Christensen's conclusion that "[a]ny motorized vehicle use on roads

will reduce habitat effectiveness." BDNF:L- 055:4 (emphasis added). The defini- tion section ofthe FEIS does not support the exclusion of temporary roads either. "Road density" is defined as the "[n]umber ofmiles of open road per square mile.” BDNF:A1-40:1463. While "open road" may suggest that restricted-use roads are not included in the definition, Defendants have admitted that administrative and permitted roads are, in fact, included in the definition.

A "temporary road" is listed as one type of"road." ld. It is defined as a "road[] authorized by contract, permit, lease, other written authorization, or emergency operation not intended to be part of the forest transportation system and not necessary for long- term resource man- agement," id., and as "[a] road or trail necessary for emergency operations, or au- thorized by contract, permit, lease, or other written authorization that is not a forest road or trail that is not included in the Forest Transportation Atlas (36 CFR 212.1 (2005) Transportation System),"

id. at 1464. In other words, a temporary road may be an administrative or permitted road, which Defendants say are included in the tables.

Neither the Forest Plan nor the FEIS discuss what effect temporary roads will have on elk viability. In their briefing for the Fleecer case the Forest Service argued that including temporary roads would be nonsensical in areas where the road density objectives are lower than the actual road density at the time the Plan was adopted. In these areas, they assert, no management activities requiring temporary roads would ever be allowed. While this may be true, the Forest Service failed to develop its analysis in the record for the Forest Plan itself, and provided no explanation for its departure from the best available science or from the definitions contained in the FEIS. It "entirely failed to consider an important aspect ofthe problem," Lands Council I, 537 F.3d at 993, and must address this issue on remand in a supplemen- tal EIS.

The EA did not adequately explain the effect of temporary roads on elk viability as the court ordered for the Fleecer EA.

The Forest Service assumptions in the Travel Plans that all closures would be effective has proven false. How many road closure violations have occurred in the Wisdom Ranger District in the last 5 years? It there have been violations of road closures, for this reason, you cannot tier to the analysis in the Travel Plan because it is invalid.

Please update your open road density calculations to include all roads receiving illegal use.

The Project EA fails to take a hard look at cumulative effects, connectivity and secure habitat for grizzlies, and the Forest Plan minimum of 60% secure habitat for the Gravellies.

Please do a better analysis examining how this project could affect grizzly bears, lynx and other species listed under the Endangered Species Act. Are you complying with lynx critical habitat requirements? Please examine how this project will affect all MIS and sensitive species.

The current best science indicates that connectivity between the Yellowstone and Glacier ecosystems are necessary for the long term genetic health of both populations, especially bears in the Yellowstone ecosystem. The project area lies within an identified linkage zone for grizzly bears as well as lynx. However, there are no management standards for either species to ensure connectivity is maintained, based on the current best science as required by the ESA. This requires limits on open road densities, limits on travel barriers, and retention of at least 50% dense, older forest habitats for lynx. The NRLMD (2007) does not require any specific features for connectivity for lynx, and the RFP does not require any minimum im- pacts from open roads to grizzly bears. Grizzly bears are known to be expanding into this landscape, and it is also historic habitat for lynx. Since lynx occupied this area at the time of listing as a threatened species, this landscape may qualify as critical habitat. It's suitability for lynx must therefore be retained until a final deci- sion is made on critical habitat. And suitability for grizzly bear use must also be retained/restored.

The Forest Plan analysis and impacts on ESA-listed grizzly bear violate ESA, NFMA, and NEPA.

The Forest Service did not prepare a biological assessment and consult with U.S. Fish and Wildlife Service regarding the impact of the Revised Forest Plan on the threatened grizzly bear in all areas across the Forest where grizzly bears may be present.

The biological opinion for the Revised Forest Plan apparently is based on grizzly bear distribution in 2004, which is eight year old data that no longer represents the best available science on where grizzly bears may be present on the Forest.

There is no scientifically sound incidental take statement for the Revised Forest Plan for the threatened grizzly bear that includes reasonable and prudent measures for all areas where grizzly bears may be present across the Forest.

The agencies' failure to promulgate an adequate biological assessment, Biological Opinion, and Incidental Take Statement for the Revised Forest Plan that addresses all grizzly bears across the Forest violates the ESA.

The Forest Service's failure to take a hard look and include appropriate standards for ESA-listed grizzly bears within the Forest Plan, in a supplemental NEPA process, violates NEPA. See Pacific Rivers Council v.

supplemental NEPA analysis for the Forest Plan.

The Forest Service's failure to amend the Forest Plan to include binding legal stan- dards aimed at recovering and conserving the ESA-listed grizzly bear on the Forest violates NFMA.

The Forest Service must complete a biological assessment for grizzly bears for the Project because the U.S. Fish and Wildlife Service states that both resident and transient grizzly bears may be present on the Forest.

Grizzly bears are present on the Forest, both within designated grizzly bear recov- ery zones and outside of those zones.

In formal consultation, the ESA's implementing regulations mandatorily impose "an affirmative duty to consider cumulative effects." Conservation Congress v. U.S. Forest Serv., 720 F.3d 1048, 1055 (9th Cir. 2013); 50 C.F.R. §402.14(g)(3) (requiring FWS to "[e]valuate the effects of the action and cumulative effects on the listed species or critical habitat")

Cumulative effects are defined as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." 50 C.F.R. §402.02.

Additionally, FWS must accurately analyze the "environmental baseline," which includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process. The consequences to listed species or designated critical habitat from ongoing agency activities or existing agency facilities that are not within the agency's discretion to modify are part of the environmental baseline."

Both the Project EA and Project BiOp fail to disclose and fail to discuss the cumulative effects of proposed State-DNRC timber harvest in the cumulative effects area, and fail to provide meaningful disclosure and analysis regarding the BLM Middle Ruby Project and the Forest Service Forest-wide aspen project.

