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Comments: June 6, 2019

Custer Gallatin National Forest Supervisor's Office

10 East Babcock

Bozeman, MT 59715

To Whom it May Concern:

Please accept these attached comments from me in MS Word format on behalf of the Alliance for the Wild Rockies, Native Ecosystems Council and Montana Ecosystems Defense Council on the revised Forest Plan and the draft environmental impact statement for the revised forest plan.

Thank you for your attention to these concerns.

Please accept these comments from me on behalf of the Alliance for the Wild Rockies, Native Ecosystems Council and Montana Ecosystems Defense Council (Here after AWR or Alliance) on the revised Forest Plan and the draft environmental impact statement for the revised forest plan.

The DEIS doesn't consider an alternative that recommends as wilderness all of the inventoried roadless areas and the the unroaded areas adjacent to inventoried roadless areas as in violation of NEPA. Please consider an alternative an alternative that would recommend as wilderness all roadless areas and the adjoining un-inventoried roadless areas as recommended wilderness.

The Ninth Circuit Court of Appeals has ruled repeatedly that the Forest Service must analyze the environmental consequences, including irreversible and irretrievable commitment of resources on roadless area attributes, and the effects of potential designation as wilderness under the Wilderness Act of 1964 on a project on lands contiguous to roadless areas. This analysis must consider the effects to the entire roadless expanse -- that is both the roadless area and the unroaded lands contiguous to the roadless area. All of the Roadless areas in the Custer Gallatin National Forest would be designated as Wilderness under the Northern Rockies Ecosystem Protection Act or (NREPA). Currently, ten Senators are sponsoring NREPA in the Senate (S. 827) and 40 Representatives are sponsoring NREPA in the House (H.R. 1321).

Please find a copy of S. 827 attached.

The Custer Gallatin National Forest must consult with the Fish and Wildlife Service forest wide on and the impact of the proposed revised forest plan on lynx, lynx critical habitat, grizzly bears and wolverines.

The Custer Gallatin National Forest 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 aspens 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 ([ldquo]reasonably foreseeable[rdquo]) 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 [sect] 1502.16; 16 USC [sect]1604(g); 36 CFR [sect]219.12; ESA Section 7; 50 CFR [sect][sect]402.9, 402.14). All net carbon emissions from logging represent [ldquo]irretrievable and irreversible commitments of resources.[rdquo]

It is clear that the management of the planet's forests is a nexus for addressing this largest crisis

ever facing humanity. Yet the DEIS fails to even provide a minimal quantitative analysis of project- or agency-caused CO2 emissions or consider the best available science on the topic.

The lack of detailed scientific discussions in the DEIS 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 as nuclear annihilation (although at least with the latter we're not already pressing the button).

The DEIS provided a pittance of information on climate change effects on CGNF vegetation. The DEIS provides no analysis as to the veracity of the Revised Forest Plan'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 DEIS fails to adequately consider that the effects of climate change on the Custer Gallatin National Forest, including that the [ldquo]desired[rdquo] vegetation conditions will likely not be achievable or sustainable. The DEIS fails to provide any credible analysis as to how realistic and achievable its desired conditions are in the context of a rapidly changing climate, along an unpredictable but changing trajectory.

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

The DEIS 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 DEIS fails to provide estimates of the total amount of carbon dioxide (CO2) 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 atmospheric CO₂. Unsurprisingly the DEIS and the revised Forest Plan doesn't state that simple fact.

The DEIS 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 various types of vegetation cover found on the CGNF.

The EA also ignores CO₂ 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 DEIS must take a hard look at the science of climate change. Alternatively, draft and new EIS for this Revised Forest Plan which includes an analysis that examines climate change in the context of project activities and Desired Conditions. Better yet, it's time to prepare an EIS on the whole bag of U.S. Government climate policies.

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 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 Custer Galatin 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[sect]6(g)(3)(E)(ii)).

The Revised Forest Plan goals and expectations are not consistent with NFMA's "adequate restocking" requirement. Scientific research can no longer be ignored.

[Idquo]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 regeneration. High fire severity and low seed availability further reduced the probability of post-fire regeneration. Together, our results demonstrate 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.[rdquo] 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)

Forests are already experiencing emissions-driven deforestation on both the post-fire and post-logging acreage. Areas where the cumulative 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?

NFMA requires documentation and analysis that accurately estimates climate risks driving regeneration failure and deforestation [ndash] all characteristic of a less [ldquo]resilient[rdquo] forest.

[Idquo]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.[rdquo] Evidence for declining forest resilience to wildfires under climate change, Ecology Letters, (2018) 21: 243[ndash]252, Stevens-Rumens et al. (2018). (Please find attached)

The Revised Forest Plan is based on assumptions largely drawn from our past that no longer hold true. These assumptions, made decades ago, must be challenged, and amended, where overwhelming evidence demonstrates a change of course is critical. It is time to take a step back, assess the present and future and make the necessary adjustments, all in full public disclosure to the Congress and the American people. Many acres of (conifers) In many areas, conifers haven[rsquo]t shown [ldquo]resilience[rdquo] enough to spring back from disturbance. Regeneration is already a big problem. (Emphasis added).

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 research supporting our comments focus on important data and analysis. 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 CGNF, and 3) climate-risk science [ndash] some of which is cited below. The Revised Forest Plan and the DEIS do not Disclose the impact of climate change on the efficacy of the proposed treatments

called for in the Revised Forest Plan.

Hayward, 1994 essentially calls into question the entire manipulate and control regime, as represented in the DEIS. The managed portion of the Custer Galatin National Forest has been fundamentally changed, as has the climate, so the Forest Service must analyze how much land has been fundamentally changed forest wide compared to historic conditions, and disclose such information to the public in the context of an EIS by completing the Forest Plan Revision

PLEASE TAKE A HARD LOOK AT HOW CLIMATE CHANGE AFFECTS AND IS AFFECTED BY THE REVISED FOREST PLAN IN VIOLATION OF NEPA, NFMA.

Published scientific reports indicate that climate change will be exacerbated by logging, and that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the proposed effects of the Revised Forest Plan). The former indicates that the logging called for in the revised Forest Plan may have a significant adverse effect on the environment, and the latter undermines the central underlying purpose of the Revised Forest Plan. 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 following studies: [rdquo]

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 [ndash] 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[rsquo]ev Gedalof, David L. Peterson, and Philip Mote. 2004. Climatic change, wildfire, and conservation. *Conservation Biology* 18:4: 890 -902.

Please include an alternative that considers the long-term cumulative impacts of its industrial logging on climate change. [rdquo]

This important consideration could lead land managers and policy makers to the conclusion that National Forest lands are more valuable to the national and global community as carbon sinks than as commercial tree farms.

