October 3, 2025

Jason Oltrogge

District Ranger

Judith Ranger District

109 Central Ave.

Stanford, MT 59479

Dear Ranger Oltrogge,

Thank you for this opportunity to comment. Please accept these comments from me on behalf of the Alliance for the Wild Rockies, Council on Wildlife and Fish, Center for Biological Diversity, and Native Ecosystems Council on the proposed Judith Springs Vegetation Project.

We believe because of the size of the project and the cumulative effects of past current and future logging by the Forest Service and private logging in the area the Forest Service must complete a full environmental impact statement (EIS) for this Project. 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 checklist of issues that must be included in the EIS for he 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 an EA if you refuse to write an EA for the Project.

Please consider an alternative with no new roads or reconstructed roads.

Please analyze the unroaded lands on Forest lands contiguous to IRAs for their wilderness potential.

Please consider an alternative that does not treat unroaded lands on Forest lands contiguous to an IRA.

I. NECESSARY ELEMENTS FOR

PROJECT EIS or even for an EA if you refuse to write an EIS:

A. Disclose all Helena-Lewis and Clark National Forest Plan requirements for logging/burning projects and explain how the Project complies with them including the desired future contains of the forest in the Forest Plan;

B. Will this project comply with forest plan big game hiding cover standards and the eastside assessment?

C. Disclose the acreages of past, current, and reasonably foreseeable logging, grazing, mining, and road building activities within the Project area;

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

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

F. Disclose the biological assessment for the candidate, threatened, or endangered species with potential and/or actual habitat in the Project area;

G. Disclose the biological evaluation for the sensitive and management indicator species with potential and/or actual habitat in the Project area;

H. Disclose the snag densities in the Project area, and the method used to determine those densities;

I. Disclose the current, during-project, and post-project road densities in the Project area;

J. Disclose the Helena-Lewis and Clark National Forest's (HLCNF) record of compliance with state best management practices regarding stream sedimentation from ground-disturbing management activities;

K. Disclose the Helena-Lewis and Clark National Forest's record of compliance with its monitoring requirements as set forth in its Forest Plan;

L. Disclose the Helena-Lewis and Clark National Forest's record of compliance with the additional monitoring requirements set forth in previous DN/FONSIs and RODs on the Helena-Lewis and Clark National Forest;

M. Disclose the results of the field surveys for threatened, endangered, sensitive, and rare plants in each of the proposed units;

N. Please formally consult with the US FWS on the impacts of this project on candidate, threatened, or endangered species and plants;

O. Please consult with the US FWS on the impacts of this project on lynx critical habitat and potential lynx critical habitat;

P. Will this Project exacerbate existing noxious weed infestations and start new infestations?

Q. Do unlogged old growth forest store more carbon than the wood products that would be removed from the same forest in a logging operation?

R. What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of National Forest lands are logged every year? How much carbon is lost by that logging?

S. Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends “[i]ncreasing or maintaining the forest area by avoiding deforestation,” and states that “protecting forest from logging or clearing offer immediate benefits via prevented emissions.” That study also states that “[w]hen the initial condition of land is a productive old-growth forest, the conversion to forest plantations with a short harvest rotation can have the opposite effect lasting for many decades . . . .” The study does state that thinning may have a beneficial effect to stabilize the forest and avoid stand-replacing wildfire, but the study never defines thinning. In this Project, where much of the logging is clear-cutting and includes removing large trees without any diameter limit, and where the removal of small diameter surface and ladder fuels is an unfunded mandate to the tune of over $3 million dollars, it is dubious whether the prescriptions are the same type of “thinning” envisioned in Krankina and Harmon (2006).

T. Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard. A failure to comply with visual quality Forest Plan standards violates NFMA.

U. For the visual quality standard analysis please define "ground vegetation," i.e. what age are the trees, "reestablishes," "short term," "longer term," and "revegetate."

V. Please disclose whether you have conducted surveys in the Project area for this Project for wolverines, pine martins, northern goshawk and lynx as required by the Forest Plan.

W. Please disclose how often the Project area has been surveyed for wolverines, pine martins, northern goshawks, monarch butterflies, grizzly bears, whitebark pine and lynx.

X. Is it impossible for a wolverines, pine martins, monarch butterflies, northern goshawks, grizzly bears, whitebark pine and lynx to inhabit the Project area?

Y. Would the habitat be better for wolverines, monarch butterflies, pine martins, northern goshawks, grizzly bears, whitebark pine and lynx if roads were removed in the Project area?

Z. What is the U.S. FWS position on the impacts of this Project on wolverines, pine martins, monarch butterflyies, northern goshawks, grizzly bears, whitebark pine and lynx? Have you conducted ESA consultation?

AA. Please provide us with the full BA for the wolverines, monarch butterflies, pine martins, northern goshawks, grizzly bears, whitebark pine and lynx.

BB. What is wrong with uniform forest conditions?

CC. Has the beetle kill contributed to a diverse landscape?

DD. Why are you trying to exclude stand replacement fires when these fires help aspen and whitebark pine?

EE. Please disclose what is the best available science for restoration of whitebark pine and disclose to the public what the proposed treatment are for whitebark pine and if the treatments proposed for whitebark pine regeneration are likely to fail according to the agency's only long term research study on the effects of cutting and burning treatments on whitebark pine regeneration;

FF. Disclose the level of current noxious weed infestations in the Project area and the cause of those infestations;

GG. Disclose the impact of the Project on noxious weed infestations and native plant communities;

HH. Disclose the amount of detrimental soil disturbance that currently exists in each proposed unit from previous logging and grazing activities;

II. Disclose the expected amount of detrimental soil disturbance in each unit after ground disturbance and prior to any proposed mitigation/remediation;

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

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

LL. Disclose the timeline for implementation;

MM. Disclose the funding source for non-commercial activities proposed;

NN. Disclose the current level of old growth forest in each third order drainage in the Project area;

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

PP. Disclose the historic levels of mature and old growth forest in the Project area;

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

RR. Disclose the amount of mature and old growth forest that will remain after implementation;

SS. Disclose the amount of current habitat for old growth and mature forest dependent species in the Project area;

TT. Disclose the amount of habitat for old growth and mature forest dependent species that will remain after Project implementation;

UU. 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;

VV. Disclose the amount of big game (moose and elk) hiding cover, winter range, habitat effectiveness, and security currently available in the Project area:

WW. Disclose the amount of big game (moose and elk) hiding cover, winter range, and security during Project implementation;

XX. Disclose the amount of big game (moose and elk) hiding cover, winter range, habitat effectiveness, and security after implementation;

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

ZZ. 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;

AAA. 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;

BBB. 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;

CCC. Disclose when and how the Helena-Lewis and Clark National Forest made the decision to suppress natural wildfire in the Project area and replace natural fire with logging and prescribed burning;

DDD. Disclose the cumulative impacts on the Forest-wide level of the Helena-Lewis and Clark National Forest's policy decision to replace natural fire with logging and prescribed burning;

EEE. Thank you for not proposing any management activities in roadless areas. Please confirm that the project complies with the Roadless Rule;

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

GGG. Disclose the impact of the proposed project on the carbon storage potential of the area;

HHH. Disclose the baseline condition, and expected sedimentation during and after activities, for all streams in the area;

III. Disclose maps of the area that show the following elements:

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;

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 Project area meet either of these road density thresholds? It appears the Project area 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: "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."

We sent a FOIA request to the Forest Service for records of road closure violations between mid-2014 and mid-2019. In response, the Forest Service disclosed over 50 reported road closure violations in the Little Belts in that 5-year time-frame. Significantly, this data only includes the witnessed and reported violations. It is fair to assume that there are many more violations that regularly occur and are not witnessed and reported. It is also fair to assume that you have made no effort to request this available information from your own law enforcement officers, much less incorporate it into your analysis. Considering your own admissions that road density is the primary factor that degrades elk and grizzly habitat, this is a material and significant omission from your analysis– all of your ORD and HE calculations are wrong without this information.

Will the project comply with the Eastside Assessment cover standards designed to protect and conserve elk habitat? The failure to analyze road closure violations even more egregious. Chronic, illegal road use is reasonably foreseeable and must be addressed in the cumulative effects analysis for both the Project and the Forest Plan amendment.

Additionally, your emphasis on elk populations across entire hunting districts is disingenuous and has little relevance to whether you are meeting your Forest Plan obligations to maintain sufficient elk habitat onNational Forest lands. As you note, the Forest Plan estimated that

70% of elk were taken on National Forest lands in 1986. What percentage of elk are currently taken on National Forest lands? Please disclose this information. Have you asked Montana FWP for this information? Any honest biologist would admit that high elk population numbers do not indicate that you are appropriately managing National Forest elk habitat; to the contrary, high elk numbers indicate that you are so poorly managing elk habitat on National Forest lands that elk are being displaced to private lands where hunting is limited or prohibited. Your own Forest Service guidance document, Christensen et al 1993 states: "Reducing habitat effectiveness should never be considered as a means of controlling elk populations."

In the Judith Springs Project area, what is the linear motorized route density on National Forest System lands in the action area and during implementation?

Please clarify what is going on. Have you closed or obliterated all roads that were promised to be closed or obliterated in the Travel Plan? Or, are you still waiting for funds to close or obliterate those roads? This distinction matters because you cannot honestly claim that you are meeting road density standards promised by the Travel Plan if you have not yet completed the road closures/ obliterations promised by the Travel Plan. Furthermore, as noted above, you have a major problem with recurring, chronic violations of the road closures created by the Travel Plan, which means that your assumptions in the Travel Plan that all closures would be effective has proven false. For this reason, you cannot tier to the analysis in the Travel Plan because it is invalid. You must either complete new NEPA analysis for the Travel Plan on this issue or provide that new analysis in the NEPA analysis for this Project. Either way, you must update your open road density calculations to include all roads receiving illegal use.

Please produce the full Travel Plan on your website, as well as its full NEPA analysis. Please take a hard look at habitat effectiveness in this Project area.

Christensen et al (1993) states: "Any motorized vehicle use on roads will reduce habitat effectiveness. Recognize and deal with all forms of motorized vehicles and all uses, including administrative use." Please disclose this to the public and stop representing that roads closed to the public should not be included in habitat effectiveness calculations. The facts that (a) you are constructing or reconstructing many miles of road for this project, (b) you have problems with recurring illegal use, and (c) you already admit that you found another 25 miles of illegal roads in the area, as part of the Horsefly project, that you have not committed to obliterating, means that your conclusion that this Project will have no effect on open road density or habitat effectiveness is implausible to the point of being disingenuous. You cannot exclude these roads simply because you say they are closed to the public. Every road receiving motorized use must be included in the HE calculation. You must consider all of this road use in order to take a hard look that is fully and fairly informed regarding habitat effectiveness. In the very least you must add in all “non-system” roads, i.e. illegal roads, as well as recurring illegal road use (violations) in your ORD calculations.

Christensen et al 1993 finds: “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.”

How many miles of new roads are you planning on building?

You fail to make this admission and instead represent that you are meeting all relevant objectives.

The project will be in violation of NEPA, NFMA, the Forest Plan, The Travel Plan, the APA and the ESA because of the recurring road closure violations. Your assumptions in the Travel Plan that all closures would be effective has proven false. For this reason, you cannot tier to the analysis in the Travel Plan because it is invalid.

The Forest Service should provide an analysis of how much of the Project area, Project area watersheds, affected landscape areas, or affected Hunting Districts provide "elk security area[s]" 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.

How will this project make the project area more resilient and diverse? How does bulldozing miles of new roads and clearcutting restore the forest?

We believe that best available science shows that Commercial Logging does not reduce the threat of Forest Fires. What best available science supports the action alternatives?

The purpose of the Judith Springs Project is to reduce the threat to values at risk such as high-investment infrastructure, adjacent private lands within Wildland Urban Interface, critical ingress/egress routes and ungulate winter range.

Please show on map the Wildland Urban Interface in the project area. Please demonstrate that the Wildland Urban Interface complies with the statutory definition of the Wildland Urban Interface found in the Healthy Forest Restoration Act.

Please see the following article:

Montana researchers urge towns to focus on wildfire preparation

[***https://missoulacurrent.com/research-wildfire-preparation/***](https://missoulacurrent.com/research-wildfire-preparation/)

Laura Lundquist

(Missoula Current) For more than a decade, a small group of scientists have been trying to convince people that fireproofing their homes is far more effective than logging the forest when it comes to surviving wildfire. But few people are listening.

In mid-December, six researchers published a paper in the Proceedings of the National Academy of Sciences journal warning that communities across the nation, but particularly those in the West, aren't prepared to survive

an urban conflagration such as the one that devastated Lahaina, Hawaii, in August.

The paper, titled "Wildland-urban fire disasters aren't actually a wildfire problem," points out that, since 2016, communities from Lahaina to Gatlinburg, Tenn., that have lost hundred of homes to fires have certain things in common: the fires occurred under extreme weather conditions - high winds and persistent drought - and most of the structures weren't fire-resistant.

"These problem fires were defined as an issue of wildfires that involved houses. In reality, they are urban fires initiated by wildfires. That's an important distinction - and one that has big repercussions for how we prepare ourselves for future fires," the authors wrote.

The authors included three researchers from the Forest Science and Fire Sciences laboratories of the U.S. Forest Service Rocky Mountain Research Station in Missoula and one from Headwaters Economics in Bozeman.