The SIR and FONSI fail to meaningfully address grizzly bear connectivity and secure habitat. Due to its location at the northern edge of the Greater Yellowstone Area, the Gravellies – and Greenhorns in particular – are designated by the Forest Plan as an area to conserve 60% secure habitat and provide connectivity. However, neither the Project EA nor the Project BiOp meaningfully addresses the conflict between that 60% minimum and the actual amount of secure habitat, 54%, which fails that minimum. Moreover, neither document meaningfully addresses how the Project will compound this failure – new temporary roads and helicopter use may reduce secure habitat by 33% during the Project.
These failures violate the ESA, NEPA, NFMA, and the APA

The Project analysis and impacts on ESA-listed grizzly bears violate ESA, NEPA and NFMA.

The U.S. Court of Appeals for the Ninth Circuit holds that "[o]nce an agency is aware that an endangered species may be present in the area of its proposed action, the ESA requires it to prepare a biological assessment . . . ."

Thomas v. Peterson, 753 F. 2d 754, 763 (9

Cir. 1985).

Because there are endangered species present and will be effect, the Forest Service must complete an EIS. The Project EIS and BA/BiOp must disclose and apply the best available science on recommended open motorized route density, total motorized route density, and core habitat thresholds for NCDE grizzly bears.

The best available science on NCDE grizzly bears requires no more than 19% open motorized route density over 1.0 mi./sq.mi. and 19% total motorized route density over 2.0 mi./sq.mi., and no less than 68% core habitat for NCDE grizzly bears (19/19/68).

The following article in the November 3, 2017 NY Times mentions the importance of corridors between the Northern Continental Divide population and the Yellow- stone grizzly population. It also mentions that grizzly bears from the Northern Continental Divide population have almost connected with the Yellowstone popu- lation since there is a grizzly bear in the mountains near Butte, 70 miles from the Yellowstone population.

Yellowstone Grizzlies May Soon Commingle With Northern Cousins

https://www.nytimes.com/2017/11/03/science/grizzly-bears-yellowstone- genes.html?_r=0

HELENA, Mont. — To make the plains and mountains safe for the great herds of cattle that were brought to the West at the end of the 19th century, grizzly bears were routinely shot as predators by bounty hunters and ranchers.

Ever since, the bears in Yellowstone National Park, protected from hunting, have been cut off from the rest of their kind. Their closest kin prowl the mountains some 70 miles north, in and around Glacier National Park.

In a new paper, biologists say that as grizzly populations increase in both Glacier and Yellowstone, more adventurous males from both parks are journeying farther to stake out territory, winding up in places where they have not been seen in a cen- tury or more.

If they keep roaming and expanding, the two populations will likely reconnect, perhaps as soon as five or 10 years from now.

---

“It’s very encouraging for the long-term future of the bear,” said Frank van Manen, leader of the Interagency Grizzly Bear Study Team in Bozeman, Mont., which oversees research into Yellowstone’s bears.

A mingling of the separate populations would go a long way toward bolstering the genetics of the isolated Yellowstone grizzlies.

The bears in the Greater Yellowstone ecosystem, in and around the park, are healthy now, and they have increased to at least 700 today from fewer than 150 in 1975, when they were listed as endangered.

But a genetic lifeline from Glacier bears, which are also related to the grizzlies of Canada, will mean a good deal more diversity to help assure the bears' future. It's so important that researchers have talked about trucking grizzly bears from the north to add to the Yellowstone gene pool.

"Because Yellowstone is a bit lower in genetic diversity, hundreds of years from now they might be less able to adapt to changing conditions — changing climate, changing food sources and disease resistance," Dr. van Manen said.

While no one knows what advantageous traits the Glacier grizzlies might have in their genes, increasing diversity is the best way to assure resilience against those types of hazards.

Currently, the nearest interloper from the Northern Continental Divide Ecosystem has bridged the 70-mile gap by working his way south. That grizzly is in the mountains near Butte, Mont., some 50 miles from the perimeter of the Yellowstone ecosystem.

!!
Biologists and conservationists are rooting for a natural reunion between the two

largest populations of grizzlies in the country, Dr. van Manen said.

In a study published in Ecosphere, researchers tracked grizzly bears from the northern and southern populations as they moved through western Montana, in- cluding the rugged Big Belt mountains near this city, which sits between the two national parks.

Photo !!

!

A grizzly on a road near Mammoth, Wyo. Scientists say if bears keep roaming

from Yellowstone and Glacier National Park, the two populations will likely re- connect. Credit David Grubs/The Billings Gazette, via Associated Press

The effort to follow these nomadic bears was aided by satellite data collars and new, more powerful data analysis techniques. Some 124 males were monitored from 2000 to 2015, some for more than one year.

GPS collars can track a bear almost in real time, providing richly detailed informa- tion on the corridors and habitats they use that need to be protected.

While much of the land between the two parks is publicly owned and wild, it be- comes a gauntlet in some places as bears migrate into towns, cities, ranches and farms.



The bears are likely to seek out dog food, beehives, garbage, chickens and even apple trees, getting into trouble that may require trapping and relocating them. Highway crossings, especially on I-90 and I-15, pose a serious risk.

Conservation groups and biologists say it’s a race against time to protect some of the open land between the two parks and to assure permanent transit routes for wildlife through land purchases or conservation easement.

Residential housing development north of Yellowstone around Bozeman, for ex- ample, is soaring.

“Even one house per square mile can be a problem for bears,” said Jodi Hilty, a wildlife biologist in Canmore, Canada. “At the same time, this is one of the most intact mountain ecosystems in the world.”