The DEIS and the Revised Forest Plan are 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, [hellip] the Secretary shall [hellip] promulgate regulations, under the principles of the Multiple-Use, Sustained-Yield Act of 1960[hellip]

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. [sect] 219.27 (Management requirements) state:

(a) Resource protection. All management prescriptions shall[mdash]

(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 conservation of soil and water resources;

The project-level, and programmatic-level (Forest Plan) fail to publicly 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 CGNF in the proper climate-risk context/scenario 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. Has the CGNF already experienced difficulty restocking on areas that burned in wildfires? NFMA (1982) regulation 36 CFR 219.27(c)(3) implements the NFMA statute, which requires adequate restocking in five years.

Given the forest[rsquo]s poor history of restocking success and its failure to employ the best available science, the adequacy of the site-specific and programmatic NEPA/NFMA process begs for further analysis and disclosure of the reality of worsening climate conditions which threaten [ndash] directly and cumulatively [ndash] to turn forest into non-forested 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 DEIS fails to acknowledge the likelihood that [ldquo][hellip]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 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 experienced before because today's growing conditions are different from anything in the past. The climate is changing at an unprecedented rate, exotic diseases and pests are present, and landscapes are fragmented by human activity 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 appropriate 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 decisions on the assumption that present site conditions are similar to those of the past."

"This may no longer be the case."

We believe Revised Forest Plan should establish standards and guidelines which acknowledge the significance of climate risk to other multiple-uses. These standards 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 all of the alternatives in a proper context — a hotter forest environment, with more frequent drought cycles. This evidence brings into question the assumptions in the revised forest plan and the DEIS.

According to best available science, implementing the commercial logging and prescribed burning called for in the alternatives 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.

What are the effects suppressing natural wildfire in the Custer Gallatin National Forest and replace natural fire with logging and prescribed burning?

Please disclose the cumulative impacts on the Forest-wide level of the Custer Gallatin National Forest's policy decision to replace natural fire with logging and prescribed burning.

Please do a more in depth disclosure of how Revised Forest Plan complies with the Roadless Rule.

Please disclose the impact of climate change on the efficacy of the proposed treatments;

Please disclose the impact of the revised forest plan on the carbon storage potential of the forest.

The importance of carbon storage capacity of the world's forests is tied to their role globally in removing atmospheric carbon that is contributing to ongoing global warming. Please include a measurement of the net carbon impact of the revised forest plan.

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 program. Please find the order attached.

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 leasing, 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, Montana Environmental Information Center, Powder River Basin Resource Council, Northern Plains Resource Council, the Sierra Club, and the Natural Resources Defense Council.

The revised Forest Plan is in violation of NEPA, NFMA, the APA, the ESA for not examining the impacts of the management activities authorized under the Revised Forest Plan on climate change.

Management activities could eliminate the forests. Forests absorb carbon. Management activities could destroy soils in the Custer Gallatin National Forest. 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 investigator 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 paleoecologist Philip Higuera, biologist Anna Sala and geoscientist Marco Maneta at UM along with colleagues at the U.S. Forest Service and University of Colorado-Boulder to produce the study, which was released Monday in the Proceedings of the National Academy of Sciences journal.

[ldquo]What[rsquo]s striking is if you asked scientists two decades ago how climate warming would play out, this is what they expected we[rsquo]d see,[rdquo] Higuera said. [ldquo]And now we[rsquo]re starting to see those predictions on the impact to ecosystems play out.[rdquo]

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.

[ldquo]We did over 4,000 miles of road-tripping across the West, as well as lots of miles hiking and backpacking,[rdquo] 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, Dobrowski said.

[ldquo]There used to be enough variability in seasonal conditions that seedlings could make it across these fixed thresholds,[rdquo] Dobrowski said. [ldquo]After the mid-[lsquo]90s, those windows have been closing more often. We[rsquo]re worried we[rsquo]ll lose these low-elevation forests to shrubs or grasslands. That[rsquo]s what the evidence points to.[rdquo]

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.

[ldquo]The six sites we looked at in the Bitterroots haven[rsquo]t been above the summer humidity threshold since 1997,[rdquo] Higuera said. [ldquo]Soil moisture hasn[rsquo]t crossed the threshold since 2009.[rdquo]

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.

[ldquo]But at the lower fringes, those burn areas may transition to non-forest types,[rdquo] Higuera said, [ldquo]especially where climate conditions at the end of this century are different than what we had in the early 20th Century.[rdquo]

The study also found that soil sterilization wasn[rsquo]t a factor in tree regrowth, 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[rsquo]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 reseedling. 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.

Published scientific reports indicate that climate change will be exacerbated by logging, and that climate change will lead to increased wildfire severity (including drier and warmer conditions that may render obsolete the purpose of the projects authorized under the Revised Forest Plan.

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 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.

Please find Depro et al and Harmon attached.

Please find attached the paper by Davis et al. that the Missoulian refers to: [Idquo]Wildfires and climate change push low-elevation forests across a critical climate threshold for tree regeneration

Kimberley T. Davis, Solomon Z. Dobrowski, Philip E. Higuera, Zachary A. Holden, Thomas T. Veblen, Monica T. Rother, Sean A. Parks, Anna Sala, and Marco P. Maneta[rdquo]

[Idquo]Abstract

Climate change is increasing fire activity in the western United States, which has the potential to accelerate climate-induced shifts in vegetation communities. Wildfire can catalyze vegetation change by killing adult trees that could otherwise persist in climate conditions no longer suitable for seedling establishment and survival. Recently documented declines in post-fire conifer recruitment in the western United States may be an example of this phenomenon. However, the role of annual climate variation and its interaction with long-term climate trends in driving these changes is poorly resolved. Here we examine the relationship between annual climate and post-fire tree regeneration of two dominant, low-elevation conifers (ponderosa pine and Douglas-fir) using annually resolved establishment dates from 2,935 destructively sampled trees from 33 wildfires across four regions in the western United States. We show that regeneration had a nonlinear response to annual climate conditions, with distinct thresholds for recruitment based on vapor pressure deficit, soil moisture, and maximum surface temperature. 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 regeneration. High fire severity and low seed availability further reduced the probability of post-fire regeneration. Together, our results demonstrate 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.[rdquo]

Please disclose the efficacy of the proposed activities at reducing wildfire risk and severity in the CGNF in the future, including a two-year, five-year, ten-year, and 20-year projection authorized under the Revised Forest Plan;

Please see the attached paper by Dr. William Baker titled:

[ldquo]Are High-Severity Fires Burning at Much Higher Rates

Recently than Historically in Dry-Forest Landscapes of the

Western USA?[rdquo]