In a 2014 paper in the Proceedings of the National Academy of Science, some of the same authors developed a community risk assessment that put the focus on improving the security of individual homes in a community, not the forest around them.

The emphasis is placed on modifying the house and the home ignition zone, a region within 100 feet of a house where debris and vegetation should be eliminated or *minimized to reduce the chance of fire getting close to the house.*

The reason that urban conflagrations begin and spread is because wind pushes embers and heat from one unprotected building to another, overwhelming fire departments that normally train to fight fire in just one building. Conditions are made worse when buildings are close together, because radiant heat becomes a bigger factor, spreading fire quicker.

"Reducing the likelihood that a home will ignite interrupts the disaster sequence by enabling effective structure protection. New construction siting, design, construction materials, and landscaping requirements should take wildfire potential into account," the authors wrote in the December paper.

One of the paper's authors, Jack Cohen, is a fire-behavior analyst and heat transfer engineer who has spent 40 years investigating wildfires, particularly those that are linked to incidents where hundreds of homes burned. He has spent at least the past decade writing papers and giving talks about the need to focus on making homes less susceptible to wildfires, which are a natural process, especially in the arid West.

When asked why the researchers decided to submit the recent article that seeks to drum home points they already promoted a decade ago, Cohen said cities and agencies

have done very little during that time period to put their recommendations into place.

"What prompted us this time was the Lahaina urban conflagration that was associated with a grassfire. It may be a repeated message on our part, but it's not being received very well. Not much has changed," Cohen said. "The federal and state agencies still don't get it - they're still defining the problem as a wildfire control problem."

Since the 2014 paper, Cohen and other researchers have had to just watch as town after town has burned terribly but predictably, as if no one has read their research. In Gatlinburg and Pigeon Forge, Tenn., 2,460 buildings burned in a 2016 fire; in 2018, the Camp Fire led to the loss of almost 19,000 buildings in Paradise, Calif.; in December 2021, 1,084 buildings burned in Superior and Louisville, Colo. from a grass fire; and in November 2021, a grassfire sparked fires in 23 homes in Denton, Mont.

Each wildfire had very little connection to most of the burning buildings, Cohen said. A wildfire is the source of initial ignition, but from that point on, it's a series of structure fires that lead to more structure fires. For example, with the Four Mile Canyon Fire in Boulder, Colo., the state of Colorado and the Forest Service had completed a number of fuel treatments nearby that they touted as protective. But high winds carried fire brands to ignite the houses far from the fire. Cohen found that while 168 houses burned, a lot of vegetation around the

houses didn't, "so the wildfire didn't sweep through town."

"In the past five years, a number of incidents with more than 100 houses burning have been initiated by grass fires, which burn quickly. The grass fires pass through and are gone while the community continued to burn," Cohen said. "What I've found, particularly over the past five or six years, is that extreme wildfire is not dependent on closed-canopy conifers that produce big flames. The only time these urban disasters occur is under extreme conditions. That typically means it's very windy."

Nothing about the Lahaina Fire surprised Cohen. Not even the overblown claims that a wildfire "roared through and destroyed the town." Again, the wildfire was over before the town really started to burn. The fire started as a grassfire fanned by high winds, and had Lahaina not been there, the fire would have burned through the buffel grass and guinea grass within a matter of minutes before it died out on the beach.

But Lahaina was there, a high-density community with several blocks of multi-story, largely-connected wooden structures. That configuration caused buildings to catch fire either due to burning embers flying from other buildings or from catching fire due to the overwhelming heat from nearby buildings.

"The ignition initiated where the grassfire came down, and that was it - it was a conflagration," Cohen said.

“You don’t want to be in a high-density community when you can’t control the fire. Thirteen of the 26 fatalities in the 1991 Oakland Hills Fire occurred in the street when two-story buildings were burning on both sides of the street and the road became blocked. The heat was untenable.”

One house in Lahaina stood untouched and was dubbed “the miracle house.” But Cohen said it was just a good example of the points he and his fellow authors have been trying to communicate about defensible space and being fire-adapted. The owners had recently renovated the house with a nonflammable roof. It had wood walls, but the nearest building was about 30 feet away - far enough to prevent radiant heat from starting a fire - and there was little debris on the grounds or the house to actively spread the fire.

“The home ignition zone works,” Cohen said. “The home ignition zone came out of the modeling I did and then the crown fire experiments I did with wood walls to show the distance, the proximity required to produce an ignition was realistic. At the same time, California was cutting 300-foot clearances around communities, which means nothing to (airborne) burning embers, but it’s way over (what’s required) for radiant heat exposure.”

Cohen and his colleagues hope their latest paper prompts more action from local governments. Cohen is hoping Missoula County can do a better job when it updates its Wildfire Protection Plan in the near future.

But more than likely, Cohen said, they'll be writing a similar paper in another few years, trying to make politicians and the public understand. It doesn't help that they're fighting some in their own agency, the Forest Service, who insist that logging, not home modification, will save communities.

"Fire is inevitable. But nobody's figuring it out," Cohen said. "We're starting from the presumption that it's wildfire that spreads through a community that lays it to waste. We even have the agencies responding in that fashion by being obsessed with this notion of wildfire control. So they do fuel treatments to have safe firefighting. That's not only counter ecologically, it doesn't work."

Contact reporter Laura Lundquist at lundquist@missoulacurrent.com.

Please find, "Wildland-urban fire disasters aren't actually a wildfire problem," by Calkin et al. 2023 attached. Calkin et al. 2024 found that to protect homes from wildfire we have to harden homes, not cut and burn forests.

The project area should be within 100 feet of homes not on Forest Service and BL:M lands unless a home is within 100 feet of Forest Service and BL:M lands. The purpose and need are not based on the best available science and is in violation of NEPA, NFMA and the APA.

Please analyze the impact of the project on climate change.

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 un-thinned 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

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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.

Please evaluate and analyze in the environmental baseline, effects of the action, and cumulative effects, how the removal of all wildlife standards may affect grizzly bears, wolverines, monarch butterflies, lynx, or lynx critical habitat.

Cumulative effects are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

The Forest Service's EIS for the revised forest plan fails to adequately analyze the direct and indirect effects of removing all wildlife standards from the Helena-Lewis and Clark Forest Plan, including standards designed to protect hiding cover and limit open road densities on big game species and habitat (including security), grizzly bears, grizzly bear habitat, grizzly bear movement and recovery, lynx, lynx habitat, and lynx critical habitat.

The Forest Service's EIS for the revised forest plan fails to adequately analyze the cumulative effects of removing all wildlife standards from the Helena-Lewis and Clark Forest Plan, including standards designed to protect hiding cover and limit open road densities on big game species and habitat (including security), grizzly bears, grizzly bear habitat, grizzly bear movement and recovery, lynx, lynx habitat, and lynx critical habitat. Other activities occurring on the Helena-Lewis and Clark National Forest, including livestock grazing, recreational uses, logging, and climate change are having and continue to have a cumulative effect on big game species and habitat, grizzly bears, grizzly bear movement and recovery, lynx, lynx habitat, and lynx critical habitat.

The Forest Service's failure to analyze the direct, indirect, and cumulative effects of removing all wildlife standards is arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with NEPA.

NEPA requires the Forest Service to adequately consider and analyze a reasonable range of alternatives.

Under NEPA, the alternatives analysis is "the heart" of the environmental analysis because it presents impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options. The alternatives analysis guarantees that agency decision makers have before them and take into proper account all possible approaches to a particular action (including total abandonment of the action) which would alter the environmental impact and the cost-benefit balance.

The Forest Service's EIS for the revised forest plan fails to consider and analyze a reasonable range of alternatives to removing all wildlife standards from the Helena-Lewis and Clark Revised Forest Plan. The Forest Service only took an all (remove all wildlife standards) or nothing (keep all wildlife standards) approach.

The Forest Service's EIS for the revised Forest Plan never evaluated keeping some of the wildlife standards. The Forest Service never evaluated amending or modifying some or all of the ten wildlife standards (including the numeric requirements for retaining hiding cover and limiting open road densities). The Forest Service never evaluated an alternative that includes specific Management Area direction with standards in areas deemed critical for big game habitat and security. The Forest Service never evaluated and compared a wide range of new and varying standards with varying numeric limits for managing big game habitat and security on the forest based on the best available science.

The Forest Service did not adequately analyze the cumulative effects of the revised forest plan, recreation, fire suppression, logging, illegal road use, on wildlife in violation of NEPA, NFMA, the APA and the ESA.

The purpose of the Judith Springs Project is to promote resiliency and ecological function.

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.

How many road closure violations have been issued in the Judith-Musselshell Ranger District within the last 5 years?

Are the road closures in the Judith-Musselshell Ranger District effective?

Please include the results of monitoring road closure effectiveness since the EA is assuming they are effective.

Any desire to keep a road in the project area must be in harmony with the alleged priority goals, 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.

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),

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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

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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 fuel reduction and Resiliency 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 demonstrate that the project uses a legal definition of the Wildland Urban Interface (WUI) in violation of NEPA, NFMA, the Healthy Forest Act and the APA. The Judith Springs project purpose and need is based on false assumptions in violation of NEPA, NFMA and the APA.

Climate Change

Please follow NEPA and take a hard look at the impact of the project on climate change.

The federal district court of Montana recently ruled against the Kootenai National Forest on the boiler plate analysis the Forest Service has been writing:

Ultimately, greenhouse gas reduction must happen quickly, and removing carbon from forests in the form of logging, even if trees are going to grow back, will take decades to centuries to re-sequester. Put more simply, logging causes immediate carbon losses, while re-sequestration happens slowly over time, time that the planet may not have.

Please find the court's order attached.

Please follow NEPA and take a hard look at the impact of the project on climate change.

Numerous studies, including those by the Forest Service, have concluded that logging mature forests releases significant amounts of carbon stored in the trees by preventing such forests from continuing to sequester carbon in trees and roots. FS17007. When forest stands are cut down, the vast majority of the stored carbon in the forest is released over time as CO_2, thereby converting forests from a sink to a "source" or "emitter." See FS7888 (study reporting "[i]ncreased harvest through proposed thinning practices in [Oregon] has been shown to elevate emissions for decades to centuries regardless of product end use").

Please find attached, "The Enduring World Forest Carbon Sink: Key Findings and Policy Implications Forests play a critical role in mitigating climate change by sequestering carbon dioxide (CO_2) from the atmosphere." This new study led by Yude Pan, research scientist with the U.S. Department of Agriculture, Forest Service, Northern Research Station, provides a unique perspective and a long-term, ground- based benchmark on the recent magnitude, trends, drivers, and locations of Earth's critical forest carbon sinks.

It found that deforestation, degradation, and disturbances pose significant threats to forest carbon sinks.

It recommends halting deforestation and degradation while increasing large-scale reforestation and afforestation are crucial for sustaining and enhancing forest carbon sinks.

Please develop an alternative that maximizes the amount of carbon the project area absorbs.

Will the Judith Springs Project make the area more vulnerable to wildfire?

Will the project meet the Purpose and Need?

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 article below about Logging and wildfire by Dr. Chad Hanson.

October 5, 2022

"Fuel Reduction" Logging Increases Wildfire Intensity

A large and growing body of scientific evidence and opinion concludes that commercial thinning and post-fire logging/clearcutting makes wildfires spread faster and/or burn more severely, and this puts nearby communities at greater risk.

Morris, W.G. (U.S. Forest Service). 1940. Fire weather on clearcut, partly cut, and virgin timber areas at Westfir, Oregon. Timberman 42: 20-28.

"This study is concerned with one of these factors - the fire-weather conditions near ground level - on a single operation during the first summer following logging. These conditions were found to be more severe in the clear-cut area than in either the heavy or light partial cutting areas and more severe in the latter areas than in virgin timber."

Countryman, C.M. (U.S. Forest Service). 1956. Old-growth conversion also converts fire climate. Fire Control Notes 17: 15-19.

"Although the general relations between weather factors, fuel moisture, and fire behavior are fairly well known, the importance of these changes following conversion and their combined effect on fire behavior and control is not generally recognized. The term 'fireclimate,' as used here, designates the environmental conditions of weather and fuel moisture that affect fire behavior. It does not consider fuel created by slash because regardless of what forest managers do with slash, they still have to deal with the

new fireclimate. In fact, the changes in wind, temperature, humidity, air structure, and fuel

moisture may result in greater changes in fire behavior and size of control job than does the addition of more fuel in the form of slash."

"Conversion which opens up the canopy by removal of trees permits freer air movement and more sunlight to reach the ground. The increased solar radiation in turn results in higher temperatures, lower humidity, and lower fuel moisture. The magnitude of these changes can be illustrated by comparing the fireclimate in the open with that in a dense stand."

"A mature, closed stand has a fireclimate strikingly different from that in the open. Here nearly all of the solar radiation is intercepted by the crowns. Some is reflected back to space and the rest is converted to heat and distributed in depth through the crowns. Air within the stand is warmed by contact with the crowns, and the ground fuels are in turn warmed only by contact with the air. The temperature of fuels on the ground thus usually approximates air temperature within the stand."