Dr. Hilty heads the group Yellowstone to Yukon, which seeks to link bears and oth- er Yellowstone wildlife with populations in Glacier National Park and in vast tracts of wilderness in Canada. Protecting migration corridors between Yellowstone, Glacier and Canada would benefit not just bears, she said, but cougars, wolverines and other animals.

The Fish and Wildlife Service has removed the protections afforded under the En- dangered Species Act from the Yellowstone grizzly because the population has grown so large. Dr. van Manen said that the number of grizzlies may exceed 1,000.

Environmentalists have sued the agency over its decision. They argue that climate change is a wild card that might someday cause the Yellowstone bear population to collapse.

!
With the bears delisted, some are concerned about plans by Montana officials to

allow the hunting of Yellowstone grizzlies. Dr. David Mattson, a retired wildlife biologist, said that there is a good chance that “Montana will institute a more lethal regime, whether by sport hunting or by other means, that will compromise these prospects.”

The state has said it would not allow hunting in areas where the two populations might reconnect.

As bears explore far beyond their core habitats, people not accustomed to grizzlies need to be educated about bear-proofing garbage cans and sealing off beehives and chicken coops with electric fencing, Dr. van Manen said.

Carrying pepper spray has already become indispensable for hikers, hunters and others in many parts of Montana, Idaho and Wyoming.

In 2016, four grizzlies were killed after confronting hunters in “defense of life” scenarios. Recently, a game warden near Cody, Wyo., shot and killed a female grizzly when it charged at him, leaving her cubs orphans.

Generally, though, the news for the big bear is good, said Dr. van Manen.

“There is strong scientific evidence that the recovery process that was put into place starting in the mid 1970s has paid off,” he said. “It’s an extraordinary effort

---

for recovery of a species that has ability to kill people. For the American people to support it is a remarkable achievement.”

The project FEIS does not address what the level of security, OMARD, and TMARD are recommended for grizzly bears in the NCDE, and how these compare to those available in the project area. This comparison would demonstrate compat- ibility of existing and planned management of grizzly bears to the general public.

There is no analysis of TMARD before or after project completion. Decommissioning of roads will reduce OMARD, but will not reduce TMARD. The road would have to be completely obliterated, and no future use can be planned (IGBC 1998). The claim that all new temporary roads will be obliterated, and thus no add to TMARD after the projects are completed, is never actually verified in the project FEIS. There is no actual identification of the individual new temporary roads to be constructed, how long they will be left in place, the timeline for obliteration, as well as thes for obliteration. The project FEIS does not define why future management activities will not be required on these new roads in harvest units, such as future harvests in partial logging units, and precommercial thinning of the vast clearcut acreage that will be created by the project.

There is no analysis on how the project as to how the clearcutting existing cover, including openings up to large clearcuts, will affect grizzly bear movement through this landscape.

In a project analysis, the Forest Service must apply the best available science.

The BiOp for the BDNF revised Forest Plan, and the scoping notice for the Greenhorn project, also do not use the current best science by identifying limits to TMARD or security. Security is the key factor that is proposed for management outside the Recovery Zones for grizzly bears (RFP Appendix G at 48).

The suggestion by the USFWS that the RFP OMRTD direction will prevent undue impacts on grizzly bears is meaningless as well. The RFP direction does not have to be met within any specific project area, including the project, but rather within huge landscape areas. The key linkage zone in the Greenhorn project could increase roads by over 60 miles and still meet the RFP “goal” for OMARD “after” the project is completed. This goal does not apply to activities during project im- plementation (RFP glossary at corrected 295).

The incidental take allowed on the BDNF and in the project for current as well as planned levels of disturbance are illegal because there is no actual means of mea- suring take by the allowed construction of up to 70 miles of new roads across the entire BDNF, which consists of 3, 380,000 acres (RFP 2).

The Greenhorn  project violates existing conservation direction for grizzly bears because habitat connectivity is not being managed to contribute to wildlife linkage zones (RFP at 45); secure habitat needed to facilitate grizzly bear habitat will be decreased for over 10 years, during which bear movements will be reduced.

The Forest Service and the USFWS will violate the ESA, the NEPA, and the NFMA if the project is implemented, due to the following:

-the BDNF has no conservation strategy for grizzly bears on the Pintler portion of the Forest, including within the project area.

-the BDNF is not maintain habitat connectivity for grizzly bears in the Greenhorn  project area.

-the analysis of direct impacts for the project area do not use the current best sci- ence for grizzly bear security areas in the NDDE.

-the ability of grizzly bears to traverse through the project area is never evaluated.

-the current best science, including levels of grizzly bear security, open and total road densities, was not used in evaluating project impacts on grizzly bear during as well as after implementation.

-mitigation measures cited by both the Forest Service and the USFWS for grizzly bears as per landscape levels of OMRTD are invalid as direct effects are washed out.

-mitigation measures as per OMRTD at the landscape level do not apply to project implementation, and do therefore no mitigate disturbance impacts to grizzly bears from motorized routes during project activities.

-the cumulative effects of proposed activities on the Helena National Forest are not evaluated.

-the conclusions as to project effects as per the ESA of the proposed project on grizzly bears is never identified in the draft ROD or FEIS.

-the report provided by the USFWS in regards to project impacts on grizzly bears, and terms and conditions of the project, were never provided to the public in the draft ROD or FEIS.

-the conclusions regarding project impacts on grizzly bears in the project FEIS were invalid due to a lack of supporting documentation.

-there is no analysis of the loss of extensive, large blocks of hiding cover on grizzly bear movement through the project area.

-there was no action alternative that would restore grizzly bear habitat in the project area to improve habitat connectivity.

-the FS and the USFWS provided invalid, unsupported definitions of “temporary impacts”.

Openings Greater than 40 acres.

The Forest Service has not published a legal notice as require by law.

This is a violation of NEPA, NFMA, the APA, the Forest Plan and the ESA.