Dr. Baker writes: [ldquo]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-successional burned patches and decreasing landscape heterogeneity that confers resilience to climatic change.[rdquo]

Dr. Baker concluded: [ldquo]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.[rdquo]

The Revised Forest Plan calls for addressing fuel accumulation and continuity in the CGNF. More specifically, the goal of the Revised Forest Plan is to:

- [bull]Diminish the future risk of high-intensity, high-severity wildfire within the CGNF by interrupting the continuity of fuels, specifically continuous stands of lodgepole pine regeneration and heavy loadings of larger fuels;

- [bull]Recreate a diverse landscape that is more resilient to fire by retaining mature areas, disrupting dense areas, and enhancing or re-creating grassland openings; and

Reduce the future risk of high-intensity, high-severity wildfire within the CGNF by interrupting the continuity of fuels, specifically continuous stands of lodgepole pine regeneration and heavy loadings of larger fuels:

Fire is an essential ecosystem component on the Rocky Mountain Ranger District. The DEIS and the Revised Forest Plan do not reflect the best available science. Please explain why.

Based on Dr. Baker's paper, the management activities called for in the Revised Forest Plan will not address the above goals. Baker writes on p. 20:

[Management issues]

The evidence presented here shows that efforts to generally lower fire severity in dry forests for ecological restoration are not supported.

Dr. Baker's paper is the best available science. Please explain why DEIS and the Revised Forest Plan do not following the best available science.

In "Fire Ecology in Rocky Mountain Landscapes" by William Baker, Dr. Baker writes on page 435, "[...] a prescribed fire regime that is too frequent can reduce species diversity (Laughlin and Grace 2006) and favor invasive species (M.A. Moritz and Odion 2004). Fire that is entirely low severity in ecosystems that historically experience some high-severity fire may not favor germination of fire-dependent species (M.A. Moritz and Odion 2004) or provide habitat key animals (Smucker, Hutto, and Steele 2005)." Baker continues on page 436: "Fire rotations equal the average mean fire interval across a landscape and are appropriate intervals at which individual points or the whole landscape is burned. Composite fire intervals underestimate mean fire interval and fire rotation (chap 5) and should not be used as prescribed burning intervals as this would lead to too much fire and would likely lead to adversely affect biological diversity (Laughlin and Grace 2006)."

Please find (Laughlin and Grace 2006) attached.

Dr. Baker writes that we use to think we could control wildfire with tools such as prescribed burns. He writes the science shows this is not true. All we can do is have the good sense to get our homes and infrastructure protected or out of fire prone settings, as fire will eventually come. This project attempts to tame wildlife, something Dr. Baker says is impossible. This project therefore violates NFMA by not following the best available science and not meeting the purpose and need of the project.

I am mailing "Fire Ecology in Rocky Mountain Landscapes" by William Baker via U.S. mail. Please put the entire book in the project file.

Dr. Baker estimates the high severity fire rotation to be 135 - 280 years for lodgepole pine forests. (See page 162.). Baker writes on page 457-458 of "Fire Ecology in Rocky Mountain Landscapes: [...] Fire rotation has been estimated as about 275 years in the Rockies as a whole since 1980 and about 247 years in the northern

Rockies over the last century, and both figures are near the middle between the low (140 years) and high (328 years) estimates for fire rotation for the Rockies under the HRV (chap. 10). These estimates suggest the since EuroAmerican settlement, fire control and other activities may have reduced fire somewhat in particular places, but a general syndrome of fire exclusion is lacking. Fire exclusion also does not accurately characterize the effects of land users on fire or match the pattern of change in area burned at the state level over the last century (fig 10.9). In contrast, fluctuation in drought linked to atmospheric conditions appear to match many state-level patterns in burned area over the last century. Land uses that also match fluctuations include logging, livestock grazing, roads and development, which have generally increased flammability and ignition at a time when the climate is warming and more fire is coming.[rdquo]

Schoennagel et al (2004) states: [ldquo]High-elevation subalpine forests in the Rocky Mountains typify ecosystems that experience infrequent, high-severity crown fires []. . . The most extensive subalpine forest types are composed of Engelmann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), and lodgepole pine (*Pinus contorta*), all thin-barked trees easily killed by fire. Extensive stand-replacing fires occurred historically at long intervals (i.e., one to many centuries) in subalpine forests, typically in association with infrequent high-pressure blocking systems that promote extremely dry regional climate pat-terns.[rdquo] Please find Schoennagel et al (2004) attached.

Schoennagel et al (2004) states: [ldquo]it is unlikely that the short period of fire exclusion has significantly altered the long fire intervals in subalpine forests. Furthermore, large, intense fires burning under dry conditions are very difficult, if not impossible, to suppress, and such fires account for the majority of area burned in subalpine forests.

Schoennagel et al (2004) states: [ldquo]Moreover, there is no consistent relationship between time elapsed since the last fire and fuel abundance in subalpine forests, further undermining the idea that years of fire suppression have caused unnatural fuel buildup in this forest zone.[rdquo]

Schoennagel et al (2004) states: [ldquo]No evidence suggests that spruce[ndash]fir or lodgepole pine forests have experienced substantial shifts in stand structure over recent decades as a result of fire suppression. Overall, variation in cli-mate rather than in fuels appears to exert the largest influence on the size, timing, and se-verity of fires in subalpine forests []. We conclude that large, infrequent stand replacing fires are [lsquo]business as usual[rsquo] in this forest type, not an artifact of fire suppression.[rdquo].

Schoennagel et al (2004) states: [ldquo]Contrary to popular opinion, previous fire suppression, which was consistently effective from about 1950 through 1972, had only a minimal effect on the large fire event in 1988 []. Reconstruction of historical fires indicates that similar large, high-severity fires also occurred in the early 1700s []. Given the historical range of variability of fire regimes in high- elevation subalpine forests, fire behavior in Yellowstone during 1988, al-though severe, was neither unusual nor surprising.[rdquo]

Schoennagel et al (2004)states: [ldquo]Mechanical fuel reduction in subalpine forests would not represent a restoration treatment but rather a departure from the natural range of variability in stand structure.[rdquo]

Schoennagel et al (2004) states: [ldquo]Given the behavior of fire in Yellowstone in 1988, fuel reduction projects probably will not substantially reduce the frequency, size, or severity of wildfires under extreme weather conditions.[rdquo]

Schoennagel et al (2004) states: [ldquo]The Yellow-stone fires in 1988 revealed that variation in fuel conditions, as measured by stand age and density, had only minimal influence on fire behavior. Therefore, we expect fuel-reduction treatments in high-elevation forests to be generally unsuccessful in reducing fire frequency, severity, and size, given the overriding importance of extreme climate in controlling fire regimes in this zone. Thinning also will not re-store subalpine forests, because they were dense historically and have not changed significantly in response to fire suppression. Thus, fuel- reduction efforts in most Rocky Mountain subalpine forests probably would not effectively mitigate the fire hazard, and these efforts may create new ecological problems by moving

the forest structure out-side the historic range of variability.[rdquo]

Please find Schoennagel et al (2004) attached.