"Temperature profiles in a dense, mixed conifer stand illustrate this process (fig. 2). By 8 o'clock in the morning, air within the crowns had warmed to 68° F. Air temperature near the ground was only 50°. By 10 o'clock temperatures within the crowns had reached 82° and, although the heat had penetrated to lower levels, air near

the surface at 77° was still cooler than at any other level. At 2:00 p.m., air temperature within the stand had become virtually uniform at 87°. In the open less than one-half mile away, however, the temperature at the surface of pine litter reached 153° at 2:00 p.m.”

“Because of the lower temperature and higher humidity, fuels within the closed stand are more moist than those in the open under ordinary weather conditions. Typically, when moisture content is 3 percent in the open, 8 percent can be expected in the stand.”

“Moisture and temperature differences between open and closed stands have a great effect on both the inception and the behavior of fire. For example, fine fuel at 8-percent moisture content will require nearly one-third more heat for ignition than will the same fuel at 3-percent moisture content. Thus, firebrands that do not contain enough heat to start a fire in a closed stand may readily start one in the open.”

“When a standard fire weather station in the open indicates a temperature of 85° F., fuel moisture of 4 percent, and a wind velocity of 15 m.p.h.--not unusual burning conditions in the West--a fire starting on a moderate slope will spread 4.5 times as fast in the open as in a closed stand. The size of the suppression job, however, increases even more drastically.”

“Greater rate of spread and intensity of burning require control lines farther from the actual fire, increasing the

length of fireline. Line width also must be increased to contain the hotter fire. Less production per man and delays in getting additional crews complicate the control problem on a fast-moving fire. It has been estimated that the size of the suppression job increases nearly as the square of the rate of forward spread. Thus, fire in the open will require 20 times more suppression effort. In other words, for each man required to control a surface fire in a mature stand burning under these conditions, 20 men will be required if the area is clear cut."

"Methods other than clear cutting, of course, may bring a less drastic change in fireclimate. Nevertheless, the change resulting from partial cutting can have important effects on fire. The moderating effect that a dense stand has on the fireclimate usually results in slow-burning fires. Ordinarily, in dense timber only a few days a year have the extreme burning conditions under which surface fires produce heat rapidly enough to carry the fire into the crowns. Partial cutting can increase the severity of the fireclimate enough to materially increase the number of days when disastrous crown fires can occur."

SNEP (co-authored by U.S. Forest Service). 1996. Sierra Nevada Ecosystem Project, Final Report to Congress: Status of the Sierra Nevada. Vol. I: Assessment summaries and management strategies. Davis, CA: University of California, Davis, Center for Water and Wildland Resources.

"Timber harvest, through its effects on forest structure, local microclimate, and fuel accumulation, has increased fire severity more than any other recent human activity."

"[I]n areas where the larger trees (greater than 12 inches in diameter breast height) have been removed, stand-replacing fires are more likely to occur."

Beschta, R.L.; Frissell, C.A.; Gresswell, R.; Hauer, R.; Karr, J.R.; Minshall, G.W.; Perry, D.A.; Rhodes, J.J. 1995. Wildfire and salvage logging. Eugene, OR: Pacific Rivers Council.

"We also need to accept that in many drier forest types throughout the region, forest management may have set the stage for fires larger and more intense than have occurred in at least the last few hundred years."

"With respect to the need for management treatments after fires, there is generally no need for urgency, nor is there a universal, ecologically-based need to act at all. By acting quickly, we run the risk of creating new problems before we solve the old ones."

"[S]ome argue that salvage logging is needed because of the perceived increased likelihood that an area may reburn. It is the fine fuels that carry fire, not the large dead woody material. We are aware of no evidence supporting the contention that leaving large dead woody material significantly increases the probability of reburn."

Chen, J., et al. (co-authored by U.S. Forest Service). 1999. Microclimate in forest ecosystem and landscape ecology: Variations in local climate can be used to monitor and compare the effects of different management regimes. BioScience 49: 288–297.

When moving from open forest areas, resulting from logging, and into dense forests with high canopy cover, "there is generally a decrease in daytime summer temperatures but an increase in humidity..."

The authors reported a 5? C difference in ambient air temperature between a closed- canopy mature forest and a forest with partial cutting, like a commercial thinning unit (Fig. 4b), and noted that such differences are even greater than the increases in temperature predicted due to anthropogenic climate change.

Dombeck, M. (U.S. Forest Service Chief). 2001. How Can We Reduce the Fire Danger in the Interior West. Fire Management Today 61: 5-13.

"Some argue that more commercial timber harvest is needed to remove small-diameter trees and brush that are fueling our worst wildlands fires in the interior West. However, small-diameter trees and brush typically have little or no commercial value. To offset losses from their removal, a commercial operator would have to remove large, merchantable trees in the overstory. Overstory

removal lets more light reach the forest floor, promoting vigorous forest regeneration. Where the overstory has been entirely removed, regeneration produces thickets of 2,000 to 10,000 small trees per acre, precisely the small-diameter materials that are causing our worst fire problems. In fact, many large fires in 2000 burned in previously logged areas laced with roads. It seems unlikely that commercial timber harvest can solve our forest health problems."

Morrison, P.H. and K.J. Harma. 2002. Analysis of Land Ownership and Prior Land Management Activities Within the Rodeo & Chediski Fires, Arizona. Pacific Biodiversity Institute, Winthrop, WA. 13 pp.

Previous logging was associated with higher fire severity.

Donato DC, Fontaine JB, Campbell JL, Robinson WD, Kauffman JB, Law BE. 2006. Science 311: 352.

"In terms of short-term fire risk, a reburn in [postfire] logged stands would likely exhibit elevated rates of fire spread, fireline intensity, and soil heating impacts...Postfire logging alone was notably incongruent with fuel reduction goals."

Hanson, C.T., Odion, D.C. 2006. Fire Severity in mechanically thinned versus unthinned forests

of the Sierra Nevada, California. In: Proceedings of the 3rd International Fire Ecology and Management Congress, November 13-17, 2006, San Diego, CA.

"In all seven sites, combined mortality [thinning and fire] was higher in thinned than in unthinned units. In six of seven sites, fire-induced mortality was higher in thinned than in

unthinned units...Mechanical thinning increased fire severity on the sites currently available for study on national forests of the Sierra Nevada."

Platt, R.V., et al. 2006. Are wildfire mitigation and restoration of historic forest structure compatible? A spatial modeling assessment. Annals of the Assoc. Amer. Geographers 96: 455- 470.

"Compared with the original conditions, a closed canopy would result in a 10 percent reduction in the area of high or extreme fireline intensity. In contrast, an open canopy [from thinning] has the opposite effect, increasing the area exposed to high or extreme fireline intensity by 36 percent. Though it may appear counterintuitive, when all else is equal open canopies lead to reduced fuel moisture and increased midflame windspeed, which increase potential fireline intensity."

Thompson, J.R., Spies, T.A., Ganio, L.M. (co-authored by U.S. Forest Service). 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Sciences of the United States of America 104: 10743–10748.

"Areas that were salvage-logged and planted after the initial fire burned more severely than comparable unmanaged areas."

Cruz, M.G, and M.E. Alexander. 2010. Assessing crown fire potential in coniferous forests of western North America: A critique of current approaches and recent simulation studies. Int. J. Wildl. Fire. 19: 377–398.

The fire models used by the U.S. Forest Service falsely predict effective reduction in crown fire potential from thinning:

"Simulation studies that use certain fire modelling systems (i.e. NEXUS, FlamMap, FARSITE, FFE-FVS (Fire and Fuels Extension to the Forest Vegetation Simulator), Fuel Management Analyst (FMAPlus), BehavePlus) based on separate implementations or direct integration of Rothermel's surface and crown rate of fire spread models with Van Wagner's crown fire transition and propagation models are shown to have a significant underprediction bias when used in assessing potential crown fire behaviour in conifer forests of western North America. The principal sources of this underprediction bias are shown to include: (i) incompatible model

linkages; (ii) use of surface and crown fire rate of spread models that have an inherent underprediction bias; and (iii) reduction in crown fire rate of spread based on the use of unsubstantiated crown fraction burned functions. The use of uncalibrated custom fuel models to represent surface fuelbeds is a fourth potential source of bias."

Thompson, J., and T.A. Spies (co-authored by U.S. Forest Service). 2010. Exploring Patterns of Burn Severity in the Biscuit Fire in Southwestern Oregon. Fire Science Brief 88: 1-6.

"Areas that burned with high severity...in a previous wildfire (in 1987, 15 years prior) were more likely to burn with high severity again in the 2002 Biscuit Fire. Areas that were salvage-logged and planted following the 1987 fire burned with somewhat higher fire severity than equivalent areas that had not been logged and planted."

Graham, R., et al. (U.S. Forest Service). 2012. Fourmile Canyon Fire Findings. Gen. Tech. Rep. RMRS-GTR-289. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 110 p.

Thinned forests "were burned more severely than neighboring areas where the fuels were not treated", and 162 homes were destroyed by the Fourmile Canyon Fire (see Figs. 45 and 46).

DellaSala et al. (2013) (letter from over 200 scientists):

"Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including...accumulation of logging slash that can add to future fire risks..."

DellaSala et al. (2015) (letter from over 200 scientists):

"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."

North, M.P., S.L. Stephens, B.M. Collins, J.K. Agee, G. Aplet, J.F. Franklin, and P.Z. Fule (co- authored by U.S. Forest Service). 2015. Reform forest fire management. Science 349: 1280- 1281.

“...fire is usually more efficient, cost-effective, and ecologically beneficial than mechanical treatments.”

Bradley, C.M. C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western USA? Ecosphere 7: article e01492.

In the largest study on this subject ever conducted in western North American, the authors found that the more trees that are removed from forests through logging, the higher the fire severity overall:

“We investigated the relationship between protected status and fire severity using the Random Forests algorithm applied to 1500 fires affecting 9.5 million hectares between 1984 and 2014 in pine (Pinus ponderosa, Pinus jeffreyi) and mixed-conifer forests of western United States, accounting for key topographic and climate variables. We found forests with higher levels of protection [from logging] had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading.”

Lesmeister, D.B., et al. (co-authored by U.S. Forest Service). 2019. Mixed-severity wildfire and habitat of an old-forest obligate. Ecosphere10: Article e02696.

Denser, older forests with high canopy cover had lower fire severity.

Dunn, C.J., et al. 2020. How does tree regeneration respond to mixed-severity fire in the western Oregon Cascades, USA? Ecosphere 11: Article e03003.

Forests that burned at high-severity had lower, not higher, overall pre-fire tree densities.

Meigs, G.W., et al. (co-authored by U.S. Forest Service). 2020. Influence of topography and fuels on fire refugia probability under varying fire weather in forests of the US Pacific Northwest. Canadian Journal of Forest Research 50: 636-647.

Forests with higher pre-fire biomass are more likely to experience low-severity fire.

Moomaw et al. (2020) (letter from over 200 scientists:

https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest- scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/):

"Troublingly, to make thinning operations economically attractive to logging companies, commercial logging of larger, more fire-resistant trees often occurs across large areas. Importantly, mechanical thinning results in a substantial net loss of forest carbon storage, and a net

increase in carbon emissions that can substantially exceed those of wildfire

emissions (Hudiburg et al. 2013, Campbell et al. 2012). Reduced forest protections and increased logging tend to make wildland fires burn more intensely (Bradley et al. 2016). This can also occur with commercial thinning, where mature trees are removed (Cruz et al. 2008, Cruz et al. 2014). As an example, logging in U.S. forests emits 10 times more carbon than fire and native insects combined (Harris et al. 2016). And, unlike logging, fire cycles nutrients and helps increase new forest growth."

Moomaw et al. (2021) (letter from over 200 scientists: https://bit.ly/3BFtIAg):

"[C]ommercial logging conducted under the guise of "thinning" and "fuel reduction" typically removes mature, fire-resistant trees that are needed for forest resilience. We have watched as one large wildfire after another has swept through tens of thousands of acres where commercial thinning had previously occurred due to extreme fire weather driven by climate change. Removing trees can alter a forest's microclimate, and can often increase fire intensity. In contrast, forests protected from logging, and those with high carbon biomass and carbon storage, more often burn at equal or lower intensities when fires do occur."

Lesmeister, D.B., et al. (co-authored by U.S. Forest Service). 2021. Northern spotted owl nesting forests as fire refugia: a 30-year synthesis of large wildfires. Fire Ecology 17: Article 32.

More open forests with lower biomass had higher fire severity, because the type of open, lower-biomass forests resulting from thinning and other logging activities have "hotter, drier, and windier microclimates, and those conditions decrease dramatically over relatively short distances into the interior of older forests with multi-layer canopies and high tree density..."

Stephens, S.L., et al. (co-authored by U.S. Forest Service). 2021. Forest Restoration and Fuels Reduction: Convergent or Divergent? BioScience 71: 85-101.

While the authors continued to promote commercial thinning, they acknowledged that commercial thinning causes wildfires to move faster and become larger more quickly:

"Interestingly, surface fire rate of spread increased after restoration and fuel treatments [commercial thinning] relative to the untreated stand. This increased fire rate of spread following both treatment types is due to a combination of higher mid-flame wind speeds and a greater proportion of grass fuels, which result from reductions to canopy cover."

Hanson, C.T. 2021. Is “Fuel Reduction” Justified as Fire Management in Spotted Owl Habitat? Birds 2: 395-403.