Please publish a legal notice asking for public comment on opening over 40 acres and the write an EIS that fully complies with the law.

Climate Change

The NEPA requires a “hard look” at climate issues, including cumulative effects of the “treatments” in the proposed project when added to the heat, drought, wind and other impacts associated with in- creased climate risk. Regeneration/Restocking failure following wildfire, prescribed fire and/or mechanical tree-killing has not been analyzed or disclosed. There is a considerable body of science that suggests that regeneration following fire is increasingly problematic.

NEPA requires disclosure of impact on “the human environment.” Climate risk presents important adverse impacts on cultural, economic, environmental, and social aspects of the human environment. – people, jobs, and the economy – adjacent to and near the project area. Challenges in predicting responses of individual tree species to climate are a result of species competing under a never-before-seen climate regime – one forests may not have experienced before either.

In an uncertain future of rapid change and abrupt, unforeseen transitions, adjustments in management approaches will be necessary and some actions will fail. However, it is increasingly evident that the greatest risk is posed by continuing to implement strategies inconsistent with and not informed by current understanding of our novel future....

Achievable future conditions as a framework for guiding forest conservation and management, Forest Ecology and Management 360 (2016) 80–96, S.W. Golladay et al. (Please, find attached)

Stands are at risk of going from forest to non-forest, even without the added risk of "management" as proposed in the project area. The project is currently is violation of NEPA, NFMA, and the APA.

The EA does not analyze or disclose the body of science that implicates logging activities as a contributor to reduced carbon stocks in forests and increases in greenhouse gas emissions. The EA fails to provide estimates of the total amount of carbon dioxide ($CO_2$) or other greenhouse gas emissions caused by FS management actions and policies —forest-wide, regionally, or nationally. Agency policymakers seem comfortable maintaining a position that they need not take any leadership on this issue, and obfuscate via this EA to justify their failures.

The best scientific information strongly suggests that management that involves removal of trees and other biomass increases atmos- pheric $CO_2$. Unsurprisingly the EA doesn't state that simple fact.

The BDNF has not yet accepted that the effects of climate risk represent a significant issue, and eminent loss of forest resilience already, and a significant and growing risk into the "foreseeable future?"

It is now time to speak honestly about unrealistic expectations relating to desired future condition. Forest managers have failed to disclose that at least five common tree species, including aspen and four conifers, are at great risk unless atmospheric greenhouse gases and associated temperatures can be contained at today's levels of concentration in the atmosphere. (See attached map). This cumulative ("reasonably foreseeable") risk must not continue to be ignored at the project-level, or at the programmatic (Forest Plan) level.

Global warming and its consequences may also be effectively irreversible which implicates certain legal consequences under NEPA and NFMA and ESA (e.g., 40 CFR § 1502.16; 16 USC §1604(g); 36 CFR §219.12; ESA Section 7; 50 CFR §§402.9, 402.14). All net car- bon emissions from logging represent “irretrievable and irreversible commitments of resources.”

It is clear that the management of the planet’s forests is a nexus for addressing this largest crisis ever facing humanity. Yet the EA and Draft Decision Notice fails to even provide a minimal quantitative analysis of project- or agency-caused $CO_2$ emissions or consider the best available science on the topic. This is immensely unethical and immoral. The lack of detailed scientific discussions in the EA and Draft Decision Notice concerning climate change is far more troubling than the document’s failures on other topics, because the consequences of unchecked climate change will be disastrous for food production, sea level rise, and water supplies, resulting in complete turmoil for all human societies. This is an issue as serious a nuclear annihilation (although at least with the latter we’re not already pressing the button).

The EA provided a pittance of information on climate change effects on project area vegetation. The EA provides no analysis as to the veracity of the project’s Purpose and Need, the project’s objectives, goals, or desired conditions. The FS has the responsibility to inform the public that climate change is and will be bringing forest change.

The EA fails to consider that the effects of climate change on the project area, including that the “desired” vegetation conditions will likely not be achievable or sustainable. The EA fails to provide any credible analysis as to how realistic and achievable its desired condi- tions are in the context of a rapidly changing climate, along an un- predictable but changing trajectory.

The Forest Plan does not provide meaningful direction on climate change. Nor does the EA acknowledge pertinent and highly relevant best available science on climate change. This project is in violation of NEPA.

The EA does not analyze or disclose the body of science that implicates logging activities as a contributor to reduced carbon stocks in forests and increases in greenhouse gas emissions. The EA fails to provide estimates of the total amount of carbon dioxide ($CO_2$) or other greenhouse gas emissions caused by FS management actions and policies —forest-wide, regionally, or nationally. Agency policy-makers seem comfortable maintaining a position that they need not take any leadership on this issue, and obfuscate via this EA to justify their failures.

The best scientific information strongly suggests that management that involves removal of trees and other biomass increases atmospheric $CO_2$. Unsurprisingly the FSEIS doesn't state that simple fact.

The EA fails to present any modeling of forest stands under different management scenarios. The FS should model the carbon flux over time for its proposed stand management scenarios and for the vari- ous types of vegetation cover found on the BDNF.

The EA also ignores $CO_2$ and other greenhouse gas emissions from other common human activities related to forest management and recreational uses. These include emissions associated with machines used for logging and associated activities, vehicle use for administrative actions, and recreational motor vehicles. The FS is simply ignoring the climate impacts of these management and other authorized activities.

The Committee of Scientists, 1999 recognize the importance of forests for their contribution to global climate regulation. Also, the 2012 Planning Rule recognizes, in its definition of Ecosystem services, the "Benefits people obtain from ecosystems, including: (2)

Regulating services, such as long term storage of carbon; climate regulation...”

We have no more time to prevaricate, and it’s not a battle we can afford to lose. We each have a choice: submit to status quo for the profits of the greediest 1%, or empower ourselves to limit greenhouse gas emissions so not just a couple more generations might survive.