The draft EIS is in violation of NEPA, NFMA, the ESA and the APA because the project will adversely affect biological diversity, is not following the best available science and the purpose and need will not work.

Threatened and Endangered Species

Please complete the Endangered Species Act Section 7 consultation requirements for grizzly bears, wolverines, and lynx.

The best available science for grizzly bears can be found in the finding of the attached paper by Mace and Manley (1993, P: 25-26) regarding averaging road densities across broad landscapes: [ldquo]Techniques for calculating road densities that average over large blocks of land(e.g. a BMA), inclusive of both high and low elevations, result in inadequate assessments of grizzly bear response to road densities . . . For example, our entire analysis area has an average open road density of 0.63 mi/mi² and meets current road density standards. Our precise [[ldquo]moving window[rdquo] GIS] open road density technique produces the same average open road density. However, from our method we know that 26% of the analysis area (70 mi² of habitat) exceeds the 1.0mi/mi² standard. When all roads are included in calculations for our analysis area, the average total road density is 1.13 mi/mi² with 22% (58 mi²) of the area having >2 mi/mi². This 58 mi² of habitat was used less than expected by radio-instrumented bears . . . Apparently, grizzly bears adjust their habitat use patterns in part to both precise open road densities and precise total road densities. Unless a road has completely revegetated, managers should assume that some level of human use is occurring along closed roads, and grizzly bears will respond to that use . . . The preponderance of adult females in the population suggests that survival of individual bears is directly related to their selection for unroaded areas. To date, the data suggest that if unroaded habitats are reduced in quantity and size, the number of adult females will eventually decline.[rdquo]We remind the Forest that the Interagency Grizzly Bear Task Force (1998) recommended that the percentages of OMRD, TMRD, and Core be evaluated using a [ldquo]Moving Windows[rdquo] analysis method [ndash] not linear miles, not averaged miles, and definitely not 1.9 miles/ sq.mi. Rather than [ldquo]research shopping[rdquo] for weaker standards in a foreign country, the Forest Service must use the NCDE specific standards of Amendment 19 (The best available science) including TMRD and motorized trails.

In the attached [ldquo]Guide to Effects Analysis of Helicopter Use in Grizzly Bear Habitat,[rdquo] the Montana/Idaho Level 1 Terrestrial Biologist Team developed assessment guidelines in 2009 to assist in analyses of helicopter effects on grizzly bears.

The guidance document finds: [ldquo]Helicopter use in core habitat likely results in more pronounced disturbance reaction in grizzly bears since bears are not conditioned to expect disturbances from motorized equipment or vehicles in core habitat.[rdquo] In general, the guidance paper finds: [ldquo]actions which compromise the purpose of core habitat are not easily characterized as [lsquo]insignificant[rsquo] or [lsquo]discountable.[rsquo][rdquo]

The Forest Service states: [ldquo]Project activities in core areas (logging and road construction/use) would temporarily reduce the security that these areas provide grizzly bears and would result in disturbance and displacement. The direct effects of disturbance is expected to last for the life of the project activities (3-5 years for timber sales, up to 10 for prescribed fire).[rdquo]

The Forest Service Biological Assessment states: [ldquo]Use of helicopter ignition at low elevations (< 500 feet AGL) could cause grizzly bears to flee to cover or move away from the area.[rdquo]

The Biological Assessment states: [ldquo]Treatments during the spring could impact grizzly bear use of grassy, south facing openings while treatments in the fall could interfere with grizzly bear accessibility to fall foods such as berries.[rdquo]

Grizzly bears make [ldquo]extensive use of forested cover,[rdquo] including using forested habitat for resting, general concealment, thermal relief in summer, and foraging and hunting.

Please consult with the FWS on the impact of using helicopters in MS 1 grizzly bear habitat and do not allow the use of low flying helicopters in occupied grizzly habitat.

Wolverine

THE AGENCIES MUST COMPLETE A BIOLOGICAL ASSESSMENT,

BIOLOGICAL OPINION, INCIDENTAL TAKE STATEMENT, AND

MANAGEMENT DIRECTION FOREST PLAN AMENDMENT FOR THE

FOREST PLAN FOR THE WOLVERINE.

The agencies do not have in place any forest plan biological assessment, biological opinion, incidental take statement, and management direction amendment for wolverines.

THE AGENCIES MUST CONDUCT ESA CONSULTATION FOR THE

WOLVERINE.

Wolverines may be present in the CGNF. The Forest Service concedes that the Project [ldquo]may affect[rdquo] wolverines. The agencies[rsquo] failure to conduct ESA consultation for a species that may be present and may be affected by the Project violates the ESA. Wolverines are currently warranted for listing under the ESA. As the agencies are well aware, the scheduled, court ordered listing date for the wolverine is this year. In fact, FWS has recently filed the attached document in federal court committing to a January 18, 2013 listing date for the wolverine. Accordingly, the wolverine will be listed under the ESA before the final decision is made to authorize and implement this Project, and long before any project activities commence. Regardless, even candidate species must be included in a biological assessment. The Forest Service[rsquo]s biological assessment for the Project does not address wolverines. The Forest Service needs to do a supplemental EIS/ESA consultation that recognizes the wolverine as an ESA-listed species in the CGNF.

THE AGENCIES MUST PREPARE REGIONAL DIRECTION FOR THE

WOLVERINE.

Ruggiero et al 2000;

Wolverines generally scavenge for ungulates along valley bottoms and forage and den in remote, high-elevation areas (Hornocker and Hash 1981; Morgan and Copeland 1998). Thus if managers wished to provide habitat for wolverines, they could pay particular attention in the planning process to ungulates winter range and other aspects of habitat quality for ungulates to provide a consistent supply of carcasses for wolverine to scavenge. In addition, wolverines generally avoid areas of human activity. To limit the threat of human-caused disturbance or mortality, managers could restrict access to portions of the landscape where wolverines are most likely to occur.