“Within the forest types inhabited by California Spotted Owls, high-severity fire occurrence was not higher overall in unmanaged forests and was not associated with the density of pre-fire snags from recent drought in the Creek Fire, contrary to expectations under the fuel reduction hypothesis. Moreover, fuel-reduction logging in California Spotted Owl habitats was associated with higher fire severity in most cases. The highest levels of high-severity fire were in the categories with commercial logging (post-fire logging, private commercial timberlands, and commercial thinning), while the three categories with lower levels of high-severity fire were in forests with no recent forest management or wildfire, less intensive noncommercial management, and unmanaged forests with re-burning of mixed-severity wildfire, respectively.”

Hanson, C.T. 2022. Cumulative severity of thinned and unthinned forests in a large California wildfire. Land 11: Article 373.

“Using published data regarding the percent basal area mortality for each commercial thinning unit that burned in the Antelope fire, combined with percent basal area mortality due to the fire itself from post-fire satellite imagery, it was found that commercial thinning was

associated with significantly higher overall tree mortality levels (cumulative severity)."

Baker, B.C., and C.T. Hanson. 2022. Cumulative tree mortality from commercial thinning and a large wildfire in the Sierra Nevada, California. Land 11: Article 995.

"Similar to the findings of Hanson (2022) in the Antelope Fire of 2021 in northern California, in our investigation of the Caldor Fire of 2021 we found significantly higher cumulative severity in forests with commercial thinning than in unthinned forests, indicating that commercial thinning killed significantly more trees than it prevented from being killed in the Caldor Fire...Despite controversy regarding thinning, there is a body of scientific literature that suggests commercial thinning should be scaled up across western US forest landscapes as a wildfire management strategy. This raises an important question: what accounts for the discrepancy on this issue in the scientific literature? We believe several factors are likely to largely explain this discrepancy. First and foremost, because most previous research has not accounted for tree mortality from thinning itself, prior to the wildfire-related mortality, such research has underreported tree mortality in commercial thinning areas relative to unthinned forests. Second, some prior studies have not controlled for vegetation type, which can lead to a mismatch when comparing severity in thinned areas to the rest of the fire area given that thinning necessarily occurs in conifer forests but unthinned areas can include large expanses of non-conifer vegetation types that burn

almost exclusively at high severity, such as grasslands and chaparral. Third, some research reporting effectiveness of commercial thinning in terms of reducing fire severity has been based on the subjective location of comparison sample points between thinned and adjacent unthinned forests. Fourth, reported results have often been based on theoretical models, which subsequent research has found to overestimate the effectiveness of thinning. Last, several case studies draw conclusions

about the effectiveness of thinning as a wildfire management strategy when the results of those studies do not support such a conclusion, as reviewed in DellaSala et al. (2022)." (internal citations omitted)

Prichard, S.J., et al. (co-authored by U.S. Forest Service). 2021. Adapting western US forests to wild-fires and climate change: 10 key questions. Ecological Applications 31: Article e02433.

In a study primarily authored by U.S. Forest Service scientists, and scientists funded by the Forest Service, the authors state that "There is little doubt that fuel reduction treatments can be effective at reducing fire severity..." yet these authors repeatedly contradict their own proposition, acknowledging that thinning can cause "higher surface fuel loads," which "can contribute to high-intensity surface fires and elevated levels of associated tree mortality," and mastication of such surface fuels "can *cause deep soil heating" and "elevated fire intensities." The authors also acknowledge that thinning "can lead to increased surface wind speed and fuel heating, which allows for increased rates of fire spread in thinned forests," and even the combination of thinning and prescribed fire "may increase the risk of fire by increasing sunlight exposure to the forest floor, drying vegetation, promoting understory growth, and increasing wind speeds."*

Despite these admissions, contradicting their promotion of thinning, the authors cite to several U.S. Forest Service-funded studies for the proposition that thinning can effectively reduce fire severity, but a subsequent analysis of those same studies found that the results of these articles do not support that conclusion, and often contradict it, as detailed in Section 5.2 of DellaSala et al. (2022) (see below).

DellaSala, D.A., B.C. Baker, C.T. Hanson, L. Ruediger, and W.L. Baker. 2022. Have western USA fire suppression and megafire active management approaches become a contemporary Sisyphus? Biological Conservation 268: Article 109499.

With regard to a previous U.S. Forest Service study claiming that commercial thinning effectively reduced fire severity in the large Wallow fire of 2011 in Arizona, DellaSala et al. (2022, Section 5.1) conducted a detailed accuracy check and found that the previous analysis had dramatically underreported high-severity fire in *commercial thinning units, and forests with commercial thinning in fact had higher fire severity, overall.*

DellaSala et al. (2022, Section 5.2) also reviewed several U.S. Forest Service studies relied upon by Prichard et al. (2021) for the claim that commercial thinning is an effective fire management approach and found that the actual results of these cited studies did not support that conclusion.

Bartowitz, K.J., et al. 2022. Forest Carbon Emission Sources Are Not Equal: Putting Fire, Harvest, and Fossil Fuel Emissions in Context. Front. For. Glob. Change 5: Article 867112.

The authors found that logging conducted as commercial thinning, which involves removal of some mature trees, substantially increases carbon emissions relative to wildfire alone, and commercial thinning "causes a higher rate of tree mortality than wildfire."

Evers, C., et al. 2022. Extreme Winds Alter Influence of Fuels and Topography on Megafire Burn Severity in Seasonal Temperate Rainforests under Record Fuel Aridity. Fire 5: Article 41.

The authors found that dense, mature/old forests with high biomass and canopy cover tended to have lower fire severity, while more open forests with lower canopy cover and less biomass burned more severely.

USFS (U.S. Forest Service) (2022). Gallinas-Las Dispensas Prescribed Fire Declared Wildfire Review. U.S. Forest Service, Office of the Chief, Washington, D.C.

"A thinning project in the burn area opened the canopy in some areas, allowing more sunlight which led to lower fuel moistures. Heavy ground fuels resulting from the construction of fireline for the burn project added to the fuel loading. This contributed to higher fire intensities, torching, spotting, and higher resistance-to-control."

The only effective way to protect homes from fire is home-hardening and defensible space pruning within 100 to 200 feet of homes or less.

Cohen, J.D. (U.S. Forest Service). 2000. Preventing disaster: home ignitability in the wildland- urban interface. Journal of Forestry 98: 15-21.

The only relevant zone to protect homes from wildland fire is within approximately 135 feet or less from each home—not out in wildland forests.

Gibbons P, van Bommel L, Gill MA, Cary GJ, Driscoll DA, Bradstock RA, Knight E, Moritz MA, Stephens SL, Lindenmayer DB (2012) Land management practices associated with house loss in wildfires. PLoS ONE 7: Article e29212.

Defensible space pruning within less than 130 feet from homes was effective at protecting homes from wildfires, while vegetation management in remote wildlands was not. A modest additional benefit for home safety was provided by prescribed burning less than 500 meters (less than 1641 feet) from homes.

Syphard, A.D., T.J. Brennan, and J.E. Keeley. 2014. The role of defensible space for residential structure protection during wildfires. Intl. J. Wildland Fire 23: 1165-1175.

Vegetation management and removal beyond approximately 100 feet from homes provides no additional benefit in terms of protecting homes from wildfires.

Tree removal is not necessary prior to conducting prescribed fire as an additional community safety buffer.

Decades of scientific studies have proven that, even in the densest forests that have not experienced fire in many decades, prescribed fire can be applied without prior tree removal, as demonstrated in the following studies:

Knapp EE, Keeley JE, Ballenger EA, Brennan TJ. 2005. Fuel reduction and coarse woody debris dynamics with early season and late season prescribed fire in a Sierra Nevada mixed conifer forest. Forest Ecology and Management 208: 383–397.

Knapp, E.E., and Keeley, J.E. 2006. Heterogeneity in fire severity within early season and late season prescribed burns in a mixed-conifer forest. Int. J. Wildland Fire 15: 37–45.

Knapp, E.E., Schwilk, D.W., Kane, J.M., Keeley, J.E., 2007. Role of burning on initial understory vegetation response to prescribed fire in a mixed conifer forest. Canadian Journal of Forest Research 37: 11–22.

van Mantgem, P.J., A.C. Caprio, N.L. Stephenson, and A.J. Das. 2016. Does prescribed fire promote resistance to drought in low elevation forests of the Sierra Nevada, California, USA? Fire Ecology 12: 13-25.

van Mantgem, P.J., N.L. Stephenson, J.J. Battles, E.K. Knapp, and J.E. Keeley. 2011. Long-term effects of prescribed fire on mixed conifer forest structure in the Sierra Nevada, California. Forest Ecology and Management 261: 989−994.

Plesase explain why this project enhances wildlife habitat, or is needed to maintain natural ecosystem processes within the project area. It is clear that this project requires much more information to be provided to the public, and much more documentation to justify vegetation management in the project area. 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-successional 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."

. Based on Dr. Baker's paper, the proposed action will not meet the purpose and need of the project.

Please find attached DellaSala et al 2022. Please also find attached, Baker 2023.

Countering Omitted Evidence of Variable Historical Forests and Fire Regime in Western USA Dry Forests: The Low-Severity-Fire Model Rejected

William L. Baker [1,]*

, Chad T. Hanson [2], Mark A. Williams [3] and Dominick A. DellaSala [4]

1 2 3 4

** Correspondence: bakerwl@uwyo.edu*

***Abstract:** The structure and fire regime of pre-industrial (historical) dry forests over ~26 million ha of the western USA is of growing importance because wildfires are increasing and spilling over into communities. Management is guided by current conditions relative to the historical range of variability (HRV). Two models of HRV, with different implications, have been debated since the 1990s in a complex series of papers, replies, and rebuttals. The "low-severity" model is that dry forests were relatively uniform, low in tree density, and dominated by low- to moderate-severity fires; the "mixed-severity" model is that dry forests were heterogeneous, with both low and high tree densities and a mixture of fire severities. Here, we simply rebut evidence in the low-severity model's latest review, including its 37 critiques of the mixed-severity model. A central finding of high-severity fire recently exceeding its historical rates was not supported by evidence in the review itself. A large body of published evidence supporting the mixed-severity model was omitted. These included numerous direct observations by early scientists, early forest atlases, early newspaper accounts, early oblique and aerial*

photographs, seven paleo-charcoal reconstructions, ≥18 tree-ring reconstructions, 15 land survey reconstructions, and analysis of forest inventory data. Our rebuttal shows that evidence omitted in the review left a falsification of the scientific record, with significant land management implications. The low-severity model is rejected and mixed-severity model is supported by the corrected body of scientific evidence.

Dr. Baker's and DellaSala's paper are the best available science. Please explain why this project is not following the best available science.

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.

Please find Schoennagel et al (2004) attached.

Schoenagel states: “we are concerned that the model of historical fire effects and 20th-century fire suppression in dry ponderosa pine forests is being applied uncritically across all Rocky Mountain forests, including where it is inappropriate.

Schoennagel et al (2004) states: “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 patterns."

Schoennagel et al (2004) states: "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: "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."

Schoennagel et al (2004) states: "No evidence suggests that spruce–fir or lodgepole pine forests have experienced sub- stantial shifts in stand structure over recent decades as a re- sult of fire suppression. Overall, variation in climate rather than in fuels appears to exert the largest influence on the size, timing, and severity of fires in subalpine forests []. We conclude that large, infrequent stand replacing fires are ‘business as usual’ in this forest type, not an artifact of fire suppression.”.

Schoennagel et al (2004) states: “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 Yellow-stone during 1988, although severe, was neither unusual nor surprising.”

Schoennagel et al (2004) states: “Mechanical fuel reduction in sub-alpine forests would not represent a restoration treatment but rather a departure from the natural range of variability in stand structure.”

Schoennagel et al (2004) states: “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.”

Schoennagel et al (2004) states: “The Yellowstone 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 restore 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 sub-alpine forests probably would not effectively mitigate the fire hazard, and these efforts may create new ecological problems by moving the forest structure outside the historic range of variability."

Likewise, Brown et al (2004) states: "At higher elevations, forests of subalpine fir, Engelmann spruce, mountain hem- lock, and lodgepole or whitebark pine predominate. These forests also have long fire return intervals and contain a high proportion of fire sensitive trees. At periods averaging a few hundred years, extreme drought conditions would prime the- se forests for large, severe fires that would tend to set the forest back to an early successional stage, with a large carry-over of dead trees as a legacy of snags and logs in the regenerating forest . . . . natural ecological dynamics are largely preserved because fire suppression has been effective for less than one natural fire cycle. Thinning for restoration does not appear to be appropriate in these forests. Efforts to manipulate stand structures to reduce fire hazard will not only be of limited effectiveness but may also move systems away from pre-1850 conditions to the detriment of wildlife and watersheds." "Fuel levels may suggest a high fire 'hazard' under conventional assessments, but wildfire risk is typically low in these settings."

Likewise, Graham et al (2004) states: "Most important, the fire behavior characteristics are strikingly different for cold (for example, lodgepole pine, Engelmann spruce, subalpine fir), moist (for example, western hemlock, western red cedar, western white pine), and dry forests. Cold and moist forests tend to have long fire-return intervals, but fires that do occur tend to be high-intensity, stand-replacing fires. Dry forests historically had short intervals between fi- res, but most important, the fires had low to moderate severity."