The District Court of Montana ruled in Case 4:17-cv-00030- BMM that the Federal government did have to evaluate the climate change impacts of the federal government coal pro- gram.

In March 2019, U.S. District Judge Rudolph Contreras in Washington, D.C., ruled that when the U.S. Bureau of Land Management (BLM) auctions public lands for oil and gas leas- ing, officials must consider emissions from past, present and foreseeable future oil and gas leases nationwide. The case was brought by WildEarth Guardians and Physicians for Social Responsibility.

In March of 2018 the Federal District Court of Montana found the Miles City (Montana) and Buffalo (Wyoming) Field Office’s Resource Management Plans unlawfully overlooked climate impacts of coal mining and oil and gas drilling. The case was brought by Western Organization of Resource Councils, Mon- tana Environmental Information Center, Powder River Basin

Resource Council, Northern Plains Resource Council, the Sier- ra Club, and the Natural Resources Defense Council.

The project is in violation of NEPA, NFMA, the APA, the ESA for not examining the impacts of the project on climate change. The project will eliminate the forest in the project area. Forests absorb carbon. The project will destroy soils in the project area. Soils are carbon sinks.

Please see the following article that ran in the Missoulian on March 11, 2019.

Fire study shows landscapes such as Bitterroot's Sapphire Range too hot, dry to restore trees

ROB CHANEY rchaney@missoulian.com Mar 11, 2019

Burned landscapes like this drainage in the Sapphire Mountains hasn't been able to grow new trees since the Valley Complex fire of 2000, due to lack of soil moisture, humidity and seed trees, as well as excess heat during the growing season. University of Montana students Erika

Berglund and Lacey Hankin helped gather samples for a study showing tree stands are getting replaced by grass and shrubs after fire across the western United States due to climate change.

Courtesy Kim Davis

Fire-scarred forests like the Sapphire Range of the Bitterroot Valley may become grasslands because the growing seasons have become too hot and dry, according to new research from the University of Montana.

“The drier aspects aren’t coming back, especially on north-facing slopes,” said Kim Davis, a UM landscape ecologist and lead inves- tigator on the study. “It’s not soil sterilization. Other vegetation like grasses are re-sprouting. It’s too warm. There’s not enough moisture for the trees.”

Davis worked with landscape ecologist Solomon Dobrowski, fire pa- leoecologist Philip Higuera, biologist Anna Sala and geoscientist Marco Maneta at UM along with colleagues at the U.S. Forest Ser- vice and University of Colorado-Boulder to produce the study, which was released Monday in the Proceedings of the National Academy of Sciences journal.

“What’s striking is if you asked scientists two decades ago how cli- mate warming would play out, this is what they expected we’d see,” Higuera said. “And now we’re starting to see those predictions on the impact to ecosystems play out.”

The study concentrated on regrowth of Ponderosa pine and Douglas fir seedlings in Montana, Idaho, Colorado, New Mexico,

Arizona and northern California. Field workers collected trees from 90 sites, including 40 in the northern Rocky Mountains, scattered within 33 wildfires that had occurred within the past 20 years.

“We did over 4,000 miles of road-tripping across the West, as well as lots of miles hiking and backpacking,” Davis said. The survey crews brought back everything from dead seedlings to 4-inch-diameter tree rings; nearly 3,000 samples in total. Then they analyzed how long

each tree had been growing and what conditions had been when it sprouted.

Before the 1990s, the test sites had enough soil moisture, humidity and other factors to recruit new seedlings after forest fires, Do- browski said.

“There used to be enough variability in seasonal conditions that seedlings could make it across these fixed thresholds,” Dobrowski said. “After the mid-‘90s, those windows have been closing more of- ten. We’re worried we’ll lose these low-elevation forests to shrubs or grasslands. That’s what the evidence points to.”

After a fire, all kinds of grasses, shrubs and trees have a blank slate to recover. But trees, especially low-elevation species, need more soil moisture and humidity than their smaller plant cousins. Before the mid-90s, those good growing seasons rolled around every three to five years. The study shows such conditions have evaporated on virtually all sites since 2000.

“The six sites we looked at in the Bitterroots haven’t been above the summer humidity threshold since 1997,” Higuera said. “Soil moisture hasn’t crossed the threshold since 2009.”

The study overturns some common assumptions of post-fire recovery. Many historic analyses of mountain forests show the hillsides used to hold far fewer trees a century ago, and have become overstocked due to the efforts humans put at controlling fire in the woods. Higuera explained that some higher elevation forests are returning to their more sparse historical look due to increased fires.

“But at the lower fringes, those burn areas may transition to non- forest types,” Higuera said, “especially where climate conditions at the end of this century are different than what we had in the early 20th Century.”

The study also found that soil sterilization wasn’t a factor in tree re- growth, even in the most severely burned areas. For example, the 2000 Sula Complex of fires stripped forest cover in the southern end of the Bitterroot Valley. While the lodgepole pine stands near Lost Trail Pass have recovered, the lower- elevation Ponderosa pine and Douglas firs haven’t.

Another factor driving regeneration is the availability of surviving seed trees that can repopulate a burn zone. If one remains within 100 meters of the burned landscape, the area can at least start the process of reseeding. Unfortunately, the trend toward high-severity fires has reduced the once-common mosaic patterns that left some undamaged groves mixed into the burned areas.

Higuera said he hoped land managers could use small or prescribed fires to make landscapes more resilient, as well as restructure tree- planting efforts to boost the chances of heavily burned places.

Rob Chaney

Natural Resources & Environment Reporter

Natural Resources Reporter for The Missoulian.

The NFMA requires in the face of increasing climate risk, growing impacts of wildfire and insect activity, plus scientific research find- ings, the FS must disclose the significant trend in post-fire regeneration failure. The forest has already experienced considerable difficulty restocking on areas that have been subjected to prescribed fire, clear-cut logging, post- fire salvage logging and other even-aged management "systems."