Wolverine Ecology and Conservation in the Western United States, by Robert Michael Inman Faculty of Natural Resources and Agricultural Sciences Department of Ecology, Uppsala, 2013 wrote on page 26, [ldquo]Wolverines selected areas of higher elevation, where there was steeper terrain, more snow, fewer roads, less human activity, and which were closer to high elevation talus, tree cover, and areas with April 1 snow cover.[rdquo]

On page 29, Inman wrote, [ldquo]While there is no indication that dispersal is currently being

limited by human development in a manner that has negative consequences for the wolverine metapopulation, it is reasonable to assume that willingness to disperse through developed areas and/or survival of dispersers moving through developed areas would be impacted by increasing road and housing densities at some point.[rdquo][rsquo]

In its Order dated 4/4/16, the U.S. District Court of Montana ruled: [ldquo]The United States Fish & Wildlife Service's Withdrawal of its Proposed Rule to list the distinct population segment of the North American wolverine occurring in the contiguous United States as a threatened species under the Endangered Species Act, 79 Fed. Reg. 47,522 (Aug. 13, 2014), is hereby VACATED.[rdquo] Therefore the status of the wolverine is Proposed for listing under the ESA, and the FS must undergo formal consultation with the U.S. Fish & Wildlife Service.

Wolverines use habitat ranging from Douglas-fir and lodgepole pine forest to subalpine white-bark pine forest (Copeland et al., 2007). Lofroth (1997) in a study in British Columbia, found that wolverines use habitats as diverse as tundra and old-growth forest. Wolverines are also known to use mid- to low-elevation Douglas-fir forests in the winter (USDA Forest Service, 1993).

Aubry, et al. 2007 note that wolverine range in the U.S. had contracted substantially by the mid- 1900s and that extirpations are likely due to human-caused mortality and low to nonexistent immigration rates.

May et al. (2006) cite: [ldquo]Increased human development (e.g. houses, cabins, settlements and roads) and activity (e.g. recreation and husbandry) in once remote areas may thus cause reduced ability of wolverines to

perform their daily activities unimpeded, making the habitat less optimal or causing wolverines to avoid the disturbed area (Landa & Skogland 1995, Landa et al. 2000a).

Ruggiero, et al. (2007) state: "Many wolverine populations appear to be relatively small and isolated. Accordingly, empirical information on the landscape features that facilitate or impede immigration and emigration is critical for the conservation of this species."

Ruggiero et al. (1994b) recognized that "Over most of its distribution, the primary mortality factor for the wolverines is trapping." Those authors also state, "Transient wolverines likely play a key role in the maintenance of spatial organization and the colonization of vacant habitat. Factors that affect movements by transients may be important to population and distributional dynamics."

Roads and human density are important factors influencing current wolverine distribution (Carroll et al. 2001b); and wolverine habitat selection is negatively correlated with human activity including roads (Krebs et al. 2007). Wolverine occurrence has shown a negative relationship with road densities greater than 2.8 mi/mi² (1.7 km/km²) (Carroll et al. 2001b).

The presence of roads can be directly implicated in human-caused mortality (trapping) of this species. Trapping was identified as the dominant factor affecting wolverine survival in a Montana study (Squires et al. 2007).

Krebs et al. (2007) state, "Human use, including winter recreation and the presence of roads, reduced habitat value for wolverines in our studies."

Wisdom et al. (2000) state:

Carnivorous mammals such as marten, fisher, lynx, and wolverine are vulnerable to over-trapping (Bailey and others 1986, Banci 1994, Coulter 1966, Fortin and Cantin 1994, Hodgman and others 1994, Hornocker and Hash 1981, Jones 1991, Parker and others 1983, Thompson 1994, Witmer and others 1998), and over-trapping can be facilitated by road access (Bailey and others 1986, Hodgman and others 1994, Terra-Berns and others 1997, Witmer and others 1998).

...Snow-tracking and radio telemetry in Montana indicated that wolverines avoided recent burns (Hornocker and Hash 1981).

Copeland (1996) found that human disturbance near natal denning habitat resulted in immediate den abandonment but not kit abandonment. Disturbances that could affect wolverine are heli-skiing, snowmobiles, backcountry skiing, logging, hunting, and summer recreation (Copeland 1996, Hornocker and Hash 1981, ICBEMP1996f). Please find Hornocker attached.

Carroll et al. (2001b) state:

The combination of large area requirements and low reproductive rate make the wolverine vulnerable to human-induced mortality and habitat alteration. Populations probably cannot sustain rates of human-induced mortality greater than 7%, lower than that documented in most studies of trapping mortality (Banci 1994, Weaver et al. 1996).

... The present distribution of the wolverine, like that of the grizzly bear, may be more related to regions that escaped human settlement than to vegetation structure.

Wisdom et al. (2000) offered the following strategies:

* Provide large areas with low road density and minimal human disturbance for wolverine and lynx, especially where populations are known to occur. Manage human activities and road access to minimize human disturbance in areas of known populations.

* Manage wolverine and lynx in a metapopulation context, and provide adequate links among existing populations.

* Reduce human disturbances, particularly in areas with known or high potential for wolverine natal den sites (subalpine talus cirques).

* The EA fails to consider and use the best available science and fails to insure population viability in violation of NFMA and additionally, violating NEPA's requirements that the FS demonstrate scientific integrity. See 36 C.F.R. 219.3; 40 C.F.R. 1502.24.

The FS fails to set meaningful thresholds and assumes that project-caused habitat losses are insignificant. Of such analyses, Schultz (2010) concludes that [ldquo]the lack of management thresholds allows small portions of habitat to be eliminated incrementally without any signal when the loss of habitat might constitute a significant cumulative impact.[rdquo] In the absence of meaningful thresholds of habitat loss and no monitoring of wolverine populations at the Forest level, projects will continue to degrade wolverine habitat across the Beaverhead-Deerlodge NF over time.

Please consult with the FWS on the impact of the Forest Plan on wolverines. THE AGENCIES MUST COMPLETE A BIOLOGICAL ASSESSMENT, Get a BIOLOGICAL OPINION from FWS, INCIDENTAL TAKE STATEMENT, AND MANAGEMENT DIRECTION FOREST PLAN AMENDMENT FOR THE FOREST PLAN FOR THE WOLVERINE.

The best available science, Christensen et al (1993), recommends elk habitat effectiveness of 70% in summer range and at least 50% in all other areas where elk are one of the primary resource considerations. According to Figure 1 in Christensen et al (1993), this equates to a maximum road density of approximately 0.7 mi/sq mi. in summer range and approximately 1.7 mi/sq mi. in all other areas.

Do any of the 6th Code watersheds in the CGNF meet either of these road density thresholds? It appears the CGNF as a whole also far exceeds these thresholds. Please disclose this type of Project level or watershed analysis on road density.

Christensen et al (1993) state that if an area is not meeting the 50% effectiveness threshold of 1.7 mi/sq mi, the agency should admit that the area is not being managed for elk: [ldquo]Areas where habitat effectiveness is retained at lower than 50 percent must be recognized as making only minor contributions to elk management goals. If habitat effectiveness is not important, don't fake it. Just admit up front that elk are not a consideration.[rdquo] The Project EIS does not make this admission.