According to Graham et al (2004), thinning may also increase the likelihood of wildfire ignition in the type of forests in this Project area: "The probability of ignition is strongly rela- ted to fine fuel moisture content, air temperature, the amount of shading of surface fuels, and the occurrence of an ignition source (human or lightning caused) . . . . There is generally a warmer, dryer microclimate in more open stands (fig. 9) compared to denser stands. Dense stands (canopy cover) tend to provide more shading of fuels, keep- ing relative humidity higher and air and fuel temperature lower than in more open stands. Thus, dense stands tend to maintain higher surface fuel moisture contents com- pared to more open stands. More open stands also tend to allow higher wind speeds that tend to dry fuels compared to dense stands. These factors may in- crease probability of ignition in some open canopy stands compared to dense canopy stands."

Please see the attached report titled: "Have western USA fire suppression and megafire active management approaches become a contemporary Sisyphus?" By Dominick A. DellaSala[a,*], Bryant C. Baker[b,c], Chad T. Hanson[d], Luke Ruediger[e,f], William Baker [g]

The abstract of the paper states:

Fire suppression policies and "active management" in response to wildfires are being carried out by land managers globally, including millions of hectares of mixed conifer and dry ponderosa pine (Pinus ponderosa) forests of the western USA that periodically burn in mixed severity fires. Federal managers pour billions of dollars into command-and-control fire suppression and the MegaFire (landscape scale) Active Management Approach (MFAMA) in an attempt to contain wildfires increasingly influenced by top down climate forcings. Wildfire suppression activities aimed at stopping or slowing fires include expansive dozerlines, chemical retardants and igniters, backburns, and cutting trees (live and dead), including within roadless and wilderness areas. MFAMA involves logging of large, fire-resistant live trees and snags; mastication of beneficial shrubs; degradation of wildlife habitat, including endangered species habitat; aquatic impacts from an expansive road system; and logging-related carbon emissions. Such impacts are routinely dismissed with minimal environmental review and defiance of the precautionary principle in environmental planning. Placing restrictive bounds on these activities, deemed increasingly ineffective in a change climate, is urgently needed to overcome their contributions to the global biodiversity and climate crises. We urge land managers and decision makers to address the root cause of recent fire increases by reducing greenhouse gas emissions across all sectors, reforming industrial forestry and fire suppression practices, protecting carbon stores in large trees and recently burned forests, working with wildfire for ecosystem benefits using minimum suppression tactics when fire is not threatening towns, and surgical application of thinning and prescribed fire nearest homes.

This conclusion of this paper is that the purpose and need of the project will not be met by your proposed management activities. This paper is now the best available science. Why does the Judith Springs proposal not follow the best available science?

Schoennagel et al (2004) states: “we are concerned that the model of historical fire effects and 20th-century fire suppression in dry ponderosa pine forests is being applied uncritically across all Rocky Mountain forests, including where it is inappropriate.”

Schoennagel et al (2004) states: “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 patterns."

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"Mechanical fuel reduction in sub- alpine forests would not represent a restoration treatment but rather a departure from the natural range of variability in stand structure."

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Likewise, Brown et al (2004) states: "At higher elevations, forests of subalpine fir, Engelmann spruce, mountain hemlock, and lodgepole or whitebark pine predominate. These forests also have long fire return intervals and contain a high proportion of fire sensitive trees. At periods averaging a few hundred years, extreme drought conditions would prime the- se forests for large, severe fires that would tend to set the fo- rest back to an early successional stage, with a large carry- over of dead trees as a legacy of snags and logs in the regenerating forest . . . . natural ecological dynamics are largely preserved because fire suppression has been effective for less than one natural fire cycle. Thinning for restoration does not appear to be appropriate in these forests. Efforts to manipulate stand structures to reduce fire hazard will not only be of limited effectiveness but may also move systems away from pre-1850 conditions to the detriment of wildlife and watersheds." "Fuel levels may suggest a high fire 'hazard' under conventional assessments, but wildfire risk is typically low in these settings."

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spruce, subalpine fir), moist (for example, western hemlock, western redcedar, western white pine), and dry forests. Cold and moist forests tend to have long fire- return intervals, but fires that do occur tend to be high- intensity, stand-replacing fires. Dry forests historically had short intervals between fi- res, but most important, the fires had low to moderate severity."

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A new study soon to be published by Dominick A. DellaSala et. al. found that re- viewed 1500 wildfires between 1984 and 2014 found that actively managed forests had the highest level of fire severity. While those forests in protected areas burned, on average, had the lowest level of fire severity. In other words, the best way to reduce severe fires is to protect the land as wilderness, not "manage" it.

The Project will violate the NEPA if there are no valid snag surveys done for the project area both within and outside proposed harvest units.

The project will violate the NEPA if there are no valid surveys for old growth habitat within each project area, as identified by Green et al. 1992; old growth types need to be defined and quantified by timber types, such as lodgepole pine,

Douglas-fir, mixed conifer, spruce, subalpine fir, and limber pine.

Please survey entire project area for old growth and replacement old growth.

Page 13 of the Bonanza Preliminary EA states that the majority of trees in the Helena- Lewis and Clark National Forest are over 80 years old. Based on this the project area should have lots of old growth forests.

The project will likely violate the NEPA if the mitigation measures for MIS, sensitive species, and Montana Species of Concern (birds, mammals including bats) are not clearly de- fined, and demonstrated to be effective as per the current best science.

Please demonstrate that the Projectcomplies with the migratory bird treaty act.

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. Livestock grazing occurs in the Project area and causes sediment impacts, trampled or destabilized banks, increased nutrient loads in streams, and decreased density, diversity, and function of riparian vegetation that may lead to increased stream temperatures and further detrimental impacts to water quality.

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FAILURE TO REVIEW AND PROTECT CULTURAL AND HISTORICAL RESOURCES

Consultation with the State Historic Preservation Office (SHPO) must be completed prior to a decision being signed.

Any required protection measures provided from SHPO will be incorporated into my final decision.

Crucial to the preservation of the historical and cultural foundations of the nation, Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 C.F.R. Part 800 (PDF) (revised August 5, 2004) require Federal agencies to consider the effects of projects they carry out, approve, or fund on historic properties. Additionally, Federal agencies must provide the Advisory Council on Historic Preservation (ACHP) opportunity to comment on such projects prior to the agency's final decision.

A Federal project that requires review under Section 106 is defined as an "undertaking." An undertaking means a project, activity or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; and those requiring a Federal permit, license, or approval.

Section 110 of the NHPA

Added to the NHPA in 1992, Section 110 requires Federal agencies to emphasize the preservation and enhancement of cultural resources. Section 110 directs agencies to initiate measures necessary to direct their policies, plans, and programs in such a way that federally-owned sites, structures, and objects of historical architectural or archaeological significance are preserved, restored, and maintained for the inspiration and benefit of the public. The agencies are also encouraged to institute (in consultation with the ACHP) procedures to assure Federal plans and programs contribute to the preservation and enhancement of non-Federally owned sites, structures, and objects of historical, architectural, and archaeological significance. Has the MT SHPO received this survey? The cultural surveys need to be done before the NEPA and NHPA process can be completed, which has not occurred. The project must be approved by the SHPO and the public needs to given a chance to comment on this.

Did the Forest Service conduct NEPA analysis (i.e. an EA or EIS) for the Fire Plan the Forest is using for this project? If you don't the project will be in violation of NEPA, NFMA, and the APA.

Please provide a map showing the WUI and the locations of all homes in comparison to the project area.

If the Forest Service did not conduct NEPA for the Fire Plan, please disclose the cumulative effects of Forest-wide implementation of the Fire Plan in the project EIS, or EA if you refuse to write an EIS, to avoid illegally tiering to a non NEPA document. Specifically analyze the decision to prioritize mechanical, human-designed, somewhat arbitrary treatments as a replacement for naturally-occurring fire.

Did the Forest Service conduct ESA consultation for the Fire Plan?

Will the Forest Service be considering bind- ing legal standards for noxious weeds in its revision of the Helena-Lewis and Clark Forest Plan?

How effective have BMPs been at stopping (i.e. preventing) new weed infestations from starting during logging and related road operations?

Is it true that new roads are the number one cause of new noxious weed infestations?

Why isn't the Forest Service considering a Forest Plan amendment in this Project to amend the Forest Plan to include binding legal standards that address noxious weeds?

Is it true that noxious weeds are one of the top threats to biodiversity on our National Forests?

How can the Forest Service be complying with NFMA's requirement to maintain biodiversity if it has no legal standards that address noxious weeds?

Will this Project address all Project area BMP needs, i.e. will the BMP road maintenance backlog and needs from this Project all be met by this Project?

The scoping notice was not clear if any MIS were found. What MIS did you find, how many and how did you look for these MIS?

How will the decreased elk security and thermal cover affect wolverines?

Please formally consult with the US FWS on the impact of this project on wolverines. The U.S. District Court ordered the USFWS to reconsider if wolverines should be listed untie ESA. Wolverines need secure habitat in big game winter range.

Which wildlife species and ecosystem processes, if any, does the fire-proofing in the proposed project benefit? Which species and processes do fire-proofing harm?

What is your definition of healthier?

What evidence do you have that this logging will make the forest healthier for fish and wildlife? What about the role of mixed severity and high severity fire – what are the benefits of those natural processes?

How have those processes (mixed and high severity fire) created the ecosystems we have today?

Over how many millennia have mixed and high severity fire have been occurring without human intervention?

What beneficial ecological roles do beetles play? You didn't answer this in violation of NEPA, NFMA and the APA.

Can the forest survive without beetles?

Will all WQLS streams in the project area have completed TMDLs before a decision is signed?

Will this project leave enough snags to follow the Forest Plan requirements and the requirements of sensitive old growth species such as flammulated owls and goshawks?

Will this Project exacerbate existing noxious weed infestations and start new infestations?

Do unlogged old growth forests store more carbon than the wood products that would be removed from the same forest in a logging operation?

Please see the following paper titled, “Do Young Tress Suck up more Carbon?”

Do Young Trees Suck Up More Carbon?

https://insideclimatenews.org/news/08022022/do-young-trees-suck-up-more-carbon/#:~:text=Old-growth%20forests%2C%20the%20kinds%20that%20have%20been%20around,with%20the%20largest%20trees%20playing%20the%20biggest%20role.

February 8, 2022

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Which is better at slowing climate change: mature forests or young ones? It's a mostly settled debate among climate scientists who have dedicated their careers to studying how trees suck carbon from the air and store it in their trunks, branches and even in the soil beneath their roots.

But that debate is being rekindled in Washington state, as officials weigh public comments that could ultimately determine how the state will implement its new cap and trade program—set to begin in January 2023—as part of a bigger statewide push to reduce greenhouse gas emissions in the coming decades. Climate activists are pushing back against a comment left by a trade group representing the timber industry, which suggests that cutting down old trees and replacing them with young

ones is better for the climate than leaving the forests untouched.

"Offset protocols should incentivize active forest management, which is more effective in capturing and storing atmospheric carbon in forest and wood product carbon pools than a policy of hands-off management that precludes periodic harvests and the use of wood products," the American Forest Resource Council wrote to Washington regulators in a Jan. 26 comment.

In its reasoning, the trade group cites a 2016 study, part of a body of research that has found that younger forests absorb carbon from the air at a faster rate than older ones. As trees age, the studies suggest, their ability to pull in carbon slows down until eventually the trees die and release that carbon back into the atmosphere as the wood decays or is burned. Therefore, the American Forest Resource Council argues, Washington regulators should be prioritizing planting young trees over protecting old ones.

But some of the nation's top forestry and climate experts say that that conclusion is out of touch with reality, and that what matters more is the total amount of carbon those forests keep out of the atmosphere, not the rate at which they absorb carbon.

Old-growth forests, the kinds that have been around for decades and even centuries, store significantly more total carbon than young forests, with the largest trees playing the biggest role. Alaska's Tongass National Forest, for *example, stores the equivalent of about 8 percent of the carbon stored in all the forests of the lower 48 states combined. Many of the trees in the Tongass are over 800 years old.*

But once a forest gets harvested, chances are that the carbon stored in those trees will soon return to the atmosphere, said Beverly Law, a professor emeritus at Oregon State University and a leading voice in the intersecting fields of forest ecosystems and carbon sequestration.

In 2019, Law co-authored a study that found that 65 percent of the trees harvested in Oregon over the past 115 years have returned to the atmosphere in the form of carbon dioxide, while 16 percent ended up in landfills. Those trees often became short-lived consumer products such as paper or cardboard.

Conversely, only 19 percent of those trees harvested in Oregon turned into longer-term consumer products—such as the wood used for building homes—that continue to store carbon today, the research found.

"We've looked at these numbers over time, and cumulative amounts, it goes to the atmosphere fairly quickly," Law said, referring to the carbon held in harvested trees. "Most of it ends up in the atmosphere within a few decades."

Research has also shown that young trees are more susceptible than older trees to dying from heat waves, drought and wildfires, all of which are worsening under

climate change. And newly planted forests can take decades to store as much carbon as the older forests they're replacing, Law said.

All things considered, Law said, states should be prioritizing the protection of their old-growth forests, not replacing them with young trees as the timber industry suggests, as they pursue tough plans to reduce emissions and stave off the worst of the climate crisis. "We only have the next 10 to 30 years—and we have to start now—to get our emissions down," she said. "That is not getting our emissions down. That's taking us back to ground zero and trying to regrow again."

That's it for this issue of Today's Climate. I'll be back in your inbox on Friday.