NFMA (1982) regulation 36CFR 219.27(C)(3) implements the NFMA statute, which requires restocking in five years.

Forest managers must analyze and disclose the fact that the Beaverhead-Deerlodge National Forest can no longer "insure that timber will be harvested from the National Forest system lands only where...there is assurance that such lands can be restocked within five years of harvest?" (NFMA§6(g)(3)(E)(ii)).

The project goals and expectations are not consistent with NFMA's "adequate restocking" requirement. Scientific research can no longer be ignored.

"At dry sites across our study region, seasonal to annual climate conditions over the past 20 years have crossed these thresholds, such that conditions have become increasingly unsuitable for regenera- tion. High fire severity and low seed availability further reduced the probability of post-fire regeneration. Together, our results demon- strate that climate change combined with high severity fire is leading to increasingly fewer opportunities for seedlings to establish after wildfires and may lead to ecosystem transitions in low-elevation ponderosa pine and Douglas-fir forests across the western United States." Wildfires and climate change push low-elevation forests across a critical climate threshold for tree regeneration, PNAS (2019), Kimberley T. Davis, et al. (Please, find attached)

Forests are already experiencing emissions-driven deforestation on both the post-fire and post-logging acreage. Areas where the cumula- tive effects of wildfire, followed by salvage logging on the same piece of ground are error upon error, with decades of a routine that can rightfully be described as willful ignorance and coverup.

Where is the reference to restocking? Monitoring data and analysis? If monitoring has been done there is no disclosure documenting the scope and probability of post-fire regeneration failures in the project area. NFMA requires documentation and analysis that accurately estimates climate risks driving regeneration failure and deforestation – all characteristic of a less “resilient” forest.

“In the US Rocky Mountains, we documented a significant trend of post-fire tree regeneration, even over the relatively short period of 23 years covered in this analysis. Our findings are consistent with the expectation of reduced resilience of forest ecosystems to the combined impacts of climate warming and wildfire activity. Our results suggest that predicted shifts from forest to non-forested vegetation.” Evidence for declining forest resilience to wildfires under climate change, Ecology Letters, (2018) 21: 243–252, Stevens-Rumens et al. (2018).

The Forest Plan is based on assumptions largely drawn from our past. These assumptions must be challenged, and amended, where overwhelming evidence demonstrates a change of course is critically important. It is time to take a step back, assess the future and make the necessary adjustments, all in full public disclosure to the Congress and the American people.

The EA fails to acknowledge the likelihood that "...high seedling and sapling mortality rates due to water stress, competing vegetation, and repeat fires that burn young stands," which will likely lead to a dramatic increase in non- forest land acres. Many acres of (conifers) trees already fail to regenerate. (Emphasis added). A map of these areas is required. In many areas, conifers haven't shown "resilience" enough to spring back from disturbance.

Looking to the Future and Learning from the Past in our Na- tional Forests: Posted by Randy Johnson, U.S. Forest Service Research and Development Program, on November 1, 2016 at 11:00 AM http://blogs.usda.gov/2016/11/01/looking-to-the- future-and-learning-from-the-past-in-our-national-forests/

Excerpt:

"Forests are changing in ways they've never ex- perienced before because today's growing conditions are different from anything in the past. The climate is chang- ing at an unprecedented rate, exotic diseases and pests are present, and landscapes are fragmented by human ac- tivity often occurring at the same time and place.

When replanting a forest after disturbances, does it make sense to try to reestablish what was there before? Or, should we find re-plant material that might be more ap- propriate to current and future conditions of a changing environment?

Restoration efforts on U.S. Forest Service managed lands call for the use of locally adapted and appropriate native seed sources. The science-based process for selecting these seeds varies, but in the past, managers based deci- sions on the assumption that present site conditions are similar to those of the past."

"This may no longer be the case."
The selected scientific research presented above is only a sampling of the growing body of evidence that supports the need to disclose the consequences of the proposed action in a proper context – a hotter forest environment, with more frequent drought cycles. This evidence brings into question

the Purpose and Need for the project. It also requires the FS to reconsider the assumptions, goals and expected desired future condition expressed in the existing Forest Plan. Plan expectations must be amended at the programmatic level before proceeding with proposed project-level action(s). According to best available science, implementing the project will most likely accomplish the opposite of the desired future condition. We can adjust as we monitor and find out more. However, to willfully ignore what we do know and fail to disclose it to the public is a serious breach of public trust and an unconscionable act. Climate risk is upon us. A viable alternative to the proposal is not only reasonable and prudent, but it is the right thing to do.

The Greenhorn project is in violation of NEPA, NFMA, the Clean Water Act, the ESA and the APA because the project will adversely affect biological diversity, is not following the best available since and the purpose and need will not work.

The NFMA requires in the face of increasing climate risk, growing impacts of wildfire and insect activity, plus scientific research findings, the FS must disclose the significant trend in post-fire regenera- tion failure. The forest has already experienced considerable difficul- ty restocking on areas that have been subjected to prescribed fire, clear-cut logging, post- fire salvage logging and other even-aged management "systems."

NFMA (1982) regulation 36CFR 219.27(C)(3) implements the NFMA statute, which requires restocking in five years.

Forest managers must analyze and disclose the fact that the Beaverhead-Deerlodge National Forest can no longer "insure that timber will be harvested from the National Forest system lands only where...there is assurance that such lands can be restocked within five years of harvest?" (NFMA§6(g)(3)(E)(ii)).

The project goals and expectations are not consistent with NFMA's "adequate restocking" requirement. Scientific research can no longer be ignored.