The Forest Service should provide an analysis of how much of the CGNF watersheds, affected landscape areas, or affected Hunting Districts provide [ldquo]elk security area[s][rdquo] as defined by the best available science, Christensen et al (1993) and Hillis et al (1991), to be comprised of contiguous 250 acre blocks of forested habitat 0.5 miles or more from open roads with these blocks encompassing 30% or more of the area.

Please provide a rational justification for the deviation from the Hillis security definition and numeric threshold that represent the best available science on elk security areas.

LYNX

How will the logging and new roads impact lynx? How soon after a fire will lynx use a forest that has been burned?

Please find Kosterman's Thesis attached. Kosterman's Thesis says that clearcutting more than 10-15% of a lynx home range results in declines in reproduction. Many National Forests allow 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 necessary 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.

What scientific basis do you have for allowing logging in the Wildland Urban Interface (WUI) in lynx critical habitat?

With what scientific basis was the WUI designated?

Squires says that lynx avoid clearcuts.

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 and Squires findings is resulting in population declines.

The Endangered Species Act requires the FS to insure that the Revised Forest Plan is not likely to result in the destruction or adverse modification of critical habitat. 16 U.S.C. [sect]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 reduces the conservation value of critical habitat for lynx. 74 Fed. Reg. 8644. The Northern Rockies Lynx Management Direction (NRLMD) as currently applied 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, provided they do not occur on more than 6% of lynx habitat on each National Forest. See NRLMD ROD. 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 allowing 6% of lynx critical habitat to be destroyed forest-wide will not appreciably reduce the conservation value.

Please consult with the USFWS on the NRLMD in lynx critical habitat.

The FS cannot insure species viability here without addressing the impacts to the already low amount of suitable habitat. By cutting in denning and foraging habitat, the agency will not be [ldquo]maintaining or enhancing the quality of the habitat.[rdquo]

The CGNF is home to the Canada lynx, listed as a Threatened species under the Endangered Species Act (ESA). In December 1999, the Forest Service and Bureau of Land Management completed their [ldquo]Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of Land Management Land Use Plans On Canada Lynx[rdquo] (Programmatic Lynx BA). The Programmatic Lynx BA concluded that the current programmatic land management plans [ldquo]may affect, and are likely to adversely affect, the subject population of Canada lynx.[rdquo]

The Lynx BA team recommended amending or revising Forest Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects on lynx. The Programmatic Lynx BA[rsquo]s determination means that Forest Plan implementation is a [ldquo]taking[rdquo] of lynx, and makes Section 7 formal consultation on the CGNF Plan mandatory, before actions such as the proposed project are approved.

Continued implementation of the Forest Plan constitutes a [ldquo]taking[rdquo] of the lynx. Such taking can only be authorized with an incidental take statement, issued as part of a Biological Opinion (B.O.) during of Section 7 consultation. The CGNF must incorporate terms and conditions from a programmatic B.O. into a Forest Plan amendment or revision before projects affecting lynx habitat, such as this one, can be authorized.

The Programmatic Lynx BA[rsquo]s [ldquo]likely to adversely affect[rdquo] conclusion was based upon the following rationale. Plans within the Northern Rockies:

- * generally direct an aggressive fire suppression strategy within developmental land allocations. [hellip]this strategy may be contributing to a risk of adversely affecting the lynx by limiting the availability of foraging habitat within these areas.

- * allow levels of human access via forest roads that may present a risk of incidental trapping or shooting of lynx or access by other competing carnivores. The risk of road-related adverse effects is primarily a winter season issue.

- * are weak in providing guidance for new or existing recreation developments. Therefore, these activities may contribute to a risk of adverse effects to lynx.

- * allow both mechanized and non-mechanized recreation that may contribute to a risk of adverse effects to lynx. The potential effects occur by allowing compacted snow trails and plowed roads which may facilitate the movements of lynx competitors and predators.

- * provide weak direction for maintaining habitat connectivity within naturally or artificially fragmented landscapes. Plans within all geographic areas lack direction for coordinating construction of highways and other movement

barriers with other responsible agencies. These factors may be contributing to a risk of adverse effects to lynx.

- * are weak in providing direction for coordinating management activities with adjacent landowners and other agencies to assure consistent management of lynx habitat across the landscape. This may contribute to a risk of adverse effects to lynx.

- * fail to provide direction for monitoring of lynx, snowshoe hares, and their habitats. While failure to monitor does not directly result in adverse effects, it makes the detection and assessment of adverse effects from other management activities difficult or impossible to attain.

- * forest management has resulted in a reduction of the area in which natural ecological processes were historically allowed to operate, thereby increasing the area potentially affected by known risk factors to lynx. The Plans have continued this trend. The Plans have also continued the process of fragmenting habitat and reducing its quality and quantity. Consequently, plans may risk adversely affecting lynx by potentially contributing to a reduction in the geographic range of the species.

- * The BA team recommends amending or revising the Plans to incorporate conservation measures that would reduce or eliminate the identified adverse effects to lynx. The programmatic conservation measures listed in the Canada Lynx Conservation Assessment and Strategy (LCAS) should be considered in this regard, once finalized.

(Programmatic Lynx BA, at 4.)

The Programmatic Lynx BA notes that the LCAS identifies the following risk factors to lynx in this geographic area:

- * Timber harvest and pre-commercial thinning that reduce denning or foraging habitat or converts habitat to less desirable tree species
- * Fire exclusion that changes the vegetation mosaic maintained by natural disturbance processes
- * Grazing by domestic livestock that reduces forage for lynx prey
- * Roads and winter recreation trails that facilitate access to historical lynx habitat by competitors
- * Legal (in Montana) and incidental trapping and shooting
- * Predation
- * Being hit by vehicles
- * Obstructions to lynx movements such as highways and private land development

As evidenced by the fact that the Canada lynx is now listed under the Endangered Species Act and has critical habitat in the CGNF, it is clear that the CGNF must do more than follow the Revised Forest Plan's weak protections provided for lynx. Please demonstrate that the Revised Forest Plan and its analysis are consistent with all Standards contained in the Lynx Conservation and Assessment Strategy (LCAS) or lynx critical habitat.

What are the effects of logging on landscape pattern on lynx and lynx critical habitat? The LCAS require that the FS:

Maintain suitable acres and juxtaposition of lynx habitat through time. Design vegetation treatments to approximate historical landscape patterns and disturbance processes.

If the landscape has been fragmented by past management activities that reduced the quality of lynx habitat,

adjust management practices to produce forest composition, structure, and patterns more similar to those that would have occurred under historical disturbance regimes.