Please find attached, the paper the article refers to, "Meeting GHG reduction targets requires accounting for all forest sector emissions"

Tara W Hudiburg et al 2019 Environ. Res. Lett. It found that mature and old-growth forests, the kinds that have been around for decades and even centuries, store significantly more total carbon than young forests, with the largest trees playing the biggest role.

It also found:

Research has also shown that young trees are more susceptible than older trees to dying from heat waves,

drought and wildfires, all of which are worsening under climate change. And newly planted forests can take decades to store as much carbon as the older forests they're replacing.

Why is the project not using the best available science and telling the public false information?

What is the cumulative effect of National Forest logging on U.S. carbon stores? How many acres of National Forest lands are logged every year? How much carbon is lost by that logging?

Is this Project consistent with "research recommendations (Krankina and Harmon 2006) for protecting carbon gains against the potential impacts of future climate change? That study recommends "[i]ncreasing or maintaining the forest area by avoiding deforestation," and states that "protecting forest from logging or clearing offer immediate benefits via prevented emissions."

Please list each visual quality standard that applies to each unit and disclose whether each unit meets its respective visual quality standard.

Please disclose whether you have conducted surveys in the Project area for this Project for whitebark pine, wolverines, pine martins, northern goshawk and lynx, as required by the Forest Plan.

Since goshawks have experience a decline of over 10% in active goshawk nesting territories, please prepare an evaluation report in response to the annual decline of over 10% in active goshawk nesting territories.

Please disclose the last time the Project area was surveyed for grizzly bears, whitebark pine, wolverines, pine martins, northern goshawk, and lynx.

Please disclose how often the Project area has been surveyed for whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears, and lynx.

Would the habitat be better for whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears, and lynx if roads were removed in the Project area?

Please provide us with the full BA for the whitebark pine, wolverines, pine martins, northern goshawks, grizzly bears, and lynx.

If the Forest Service removed roads in the project area and didn't build any new roads would there be secure habitat for grizzly bears?

Please formally consult with the Fish and Wildlife Service on the impact of the project on grizzly bears.

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 grass- lands and forest openings.

Prescribed burning activities within the analysis area 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 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 commercial and pre-commercial logging and understory thinning; and prescribed burns. 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 wi- thin 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 un-infested 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 Helena-Lewis and Clark 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 EA or EIS alternative that includes preventive measures would violate NEPA because the

Forest Service would fail to consider a reasonable alternative.

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.

Whitebark Pine

Page 9 of the Forest Vegetation report states:

Commercial thin and improvement cuts are intermediate treatments designed to remove mature trees (generally greater than eight inches diameter at breast height) to improve forest growth and resilience. Small diameter trees with no commercial value may also be felled to achieve desired stand density, reduce the number of canopy layers, address fuels, or reduce competition around leave trees. Leave tree selection would favor the best quality trees with large, well-formed crowns, straight stems, and little to no insect or disease issues. Leave tree species preference would be whitebark pine, ponderosa pine, limber pine, Douglas-fir, lodgepole pine, and then spruce and subalpine fir. Post- treatment residual trees would have more growing space, light, nutrients, and water to allow them to develop into larger trees more rapidly with reduced insect susceptibility. Commercial thinning would occur in units with more homogenous species composition and size class. This thinning, primarily from

below, would maintain or increase average stand diameter, reduce density by about 50 percent, and create a single storied structure. Improvement cutting would occur across the diameter classes in stands with more diverse species composition, size classes, and insect damage. This treatment would reduce tree density by up to 50%while maintaining the average size class. Basal area would be reduced to less than 100 square feet per acre to reduce stand hazard ratings for Douglas- fir beetle and western spruce budworm. Reduced inter-tree competition and canopy layers would enhance diameter growth and tree vigor. Although other species would be retained where present, Douglas-fir would remain the dominant species. Residual tree mortality would be less than ten percent. Improvement cutting in the presence of mature whitebark pine would have an objective to reduce competition from other tree species and to reduce the impacts to these trees in the event of wildfire. Improvement cutting in aspen stands would have an objective to reduce competition to aspen stems of all size classes in and around aspen clones.

Since you admit that, "Residual tree mortality would be less than ten percent.", please get a take permit from the FWS for taking whitebark pine.

Page 10 of the Vegetation Report stated that the project will clearcut whitebark pine trees:

Lodgepole pine regeneration cuts would remove most trees except leave trees, such as Douglas- fir and spruce. This could be used in lodgepole pine dominated stands killed by beetle with a low quantity of other tree species that would provide structural diversity. Lodgepole pine would be expected to naturally regenerate following harvest. Whitebark pine regeneration would be expected to establish with lodgepole pine in Units 203, 207, 207a, and 207b.

How many whitebark pine will be killed by this project?

The following sentence: “Improvement cutting in the presence of mature whitebark pine would have an objective to reduce competition from other tree species and to reduce the impacts to these trees in the event of wildfire.” Is not based on the best available science.

Please see the attached paper by Six et al 2021 Whitebark Genetics 2021. Six et at found:

"Anthropogenic change is creating or enhancing a number of stressors on forests. To aid forests in adapting to these stressors, we need to move beyond traditional spacing and age- class prescriptions and take into account the genetic variability within and among populations and the impact our actions may have on adaptive potential and forest trajectories. Because so little is known about the genetic diversity in most forest trees, and because it is key to effective conservation, studies of genetic diversity and structuring in forest trees should be a top priority in forest adaptation and conservation efforts."

How old are whitebark pine in the project area?

The project is not following the best available science and is not meeting the purpose and need. 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. The Forest Service is incorrect when it states that the project will have "No significant effects would result from this project or cumulatively with other activities on National Forest or adjacent lands that would affect at-risk plant species' ability to persist on the landscape."

Since you have done no surveys of whitebark pine what is the basis of the "No effect" statement?

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

Since whitebark pine are very slow growing trees and take years to mature, what scientific evidence to you have to back up the following statement on page 29? "Some immature trees may be lost, but this would not result in a trend toward federal listing."

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.

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 at- tacked and killed by mountain pine beetles, thus accelerating the loss of key mature cone- bearing trees.

Whitebark pine seedlings and saplings are very likely present in the subalpine forests proposed for burning and logging. In the absence of fire, this naturally occurring white- bark 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.

Although prescribed burning can be useful to reduce areas of high-density subalpine fir and spruce and can create favorable ecological conditions for whitebark pine regeneration and growth, in the absence of sufficient seed source for natural regeneration maintaining the viability and function of whitebark pine.

Planting of rust-resistant seedlings would likely not be sufficient to replace whitebark pine lost to fire activities.

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 accompli- shed? What is the severity of white pine blister rust in proposed action areas?

Does the Helena-Lewis and Clark N.F. have any forest plan biological assessment, biological opinion, incidental take statement, and management direction amendment for whitebark pine?

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 dry- ing 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 logging 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 cur- rent 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 logging is needed to create a diversity of stand structures and age classes; this is just agency rhetoric to conceal the real purpose of logging to the public.

The agency is violating the NEPA by using vague, unmeasureable terms to rationalize the proposed logging 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 species)? 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 will violate the Forest Plan by logging riparian areas; almost all wildlife species will be harmed by this treatment.

Please survey the project area for old growth forests before the EA or EIS is finalized so the public has a chance to comment on it. Waiting until the NEPA process is over is a violation of NEPA, NFMA, and the APA.

Please include an easily understandable accounting of all costs for the various types of treatments, including burning. For commercial logging, fuels reduction, and prescribed burning, we would like to know what the estimated cost is "per acre" for that particular treatment. We would also like to know the costs for construction of new temporary roads, reconstruction of existing roads, and road obliteration and/or decommissioning per mile of road.

LYNX

Has the Helena-Lewis and Clark National Forest (HLCNF) removed any Lynx analysis units (LAU)s in the project area?

Please demonstrate that the project uses a legal definition of the Wildland Urban Interface (WUI) in violation of NEPA, NFMA, the Healthy Forest Act.

Please find attached, “Correlates of Canada Lynx Reproductive Success in Northwestern Montana” by Megan K. Kosterman.

And “Understanding and predicting habitat for wildlife conservation: the case of Canada lynx at the range periphery” by HOLBROOK et al that confirms Kosterman’s findings.

Please find Kosterman’s paper and Holbrook 2017, Holbrook 2018, and Holbrook 2019 attached.

Does the action alternative comply with Kosterman and Holbrook’s recommendations?

1) USFS needs to take a hard look at impacts to lynx under NEPA, apply the lynx conservation measures and standards of the NRLMD, and consult on lynx via section 7 of the ESA b/c the best available science -- including recent tracking surveys conducted by WTU -- confirm lynx's presence and use of the area;

(3) USFS has failed to survey for lynx as required by the Biological Opinion on the Northern Rockies Lynx Management Direction (NRLMD).

In order to meet the requirements of the FS/USFWS Conservation Agreement, the FS agreed to insure that all project activities are consistent with the Lynx Conservation Assessment and Strategy (LCAS).

LCAS requirements include:

Project planning—standards.
1. Within each LAU, map lynx habitat. Identify potential denning habitat and foraging habitat (primarily snowshoe hare habitat, but also habitat for important alternate prey such as red squirrels), and topographic features that may be important for lynx movement (major ridge systems, prominent saddles, and riparian corridors). Also identify non-forest vegetation (meadows), shrub-grassland communities, etc.) adjacent to and intermixed with forested lynx habitat that may provide habitat for alternate lynx prey species.

2. Within a LAU, maintain denning habitat in patches generally larger than 5 acres, comprising at least 10 percent of lynx habitat. Where less than 10 percent denning habitat is currently present within a LAU, defer any management actions that would delay development of denning habitat structure.

3. Maintain habitat connectivity within and between LAUs.

Programmatic planning-standards.

1. Conservation measures will generally apply only to lynx habitat on federal lands within LAUs.

2. Lynx habitat will be mapped using criteria specific to each geographic area to identify appropriate vegetation and environmental conditions. Primary vegetation includes those types necessary to support lynx reproduction and survival. It is recognized that other vegetation types that are intermixed with the primary vegetation will be used by lynx, but are considered to contribute to lynx habitat only where associated with the primary vegetation. Refer to glossary and description for each geographic area.

3. To facilitate project planning, delineate LAUs. To allow for assessment of the potential effects on an individual lynx, LAUs should be at least the size of area used by a resident lynx and contain sufficient year-round habitat.
4. To be effective for the intended purposes of planning and monitoring, LAU boundaries will not be adjusted for individual projects, but must remain constant.
5. Prepare a broad-scale assessment of landscape patterns that compares historical and current ecological processes

and vegetation patterns, such as age-class distributions and patch size characteristics. In the absence of guidance developed from such an assessment, limit disturbance within each as follows: if more than 30 percent of lynx habitat within an LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result o vegetation management activities by federal agencies.

Project planning-standards.
1. Management actions (e.g., timber sales, salvage sales) shall not change more than 15 percent of lynx habitat within a LAU to an unsuitable condition within a 10- year period.

Programmatic planning-standards.
1. Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships.
2. 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.

Please demonstrate that project activities are consistent with above and all other applicable programmatic and project requirements.

The U.S. Court of Appeals for the Ninth Circuit hold 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 (9thCir. 1985). If the biological assessment concludes that the proposed action “may affect” but will “not adversely affect” a threatened or endangered species, the action agency must consult informally with the appropriate expert agency. 50 C.F.R. §§ 402.14 (b)(1), 402.12(k)(1).

Canada lynx are listed under the ESA.

Canada lynx may be present in the project area and the proposed project may affect lynx by temporarily increasing road density, removing vegetative cover, and engaging in mechanized activities that could displace lynx.

Please complete a biological assessment for lynx and formally consult with USFWS regarding the project’s potential impacts on lynx.

The U.S. District Court just ruled that the Forest Service has to formally consult with the U.S. FWS on the Northern Rockies Lynx Management Direction effect on lynx and lynx critical habitat. Have you done this? If not please do so.

THE AGENCIES MUST REINITIATE CONSULTATION ON THE NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION.

The Northern Rockies 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.

The Endangered Species Act requires the FS to insure that the GRLA 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 reduces 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, provided they do not occur on more than 6% of lynx habitat on each Nation- al Forest. 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 lynx critical habitat to be destroyed forest-wide while not appreciably reduce the conservation value.

The FS violated NEPA by applying the above-mentioned exception without analyzing the impacts to lynx in the individual LAUs. The Project violates the NFMA by failing to in- sure the viability of lynx. Ac- cording to the 1982 NFMA regulations, fish and wildlife must be managed to maintain vi- able 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 already contain a “relatively large percentage of unsuitable habitat.”

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.

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 “maintaining or enhancing the quality of the habitat.”

This project is in Canada lynx habitat. In order to meet the requirements of the FS/USFWS Conservation Agreement, the FS agreed to insure that all project activities are consistent with the Lynx Conservation Assessment and

Strategy (LCAS) and the requirements of protecting lynx critical habitat. The FS did not do so with its project analysis. This project will adversely affect lynx critical habitat in violation of the Endangered Species Act. The BA/BE needs to be rewritten to reflect

this information to determine if this project will adversely modify proposed critical habitat for lynx and if so conference with USFWS.