"At dry sites across our study region, seasonal to annual climate conditions over the past 20 years have crossed these thresholds, such that conditions have become increasingly unsuitable for regenera- tion. High fire severity and low seed availability further reduced the probability of post-fire regeneration. Together, our results demon- strate that climate change combined with high severity fire is leading to increasingly fewer opportunities for seedlings to establish after wildfires and may lead to ecosystem transitions in low-elevation ponderosa pine and Douglas-fir forests across the western United States." Wildfires and climate change push low-elevation forests across a critical climate threshold for tree regeneration, PNAS (2018), Kimberley T. Davis, et al. (Please, find attached)

Both RPA and NFMA mandate long-range planning which impose numerous limitations on commodity production, including grazing, timber harvesting practices and the amount of timber sold annually.

These long-range plans are based on assumptions, which are based on data, expert opinion, public participation and other factors that all, well almost all, view from a historical perspective. Assumptions that drove forest planning guidance decades ago, when climate risk was not known as it is today, are obsolete today.

Present and future climate risk realities demand new assumptions and new guidance.

A proper reexamination of the assumptions relating to resilience and sustainability contained in the Forest Plan is necessary. Scientific re- search supporting ours focus on important data and analy- sis. A full discussion and disclosure of the following is required: 1) trends in wildfires, insect activity and tree mortality, 2) past regeneration success/failure in the project area, and 3) climate-risk science – some of which is cited below. Our comments, and supporting scientific re- search clearly "demonstrates connection between prior specific written comments on the particular proposed project or activity and the content of the objection..."

The project is in violation of NEPA, NFMA, the Forest Plan and the APA.

Sec. 6. of the National Forest Management Act states:

(g) As soon as practicable, ... the Secretary shall ... promulgate reg- ulations, under the principles of the Multiple-Use, Sustained-Yield Act of 1960...

The regulations shall include, but not be limited to-

(3) specifying guidelines for land management plans developed to achieve the goals of the Program which-

(E) insure that timber will be harvested from National Forest System lands only where-

(i) soil, slope, or other watershed conditions will not be irreversibly damaged;

NFMA regulations at 36 C.F.R. § 219.27 (Management require- ments) state:

(a) Resource protection. All management prescriptions shall—

(1) Conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land;

(b) Vegetative manipulation. Management prescriptions that involve vegetative manipulation of tree cover for any purpose shall--

(5) Avoid permanent impairment of site productivity and ensure con- servation of soil and water resources;

The project-level, and programmatic-level (Forest Plan) fail to pub- licly disclose the current and future impacts of climate risk to our national forests. NEPA requires cumulative effects analysis at the programmatic level, and at the project-level. The failure to assess and disclose all risks associated with vegetative-manipulation (slash and burn) units in the project area in the proper climate-risk context/sce- nario violates the NFMA, NEPA and the APA.

In the face of increasing climate risk, growing impacts of wildfire and insect activity, plus scientific research findings, NEPA analysis and disclosure must address the well-documented trend in post-fire regeneration failure. The project has already experienced difficulty restocking on areas that burned in the 1988 wildfire. NFMA (1982) regulation 36 CFR 219.27(c)(3) implements the NFMA statute, which requires adequate restocking in five years.

Given the forest’s poor history of restocking success and its failure to employ the best available science, the adequacy of the site-specif- ic and programmatic NEPA/NFMA process begs for further analysis and disclosure of the reality of worsening climate conditions which threaten – directly and cumulatively – to turn forest into non-forest- ed vegetation, or worse. The desired future condition described in the Purpose and Need, or in the Forest Plan is not deforestation.

The Forest Plan is based on assumptions largely drawn from our past. These assumptions must be challenged, and amended, where overwhelming evidence demonstrates a change of course is critically important. It is time to take a step back, assess the future and make the necessary adjustments, all in full public disclosure to the Congress and the American people.

The EA fails to acknowledge the likelihood that "...high seedling and sapling mortality rates due to water stress, competing vegetation, and repeat fires that burn young stands," which will likely lead to a dramatic increase in non- forest land acres. Many acres of (conifers) trees already fail to regenerate. (Emphasis added). A map of these areas is required. In many areas, conifers haven't shown "re- silience" enough to spring back from disturbance.

Looking to the Future and Learning from the Past in our National Forests: Posted by Randy Johnson, U.S. Forest Service Research and Development Program, on November 1, 2016 at 11:00 AM http://blogs.usda.gov/2016/11/01/

looking-to-the- future-and-learning-from-the-past-in-our-national-forests/

Excerpt:

“Forests are changing in ways they've never ex- perienced before because today's growing conditions are different from anything in the past. The climate is chang- ing at an unprecedented rate, exotic diseases and pests are present, and landscapes are fragmented by human ac- tivity often occurring at the same time and place.

When replanting a forest after disturbances, does it make sense to try to reestablish what was there before? Or, should we find re-plant material that might be more ap- propriate to current and future conditions of a changing environment?

Restoration efforts on U.S. Forest Service managed lands call for the use of locally adapted and appropriate native seed sources. The science-based process for selecting these seeds varies, but in the past, managers based deci- sions on the assumption that present site conditions are similar to those of the past.”

“This may no longer be the case.”
Please amend the Forest Plan to establish standards and guidelines which acknowledge the significance of climate risk to other multiple-uses. Amendments must not only analyze forest-wide impacts, but the regional, national and global scope of expected environmental changes. Based on scientific research, the existing and projected irretrievable losses must be estimated. Impacts caused by gathering climate risk (heat, drought, wind) and its symptoms, including wildfire, insect activity, and regeneration failure and mature tree mortality must be analyzed cumulatively.