The LCAS sets mandatory Standards that would modify or amend the Forest Plan—steps the CGNF has thus far not accomplished. Important Programmatic Standards include:

Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships. (LCAS at 89.)

Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project. (Id.)

Map and monitor the location and intensity of snow compacting activities that coincide with lynx habitat, to facilitate future evaluation of effects on lynx as information becomes available. (LCAS at 83.)

On federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU.

Among the standards set out in the LCAS are provisions to maintain denning habitat as discussed in the programmatic lynx BO:

Denning Habitat - Within developmental land allocations, existing Plan direction to maintain old growth habitat was judged to be adequate to provide for lynx denning habitat for all geographic areas except the Great Lakes. (BO at 31.)

However, the CGNF cannot meet lynx denning requirements unless it is meeting Forest Plan old-growth requirements. The Programmatic BA's analysis of the ability of the Forest Plans, as [ldquo]amended[rdquo] by the LCAS, to prevent a [ldquo]taking[rdquo] of the lynx is based upon the Forests[rsquo] meeting such management standards. As the CGNF has not yet proved it is in compliance with old-growth species[rsquo] viability standards or adequately dealing with forest wide old-growth declines, the project may not be in compliance with the LCAS.

The impacts of both winter and non-winter motorized route densities must be adequately considered. The LCAS states, [ldquo]the effects of open road densities on lynx are poorly understood[rdquo] (LCAS at 95).

It is not clear that the CGNF has a complete understanding of the current level of use of the CGNF for snowmobiles and other motorized recreational users. Please analyze the cumulative impacts on lynx from the additional new roads, additional skid trails, and other logging access routes to be constructed in the forest[mdash]roads/access routes that could be used by snowmobilers snowmobiles and other motorized recreational users, snowshoers, and cross country skiers long after the logging activities have stopped. These roads/access routes can also impact lynx habitat during all seasons because of increased access for humans.

From Ruggiero, et al. (1999: [ldquo]Lynx metapopulation dynamics operate at regional scales[rdquo] (p. 24). There must be maps and adequate discussion of the connectivity issue in the EA, making it possible to see the landscape features that affect connectivity and metapopulation dynamics within and between LAUs both within and outside the CGNF, a goal of the LCAS mapping requirement.

The very existence of roads and compacted travel routes from motorized vehicles in snow adversely affect lynx because of the advantage provided for other predators that normally wouldn[rsquo]t be in portions of the CGNF in winter.

Any assumption that a project will not adversely impact the lynx simply because LCAS standards and guidelines are met has never been verified. These management guidelines are merely a guess for lynx management, developed by the FS and other government agencies. There has never been an independent scientific peer review of these guidelines, including by lynx experts such as those who prepared the Ruggiero, et al. (1999) research paper upon which the LCAS is largely based.

The issue of providing for the larger landscape needs of far-ranging forest carnivores (including the grizzly bear, gray wolf, wolverine, fisher, pine marten, lynx, goshawk, etc.) reveals the need to utilize the principles of Conservation Biology on a landscape level. Core areas of relatively undisturbed habitats need to be maintained. Linkages with other core areas need to be established, providing sufficient habitat components so the linkages, or corridors, are functional for genetic interchange purposes. Both core areas and linkages should be the focus of the watershed rehabilitation and recovery discussed above (such as road removal). Buffer zones around core areas should also be recognized in their contribution to habitat needs for these wildlife species.

The Revised Forest Plan does not have adequate limits on prescribed burning of lynx habitat nor does the NRLMD. Please follow the best available science and consult with the FWS on the NRLMD and revised Forest Plan[rsquo]s direction for prescribed burning of lynx habitat.

There is not an adequate regulatory mechanism to protect lynx and lynx critical habitat if there is no restriction on burning lynx critical habitat. The DEIS and Revised Forest Plan is therefore in violation of NEPA, NFMA, the APA and the ESA.

ECONOMICS

NFMA and the Forest and Rangeland Renewable Resources Planning Act (RPA) require management of national forest system lands in a manner that "maximizes long term net public benefits" [36 CFR 219.1(a)]. The Forest Service's planning regulations have defined the term "net public benefits" as the "overall value of positive effects (benefits) less all associated inputs and negative effects (costs)." NFMA requires a sophisticated consideration of benefits and costs, including use of both market and non-market methods of determining existing and future resource values, methods to determine opportunity costs, and use of best available quantitative and qualitative techniques [(36 CFR 219.12(e); 219.12(f); 219.1(b)(12)]. How will the Revised Forest Plan satisfy the monitoring requirements NFMA ? What if the Forest Service does not request an adequate budget to do monitoring?

In a May 1, 2003 report, GAO-03-503 Forest Service: Little Progress on Performance Accountability Likely Unless Management Addresses Key Challenges sent to Congress and the Honorable Scott McInnis, Chairman of the subcommittee on Forest Health, Barry Hill, Director of Natural Resources and Environment at the General Accounting Office, reported [ldquo]the Forest Service has not been able to provide to Congress and the public with a clear understanding of what its 30,000 employees accomplish with the approximately \$5 billion it received every year.[rdquo]

Please ensure that the Revised Forest Plan complies with 36 C.F.R. [sect] 219.27 (a) (7) which requires the Forest Service prior to project implementation to assess for potential physical, biological, aesthetic, cultural, engineering, and economic impacts and for consistency with multiple uses planned for the general area and 36 CFR 219.12 (3) which requires documentation of costs associated with carrying out the planned management prescriptions as compared with costs estimated in the forest plan.

Unroaded lands

It is well established that logging in an uninventoried and inventoried roadless areas is an irreversible and irretrievable[rdquo] commitment of resources that [ldquo]could have serious environmental consequences[rdquo] [shy]Smith v. U.S. Forest Service, 33 F.3d 1072, 1078 (9th Cir. 1994). Please address the effects of logging and roading the uninventoried roadless areas on their characteristics vis-[grave]-vis potential for future wilderness or

inventoried roadless area designation. The discussion of the impacts on unroaded areas was superficial. There was no analysis of the project's impact on the unique values of unroaded areas together with their adjacent inventoried roadless areas. The EIS should satisfy the "hard look" requirement with respect to the environmental impact of logging and roading uninventoried roadless areas.

Please do an inventory and map all unroaded roadless areas adjacent to inventoried roadless lands.

The roadless areas in the CGNF would be designated as wilderness under the Northern Rockies Ecosystem Protection Act, H.R. 1321: <https://www.congress.gov/bill/116th-congress/house-bill/1321?q=%7B%22search%22%3A%5B%22Northern+Rockies+Ecosystem+Protection+Act%22%5D%7D∓s=1&r=2>

and S. 828:

<https://www.congress.gov/bill/116th-congress/senate-bill/827?q=%7B%22search%22%3A%5B%22Northern+Rockies+Ecosystem+Protection+Act%22%5D%7D∓s=1&r=1>

Please see the attached "The Roadless Report."