The Helena-Lewis and Clark National Forest (HLCNF) 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 "Biological Assessment Of The Effects Of National Forest Land And Resource Management Plans And Bureau Of Land Management Land Use Plans On Canada Lynx" (Programmatic Lynx BA). The Programmatic Lynx BA concluded that the cur- rent programmatic land management plans “may affect, and are likely to adversely affect, the subject population of Canada lynx.”

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’s determination means that Forest Plan implementation is a “taking” of lynx, and makes Section 7 formal consultation on the Helena-Lewis and Clark Forest Plan mandatory, before actions such as the proposed project are approved.

Continued implementation of the Forest Plan constitutes a “taking” 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 Helena-Lewis and Clark National Forest 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's "likely to adversely affect" conclusion was based upon the following rationale. Plans within the Northern Rockies:

• Generally direct an aggressive fire suppression strategy within developmental land allocations. ...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 pre- sent 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. There- fore, these activities may contribute to a risk of ad- verse 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 affect- ing 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

The Vegetation Report mentions Cover type and states:

> ***Historically large grasslands dominated the central portion of the Castles GA.***

What is the Habitat Type of the project area?

Dr. John Craighead believed the Pfister vegetation classification was the basis for the study of ecosystems. It takes people on the ground with good plots that aren't manipulated or added to. The Craighead team had hundreds of plots throughout central Idaho they used to ground truth the satellite images. If you want good data there are no shortcuts. The Forest Service should no evidence that they used plots on the ground to ground truth the data.

Please do not dismiss the importance of the following information relating to Pfister, et al. (1977) cited in the EA. See: EA, at page 15.

Quote from Pfister et al. (1977):
RESEARCH SUMMARY

A land-classification system based upon potential natural vegetation is presented for the forests of Montana. It is based on an intensive 4-year study and reconnaissance sampling of about 1,500 stands. A hierarchical classification of forest sites was developed using the habitat type concept. A total of 9 climax series, 64 habitat types, and 37 additional phases of habitat types are defined. A diagnostic key is provided for field identification of the types based on indicator species used in development of the classification. In addition to site classification, descriptions of mature forest communities are provided with tables to portray the ecological distribution of all species. Potential productivity for timber, climatic characteristics, and surface soil characteristics are also described for each type. Preliminary implications for natural resource management are provided, based on field observations and current information.

FOREST HABITAT TYPES OF MONTANA, Robert D. Pfister, Bernard L. Kovalchik,
Stephen F. Amo, and Richard C. Presby
INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
Forest Service-U. S. Department of Agriculture
Ogden, Utah 84401 (hereafter, Pfister, et al. (1977), or Pfister)

Pfister et al. (1977) established a new, and vastly improved, forest classification system which further developed the application of habitat type classification to forest ecosystem classification. A better classification system for forest communities and the characteristics of the specific site locations upon which forest vegetation develop and depend.

The habitat type approach to classification of forest sites was developed more than 20 years ago by Daubenmire (1952) for forests of northern Idaho and eastern Washington. His original classification, and a subsequent revision and J. Daubenmire 1961, have proven useful in forest management and research

(Laysex 1974; Pfister 1976). Id. p.1
In 2022, Pfister et al. is considered the “best available science” in this field (old growth and old-growth habitat) of study. It is often, to this day, spoken fondly of as “The Bible” for habitat-type classification, a detailed expression

of the overall environment, ie. an ecological classification. There is, quite simply, no better system in existence being used for interpreting the ecological potential of the forested landscapes of Montana and the Northern Rockies. Federal land managers attempting to make intelligent prescriptions for managing/manipulating forest vegetation should, and must use Pfister's habitat type classifications as the foundation of forest ecosystem analysis.

Pfister is foundational; it is the ground upon which forest ecology and ecosystem science rests. There is no substitute, and any and all attempts to truncate, or compartmentalize elements within Phister's holistic, habitat-type classification system, represents a most objectionable form of "scientism" that reeks of a hidden agenda that has little to do with interpreting the forest's ecological potential.

ESA - As a foundational ecosystem analysis and interpretation tool, Pfister et al. is linked directly to specific language, unambiguously articulated by Congress, to describe the Purposes of ESA (Endangered Species Act).

(b) PURPOSES

The purposes of this chapter are to provide a means whereby the ecosystems upon which endangered species and the threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take

such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section. Page one, 16 USC, Chapter 35, §1531(b)

We urge the Forest Service to simply comply with the clear intent of Congress, and its own (government funded) research to properly identify the habitat type in the project area using Pfister, et al. and arrive at an intelligent decision based on the best available science, and the intent and purposes of the federal laws which govern these types of project-level management actions. Emphasis added.
….end of project/EA analysis which references Pfister, and then proceeds to depart into
a lengthy narrative, not about habitat type, but some typing using inadequate date, insufficient field examination and data and computer modelling that fails to follow
Pfister's habitat typing methodology.

Roadless rule says: "... maintain or restore the characteristics of ecosystem composition and structure..."

May I suggest that HABITAT TYPE, NOT "***...Vegetation condition class (VCC; formally known as fire regime condition class)...***" is the foundation and best available science to determine characteristics of ecosystem composition and structure. (Pfister, et al. (1977). All this "vegetative" mumbo-jumbo is used to avoid Pfister and proper, foundational identification of the habitat type. The Forest Service is looking at the Judith Springs project as an industrial deforestation project not scientists studying natural forest succession/evolution.

Large clearcuts

Will the Judith Springs project have any opening 40 acres or larger?

1. The Helena-Lewis and Clark (HCL) Revised Forest Plan (RFP) does not provide any programmatic analysis of how openings under and over 40 acres in size will affect wildlife over the planning period.

The impact of any clearcut, regardless of size, is never evaluated on wildlife in the
HLC RFP. Timber standard 4 states that on both lands suitable and unsuitable for timber production clearcutting shall be used as a harvest method only where it has been determined to be the method most appropriate to meet the purpose and need of the project outcome. The purpose and need of the "project outcome" must include requirements of the NFMA, to maintain a diversity of wildlife. There is no analysis in the RFP as to why clearcuts are needed to maintain a diversity of wildlife. Until this is demonstrated in the RFP, there is no ecological basis for creating clearcuts. This is simply a method to maximize timber production which requires removal of habitat patches for almost all forest wildlife.

2. The HLC RFP exception to the 40 acre limit on clearcut openings sizes applies when larger clearcut openings are required for desired ecological conditions, which as per the NFMA must include wildlife.

The stated exception for creating openings over 40 acres in size is stated in the RFP to apply when it has been determined to be necessary to achieve desired ecological conditions for the plan area, including those associated with forest patterns, patch sizes and forest resilience both in the short and long term. As per the NFMA, desired ecological conditions require maintaining a diversity of wildlife. The RFP did not provide any examples of why large clearcuts may be needed in a given landscape to maintain a diversity of wildlife. Thus the claimed possible need for large clearcuts is never supported with any analysis in violation of the National Environmental Policy Act (NEPA). Failure to demonstrate the ecological need of large clearcuts for wildlife is also a violation of the Administrative Procedures Act (APA), because ecosystems do not exist without wildlife.

3. The HCL RFP does not contain any "sideboards" that will maintain a diversity of wildlife when clearcutting is practiced on the landscape; as such, the direct, indirect and cumulative environmental

impacts of clearcutting on forest wildlife across the HLC Forest remains unknown, in violation of the NEPA.

It is not possible to clearcut wildlife habitat without adverse effects. As such, it is essential to limit these adverse impacts to a level that ensures wildlife populations will be maintained across forested landscapes. As for the HLC RFP, there is not a single standard or guideline for wildlife that ensures clearcutting will not create significant local and/or landscape impacts to wildlife populations. The complete absence of any standards limiting clearcut impacts on wildlife is further exacerbated by (a) the complete removal of all the ten (10) 1986 Helena Forest Plan big game standards in the RFP, and (b) the complete lack of any valid habitat standards for any nongame wildlife species that may occur on the HLC Forest. For example, the RFP claims that old growth will be managed as per the Green et al. 1992 definitions, yet only skeleton old growth stands are required in order to allow logging. The RFP FEIS did not define why logged old growth maintains its "ecological value" to wildlife. Another example is the use of a 30-year outdated guideline in the RFP for management of snag habitat. Most forest wildlife require snags within a forest, not in a clearcut or thinned forest (Bull et al. 1997). Leaving snags in harvest units is mostly window-dressing, not wildlife management. There is no analysis in the FEIS for the RFP as to why this management direction for snags will ensure a diversity of wildlife on the Forest. The current best science recommends the retention of large tracts of natural, undisturbed forests where abundant insects and disease processes and dead/dying trees provide breeding habitat for various woodpeckers, who in turn provide nesting cavities for a host of other forest birds (Goggans et al. 1989). Until this science is incoroporated in the HLC RFP management strategy for nongame wildlife, the agency cannot meet the NFMA requirements to maintain a diversity of wildlife on the Forest.

4. The current best science clearly demonstrates that "sideboards" are essential as per the level and distribution of clearcuts across a landscape if a diversity of wildlife is going to be maintained, as is required by the NFMA, and as well, as is required by the 2012 planning rule that requires management direction is implemented to ensure persistence of wildlife species of conservation concern.

There is no scientific doubt that clearcuts alone have severe impacts on wildlife habitat. And these severe impacts are exacerbated when clearcuts are planned adjacent or within locales where forest thinning is also being practiced. A good example is a display of the planned cutting units for the Judith Springs Project. Huge swaths of landscapes are being inundated with harvest units and roads, without a single habitat standard being required for wildlife. To suggest that this practice will maintain a diversity of wildlife is clearly a violation of the NEPA. Once the Judith Springs Project is complete, large accessible portions of this landscape will be largely devoid of any game and nongame wildlife habitat, with remaining heavily fragmented portions having little functional value to most wildlife. Yet, somehow, this is supposed to achieved desire ecological conditions as per the RFP. Since the RFP does not actually define any valid ecological conditions for wildlife, projects claiming to meet this direction are false. The claim on the HLC that wildlife is not a component of ecosystems clearly cannot be substantiated.

The following are examples of why sideboards are essential as per the amount and distribution of clearcutting on a landscape if a diversity of wildlife species are to be maintained, as is required by the NFMA. We note that as the acreage of other types of harvest increase in a given landscape, the direct, indirect and cumulative impact of clearcuts will increase for wildlife.

a. Goshawks (Montana Species of Concern).

Clearcutting eliminates a primary prey species for the goshawk, the red squirrel (Salafsky et al. 2005; Salafsky et al. 2007), including in Montana (Clough 2000). Red squirrels are heavily dependent upon undisturbed older forest habitat for habitat (Reynolds et al. 1992). With small territories of potentially only several acres, (Id.), a large clearcut will eliminate many red squirrel territories, as well as adversely impact remaining red squirrel territories due to habitat fragmentation (Bakker and Van Vuren 2004). Clearcutting will also eliminate another important prey species for goshawks in Montana, the snowshoe hare (Clough 2000), since this hare is heavily dependent upon dense horizontal cover that is lacking in young clearcuts (Griffin 2004; Holbrook et al. 2017b). As the size of clearcuts increases, the greater will be the number of hare territories, usually less than 25 acres (Griffin 2004), that will be removed and/or fragmented due to the loss of dense horizontal cover for 20 or more years.

The largest openings recommended in goshawk habitat is 4 acres (Reynolds et al. 1992). The adverse impact of clearcuts on goshawk habitat has been demonstrated from research in Montana, where it was reported that productivity of goshawks nests declined as the amount of clearcutting in the vicinity of the nest increased (Clough 2000). Clearcutting can also progressively displace goshawks. Research in Arizona has demonstrated that as landscapes become more open, as would occur with clearcutting, goshawk habitat begins to transform into red-tailed hawk habitat (La Sorte et al. 2004).

I. The Forest Service is violating the National Environmental Policy Act (NEPA), the National Forest Management

Act (NFMA), the Neotropical Migratory Bird Act (NMBA), and the Administrative Procedures Act (APA) in the regards to disclosing impacts of a large suite of forest birds to the public, a failure to take a "hard look" at direct, indirect and cumulative impacts of the logging and fuels management on forest birds, a failure to maintain a diversity of wildlife in the project area, and a failure to integrate bird conservation principles, measures and practices into the proposed project, and a failure to avoid "taking" of neotropical migratory birds.

A. There are at least 38 species of western forest birds likely present in the Judith Springs Project area where no analysis was completed even though these species will have essential habitat removed across vast expanses of the project area.

The Migratory Bird Treaty Act makes the taking, killing or possessing of migratory birds unlawful. No surveys for forest birds have been done for the project. Logging on

13,217 acres has a significant potential to destroy nests of forest birds, especially birds that are nesting late in the season, including due to re-nesting. This will result in "taking" of neotropical migratory birds. The level of loss of cavity-nesting birds from roadside salvage is also unknown due to a lack of surveys; no surveys for this salvage were identified in the EA or Wildlife Report.

Executive Order 13186 of 2001 directed Federal agencies to evaluate the effects of Federal actions on migratory birds with an emphasis on species of concern. Subsequently, a Memorandum of Understanding (MOU) developed between the Forest Service and the U.S. Fish and Wildlife Service (2008) directed the Forest Service to evaluate the effects of agency actions on migratory birds within the NEPA analysis process, focusing first on species of management concern along with their priority habitat and key risk factors.