The selected scientific research presented above is only a sampling of the growing body of evidence that supports the need to disclose the consequences of the proposed action in a proper context – a hotter forest environment, with more frequent drought cycles. This evidence brings into question the Purpose and Need for the project. It also requires the FS to reconsider the assumptions, goals and expected desired future condition expressed in the existing Forest Plan. Plan expectations must be amended at the programmatic level before proceeding with proposed project-level action(s). According to best available science, implementing the project will most likely accomplish the opposite of the desired future condition. We can adjust as we monitor and find out more. However, to willfully ignore what we do know and fail to disclose it to the public is a serious breach of public trust and an unconscionable act. Climate risk is upon us. A viable alternative to the proposal is not only reasonable and prudent, but it is the right thing to do.

**Whitebark pine**

Whitebark pine seedlings, saplings and mature trees, present in subalpine forests proposed for burning, would experience mortality from project activity. Whitebark pine is fire intolerant (thin bark). Fire favors whitebark pine regeneration (through canopy opening and reducing competing vegetation) only in the presence of ade- quate seed source and dispersal mechanisms (Clarks Nutcracker or humans planti- ng whitebark pine seedlings).

White pine blister rust, an introduced disease, has caused rapid mortality of white- bark pine over the last 30 to 60 years. Keane and Arno (1993) reported that 42 per- cent of whitebark pine in western Montana had died in the previous 20 years with 89 percent of remaining trees being infected with blister rust. The ability of white- bark pine to reproduce naturally is strongly affected by blister rust infection; the rust kills branches in the upper cone bearing crown, effectively ending seed pro- duction.

Montana is currently experiencing a mountain pine beetle epidemic. Mountain pine beetle prefer large, older whitebark pine, which are the major cone producers. In some areas the few remaining whitebark that show the potential for blister rust re- sistance are being attacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone-bearing trees.

Are whitebark pine seedlings and saplings present in the subalpine forests pro- posed for burning and logging? In the absence of fire, this naturally occurring whitebark pine regeneration would continue to function as an important part of the subalpine ecosystem. Since 2005, rust resistant seed sources have been identified in the Northern Rockies (Mahalovich et al 2006). Due to the severity of blister rust infection within the region, natural whitebark pine regeneration in the project area is

What surveys have been conducted to determine presence and abundance of white- bark pine re-generation? If whitebark pine seedlings and saplings are present, what measures will be taken to protect them? Please include an alternative that excludes logging in the presence of whitebark pine regeneration.Will restoration efforts include planting whitebark pine? Will planted seedling be of rust-resistant stock? Is rust resistant stock available? Would enough seedlings be planted to replace white- bark pine lost to fire activities? Have white pine blister rust surveys been accom- plished? What is the severity of white pine blister rust in proposed action areas?

Since Whitebark pine are now proposed to be listed under the ESA, you must formally reconsult with the FWS on the impact of the project on whitebark pine.  To do this the Forest Service will need to have a complete and recent survey of the entire project area for whitebark pine and consider planting whitebark pine as the best available science by Keene et al. states is the only way to get new whitebark pine to grow.

On December 2, 2020, the U.S. Fish and Wildlife Service issued a rule proposing to list whitebark pine (Pinus albicaulis) under the Endangered Species Act.

The Project area includes whitebark pine.

The project will be a NFMA violation because it will promote the demise of aspen stands by burning out conifers without providing protection from livestock browsing.

To save aspen some national forests limit cattle utilization of aspen to 20%.  What is the current cattle utilization of aspen?

The agency is violating the NEPA by claiming that conifer encroachment needs to be removed to promote aspen, when livestock grazing is almost always the problem with aspen failure to regenerate.

The agency is violating the NEPA by promoting fuel reduction projects as protection of the public from fire, when this is actually a very unlikely event; the probability of a given fuel break to actually have a fire in it before the fuels reduction benefits are lost with conifer regeneration are extremely remote; forest drying and increased wind speeds in thinned forests may increase, not reduce, the risk of fire.

The agency is violating the NEPA by providing false reasons for prescribed burning to the public by claiming that insects and disease in forest stands are detrimental to the forest by reducing stand vigor (health) and increasing fire risk. There is no current science that demonstrates that insects and disease are bad for wildlife, including dwarf mistletoe, or that these increase the risk of fire once red needles have fallen.

The agency is violating the NEPA by claiming that prescribed burning is needed to create a diversity of stand structures and age classes.

The agency is violating the NEPA by using vague, unmeasureable terms to rationalize the proposed burning to the public. How can the public measure “resiliency?” What are the specific criteria used to define resiliency, and what are the ratings for each proposed logging unit before and after treatment? How is the risk of fire as affected by the project being measured so that the public can understand whether or not this will be effective? How is forest health to be measured so that the public can see that this is a valid management strategy? What specifically constitutes a diversity of age classes, how is this to be measured, and how are proposed changes measured as per diversity? How are diversity measures related to wildlife (why is diversity needed for what speciese)? If the reasons for logging cannot be clearly identified and measured for the public, the agency is not meeting the NEPA requirements for transparency.

The agency is violating the NEPA by claiming that prescribed burning will benefit wildlife; the scoping document does not identify what habitat objectives will be addressed with burning, so the public is unable to understand how to comment on this claim.

Please find attached our previous comments on the Greenhorn Project and the Lynx Analysis Unit remapping

Forest Plan Amendment. Our concerns were not adequately addressed.

Thank you for your consideration of our concerns.

Sincerely yours,
Mike Garrity
/s/
Executive Director
Alliance for the Wild Rockies
P.O. Box 505
Helena, MT 59624
406-459-5936

And for
Sara Johnson
Native Ecosystems Council
P.O. Box 125
Willow Creek, MT 59760

And for

Steve Kelly

Director, Council on Wildlife and Fish

P.O. Box 4641

Bozeman, MT 59772

And for

Gallatin Wildlife Association
P.O. Box 5317,
Bozeman, MT 59717

And for

Nancy Schultz
Glenn Monahan
420 N 10th Ave
Bozeman, MT 59715