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 CGNF are infested with noxious weeds. Once established along roadsides, invasive plants will likely spread into adjacent grasslands and forest openings.

Prescribed burning activities within the analysis area would likely cumulatively contribute to increases in noxious weed distribution and populations. As a disturbance process, fire has the potential to greatly exacerbate infestations of certain noxious weed species, depending on burn severity and habitat type (Fire Effects Information System 2004). Soil disturbance, such as that resulting from low and moderate burn severities from prescribed fire and fire suppression related disturbances (dozer lines, drop spots, etc.), provide optimum conditions for noxious weed invasion. Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for burning within CGNF 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 in violation of NFMA and NEPA.

Please address the ecological, social and aesthetic impact of current noxious weed infestations in the CGNF. 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 CGNF? 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).

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 commercial and pre-commercial logging and understory thinning; and prescribed burns. Please discuss what open, gated, and decommissioned Forest Service roads within the CGNF 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.

Please show in the EIS a commitment to a long-term, consistent strategy of application is being proposed for each weed infested area within the proposed action area in violation of NEPA and NFMA. Please discuss 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. Please discuss what native plant restoration activities will be implemented in areas disturbed by the actions proposed in this project. Please discuss howl 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 [ldquo]the most critical component of a weed management program.[rdquo] The Forest Service[rsquo]s national management strategy for noxious weeds also recommends [ldquo]develop[ing] and implement[ing] forest plan standards[rdquo] and recognizes that the cheapest and most effective solution is prevention. Please discuss areas in the CGNF that do not have weed populations within their boundaries or what minimum standards are in the CGNF revised Forest Plan to address noxious weed infestations. The few that are there do not appear adequate based on the current weed infestation in the CGNF.

Please include an alternative in the that includes land management standards that will prevent new weed infestations by addressing the causes of weed infestation. The failure to include preventive standards would violate NFMA because the Forest Service is not ensuring the protection of soils and native plant communities. Additionally, the omission of an alternative that includes preventive measures would violate NEPA because the Forest Service failed to consider a reasonable alternative.[rdquo]

Prescribed burning activities called for in the Revised Forest Plan would likely cumulatively contribute to increases to noxious weed distribution and populations. As a disturbance process, fire has the potential to greatly exacerbate infestations of certain noxious weed species, depending on burn severity and habitat type (Fire Effects Information System 2004). Soil disturbance, such as that resulting from low and moderate burn severities from prescribed fire and fire suppression related disturbances (dozer lines, drop spots, etc.), provide optimum

conditions for noxious weed invasion. Dry site vegetation types and road corridors are extremely vulnerable, especially where recent ground disturbance (timber management, road construction) has occurred. Units proposed for burning within CGNF 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 prescribed fire in areas that have noxious weeds present on roads within units from fire management proposals.

Please disclose the amount of big game (moose and elk) hiding cover, winter range, and security currently available in the CGNF;

Please disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementations;

Please disclose the amount of big game (moose and elk) hiding cover, winter range, and security after implementation of projects called for in the revised Forest Plan;

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

Solicit and disclose comments from the Montana Department of Fish, Wildlife, and Parks regarding the impact of the Project on wildlife habitat;

D.Solicit and disclose comments from the Montana Department of Environmental Quality regarding the impact of the Project on water quality;

* Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/ or actual habitat in the CGNF;

* Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the CGNF;

G.Disclose the snag densities in the CGNF, and the method used to determine those densities;

H.Disclose the current, during-project, and post-project road densities in the CGNF;

* Disclose the Custer Gallatin National Forest's record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities;

* Disclose the CGNF's record of compliance with its monitoring requirements as set forth in its Forest Plan;

Disclose the Custer Gallatin National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/ FONSI and RODs on the CGNF;

Disclose mandate in the Revised Forest Plan field surveys for threatened, endangered, sensitive, and rare plants in be done each of the proposed logging and prescribed units authorized under the Revised Forest Plan and these surveys be made public as part of the NEPA process;

Disclose the level of current noxious weed infestations in the CGNF and the cause of those infestations;

Disclose the impact of the management activities called for in the Revised Forest Plan on noxious weed infestations and native plant communities;

Disclose the amount of detrimental soil disturbance that currently exists in CGNF from previous logging and grazing activities;

Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation authorized under the Revised Forest Plan;

Disclose the expected amount of detrimental soil disturbance in each unit after proposed mitigation/ remediation;

Disclose the analytical data that supports proposed soil mitigation/remediation measures;

Disclose the timeline for implementation;

Disclose the funding source for non-commercial activities proposed;

Disclose the current level of old growth forest in each third order drainage in the CGNF;

Disclose the method used to quantify old growth forest acreages and its rate of error based upon field review of its predictions;

Disclose the historic levels of mature and old growth forest in the CGNF;

Disclose the level of mature and old growth forest necessary to sustain viable populations of dependent wildlife species in the CGNF;

Disclose the amount of mature and old growth forest that will remain after implementation of the Revised Forest Plan in 5 year intervals for the expected life of the Revised Forest Plan;

Disclose the amount of current habitat for old growth and mature forest dependent species in the CGNF;

Disclose the amount of habitat for old growth and mature forest dependent species that will remain after the revised Forest Plan is implemented and 15 years after it is implemented and for the life of the revised Forest Plan;

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;

Disclose and address the effect regarding the failure to monitor population trends of MIS, the failure to compile data to establish a reliable inventory of sensitive species on the Forest;

Disclose the actions being taken to reduce fuels on private lands adjacent to the CGNF and how those activities/or lack thereof will impact the efficacy of the activities proposed

Disclose the efficacy of the proposed activities called for in the Revised Forest Plan at reducing wildfire risk and severity in the CGNF in the future, including a two-year, five-year, ten-year, and 20-year projection;

Disclose the impact of climate change on the efficacy of the proposed treatments called for in the Revised Forest Plan;

Disclose the impact of the proposed Revised Forest Plan on the carbon storage potential of the CGNF;

Please disclose the baseline condition, and expected sedimentation during and after proposed management activities, for all streams in the CGNF;

Please disclose maps of the CGNF that show the following elements:

1. Past, current, and reasonably foreseeable logging units in the CGNF;
2. Past, current, and reasonably foreseeable grazing allotments in the CGNF;
3. Density of human residences within 1.5 miles from the CGNF;
4. Old growth forest in the CGNF;
5. Big game security areas;
6. Moose winter range;

Thank you for your attention to these concerns.