Please evaluate project impacts on a large suite of other vulnerable forest birds species, including those associated with (a) old growth forest at some phase of their life cycle, (b) associated with snags for nesting and/or foraging sites, (c) associated with dense relatively undisturbed forests, and (d) dependent upon conifer seeds for forage. These species include at least 40 species that likely occur on the HLCNF.

a. Bird Species Associated with Old growth Forests

The Flathead National Forest provided a list of forest wildlife that are associated with old growth forests at some phase of their life cycle. These include the following 18 forest bird species that likely occur on the HLCNF Forest:

1. Black-backed Woodpecker
2. Boreal Owl
3. Brown Creeper
4. Flammulated Owl
5. Golden-crowned Kinglet
6. Hairy Woodpecker
7. Hammond’s Flycatcher
8. Hermit Thrush
9. Lewis Woodpecker
10. Northern Goshawk
11. Pileated Woodpecker
12. Pine Grosbeak
13. Red-breasted Nuthatch
14. Swainson’s Thrush
15. Three-toed Woodpecker
16. Townsend’s Warbler
17. Winter Wren
18. Pygmy Nuthatch

b. Bird Species Associated with Snags

The Flathead National Forest also provide a list of forest wildlife that are associated with snags, generally for nesting. These include the following 21 forest bird species that likely occur on the HLCNF Forest;

1. American Kestrel
2. Black-backed Woodpecker
3. Boreal Owl
4. Brown Creeper
5. Flammulated Owl
6. Hairy Woodpecker
7. House Wren
8. Lewis Woodpecker
9. Mountain Bluebird
10. Northern Flicker
11. Pileated Woodpecker
12. Northern Pygmy Owl
13. Red-breasted Nuthatch
14. Red-naped Sapsucker
15. Northern Saw-whet Owl
16. Three-toed Woodpecker
17. Tree Swallow
18. Violet-green Swallow
19. Western Screech Owl
20. Williamson Sapsucker

21. Pygmy Nuthatch

c. Bird Species Associated with Dense Forests

The following 17 species of forest birds that are likely present on the HLCNF National Forest require dense forests as habitats. Those species whose names are followed by an asterisk are also old growth species.

1. Boreal Owl* (USDA 2018; Carlsen 1991).
2. Brown Creeper* (USDA 2018; Hutto 1995).
3. Golden-crowned Kinglet* (USDA 2018; Hutto 1995).
4. Hammond's Flycatcher* (USDA 2018; Hutto 1995).
5. Northern Goshawk* (USDS 2018)
6. Pileated Woodpecker* (USDA 2018; Hutto 1995).
7. Townsend's Warbler* (USDA 2018; Hutto 1995)
8. Hermit Thrush* (Hutto 1995).
9. Gray Jay (Hutto 1995).
10. Mountain Chickadee (Hutto 1995).
11. Pine Grosbeak* (Hutto 1995).
12. Red-breasted Nuthatch* (Hutto 1995).
13. Winter Wren* (Hutto 1995).
14. Stellar's Jay (Hutto 1995).
15. Solilitary Vireo (Hutto 1995).
16. Ruby-crowned Kinglet (Hutto 1995)

17. Great Gray Owl* (Koshmrl 2013)

d. Forest Birds That Feed on Conifer Seeds

The following 17 forest bird species that likely occur on the HLCNF National Forest feed on conifer seeds as forage (Smith and Balda 1979; Smith and Aldous 1947; Widrlechner and Dragula 1984).

1. Hairy Woodpecker
2. Clark's Nutcracker
3. Gray Jay
4. Stellar's Jay
5. Mountain Chickadee
6. Red-breasted Nuthatch
7. Crossbills
8. Pine Siskin
9. Lewis Woodpecker
10. Northern Flicker
11. Winter Wren
12. American Robin
13. Evening Grosbeak
14. Pine Grosbeak
15. Chipping Sparrow
16. Oregon Junco
17. Pygmy Nuthatch

Excluding an overlap of forest birds that use more than one of these forest types, along with the analysis of habitat for the Flammulated Owl and Pygmy Nuthatch, there are at least 38 western forest birds likely present on the HLCNF that will be adversely impacted by the loss and/or degradation of habitat in the Judith Springs Project Area. This is clearly a significant adverse impact, not only from a resource aspect, but for forest birds, most of which are neotropical migratory birds. The project had no analysis of almost all these species, even though this is required by the NEPA and the MBRA, as well as the NFMA.

B. There are no conservation measures in place to protect adequate levels of habitat for the 40 species of western forest birds that will have vast expanses of their habitat removed and/or degraded with the project.

Conservation measures are essential in order to minimize impacts from logging and prescribed burning on wildlife, including forest birds. The only conservation measures included for western forest birds for the Judith Springs project include leaving a few snags in harvest units, and leaving some bigger old trees in logged old growth and recruitment old growth stands. All 4 of the forest bird habitat groups discussed above will experience severe adverse impacts from the proposed project.

a. Forest Birds Associated With Old Growth Forests

In the Response to Comments at 37 and 64, the agency acknowledges there was no analysis of wildlife associated with old growth forests, claiming there are no "true obligates" for old growth. However, the Flathead National Foreste noted that old growth-associated species are those that require or use old growth as important habitat at some phase of their life cycle (USDA 2019). And Montana Partners in Flight (2000) recommends 20-25% old growth for all forest birds. The Judith Springs NEPA analysis did not identify the scientific reference being used to support a lack of any management for old growth wildlife because almost none exist.

Please analyze how the proposed management of old growth and recruitment old growth will maintain western forest birds in the Judith Springs NEPA documents.

Historical levels of old growth in the Northern Rocky Mountains is 20-50% (Lessica 1996). However, the landscape composition of historical older forest habitat, evaluated with the same methodology used by Lessica, or fire cycles, likely included from 36% up to 71% as older forests (over 100 years in age) (McKelvey et al. 1999). These levels would depend upon what fire cycles, from 100 years up to 300 years, were operating within a specific landscape. *Id.* So historically, forest landscapes would have been dominated by a mosaic of both older forests as well as old growth. In addition, old growth forests would have varied from early-phase to late-phase old growth, depending upon the age of the forest and seral conditions (USDA 1993; Whitford 1991; Green et al. 1991).

There are already severe habitat deficiencies for old growth-associated forest birds. The additional proposed logging of old growth and old growth recruitment stands (possibly early phase old growth) will further reduce this habitat, indicating the agency has no interest in managing for old growth-associated wildlife, including neotropical migratory birds.

We identified at least 11 species of forest birds that require dense mature and old growth forests. Forest Clearcutting and thinning would remove habitat for these species. There is no information ever provided that these logging and burning proposals will maintain, let alone promote, wildlife associated with old growth. What the agency is proposing is to manage mature stands for timber production (e.g., improving stand vigor).

b. Forest Birds Associated with Dense Forest Habitat

Since the proposal includes logging of 1980 acres, it seems that much of the relatively dense forest will be logged, resulting in almost no dense forest habitat in this landscape.

It appears that the lack of more dense forest habitat in the Judith Springs Project Area not only creates a severe lack of more dense mature and old growth required by many old growth dependent species, but as well, a lack of dense forest habitat for other species that are not specifically old growth associates. It is clear that the proposed action will create a severe habitat loss compared to existing conditions for the 17 forest birds that need dense forest habitat. This is a significant adverse impact on neotropical migratory birds, in violation of the MBTA. This Act and the associated MOU is also being violated because there is no conservation strategy in place on the HLCNF National Forest to maintain habitat for these 17 forest bird species that require relatively dense forest habitat, in spite of a logging program in place that thins and/or removes forest habitat.

c. Forest Birds Associated with Snags

This project will also create a severe adverse impact on the 21 species of forest birds dependent upon snags for nesting and foraging. Although some snags may be left in logging units, most of the forest birds that use snags require snags embedded in forests. The invalid strategy of managing this suite of forest birds by leaving a few snags in harvest units was identified as invalid over 30 years ago (Goggans et al. 1989). It was also identified as invalid via a Forest Service Pacific Northwest Research Station publication in 1997 (Bull et al. 1997), over 20 years ago. So it is not only a violation of the MBTA and associated MOU, but also a NEPA violation by failing to use the current best science in a NEPA document, to claim that snag retention in harvest units will maintain this large suite of species.

d. Forest Birds that Feed on Conifer Seeds

There are at least 17 western forest bird species that feed on conifer seeds. Forest thinning and clearcutting will reduce the availability of conifer seeds to these forest bird species. As just one example, Douglas-fir stands have been reported to produce up to 95,000 seeds per acre in a good cone year (Hagar 1960). Most conifers begin producing cones only after the6 are about 20 to 30 years old; younger conifers produce smaller cone crops than do older conifers; maximum cone production for some conifers is 200 years or age; an old-growth stand of Douglas-fir produces 20 to 30 times more cones than a 50 to 100 year old second growth stand; smaller cone-producing trees in a stand fail to produce cones more often than larger and presumably older trees; a conifer that first begins producing cones at 30 years of age may regularly produce many cones only after 90 or more years (Benkman 1993). Also, because cross-pollination and the number of full seeds per cone declines as mature tree density decreases, there will be a lower limit to tree density (as affected by forest thinning) below which seeds are adequate for some bird species. *Id.*

The HLCNF has no conservation strategy in place to maintain adequate habitat for forest birds that feed on conifer seeds. Nor is there any analysis in the Judith Springs NEPA analysis as to how this suite for forest birds will be impacted by the proposed logging.

e. Hiding and Thermal Cover for Forest Birds will be Removed.

The reductions in forest overstory density through logging, and the reduction of forest understory density through prescribed burning, is never evaluated as per impacts on forest birds, either in regards to the loss of thermal and hiding cover. Thermal cover is important to almost all forest birds by mitigating the effects of severe weather as well as general weather extremes (Herbers et al. 2004). And hiding cover is not only important to help conceal nesting birds, but also to hide newly fledged juvenile birds who are generally flightless when they leave the nest. Forest thinning will result in increased mortality for forest birds due to these reductions in hiding and thermal cover in the Judith Springs project area.

C. The agency has violated the NEPA by failing to identify the ongoing significant declines of North American birds, including western forest birds, a important disclosure to the public since the proposed project will degrade and/or remove more habitat for these declining species on about 20,000 acres of the project area; failure to acknowledge this ongoing decline for a project that will eliminate vast acres of western forest bird habitat also demonstrates a failure to take a "hard look" at the project; as a result, the agency ignored the possibility that this project will contribute to cumulatively significant adverse impacts on this large suite of western forest birds.

The Forest Service failed to identify that many birds in North American, including western forest birds, have been declining since the 1970s. This alarming trend will be directly exacerbated by the proposed logging and burning in the Judith Springs project area. As early as 2016, there were reports of significant population declines of North American birds. A report in Scientific American (2016) noted that the number of breeding

North American birds had plummeted by approximately 1.5 billion over the past 40 years; 46 species had lost at least half their populations, primarily through urbanization and habitat degradation. A more recent publication indicates these declines have been even more severe. Rosenberg et al. (2019) used multiple and independent monitoring networks to reach their conclusions that the North American avifauna have had a net loss approaching 3 billion birds, or 29% of the 1970 abundance; a continent-wide weather radar network also reveals a similarly steep decline in biomass passage of migrating birds over a recent 10-years period. The authors concluded that this loss of bird abundance signals an urgent need to address threats to avert future avifaunal collapse and associated loss of ecosystem integrity, function and services.

This severe decline in North American avifauna has been well publicized. The Bozeman Daily Chronicle included a story on this issue in their September 20, 2019 issue, with a headline for this study "Where have all the wild burds gone? 3 billion fewer than 1970." The Week magazine also published a similar report on this decline in their October 4, 2019 issue, with a story headline "Birds vanishing from America's skies." The New York Times published a relatively extensive story on this topic on September 19, 2019 titled "The crisis for birds is a crisis for us all." And finally, the Montana Outdoors November/December issue of 2019 reported on this bird decline. The title of this report was “Really wrong” bird losses. This magazine is published by the Montana Fish, Wildlife and Parks.

The above reports of severe decline in North American birds were all based on the Rosenberg et al. (2019) scientific publication. This article also identified bird species declines by habitat. Of the 67 species of western forest birds tallied in Table 1, the net change in their abundance since 1970 is minus 139.7%; 64.2% of these western forest bird species are in decline. A graph in the Montana Outdoors November/December 2019 article on bird declines shows that western forest birds have decline by almost 30% since the 1970s.

The agency is violating the NEPA by a failure to evaluate project impacts on elk, which is a Management Indicator Species for the RFP; the agency is also violating the NFMA by failing to adhere to Revised Forest Plan (RFP) direction for elk regarding security and management of big game winter ranges; and the agency is violating the NEPA by failing to define claimed mitigation measures that are supposed to avoid the triggering of significant impacts without ever demonstrating how this will be achieved.

A. There is no valid analysis of project impacts on elk.

a. There is no analysis of project impacts on hiding cover.

Please evaluate how the logging and under-burning will affect elk hiding cover. Hiding cover is defined in Black et al. (1976) as enough horizontal cover to conceal at least 90% of al elk within 300 feet.

The NEPA analysis for this project does not identify either the current level of hiding cover, or what it will be after the project is implemented. Thus the public is not provided the information required to understand that project impacts will not be significant to elk. The historic level of hiding cover recommended for elk is 40% (Black Et al. 1976). However, good hiding cover has been defined as at least 66% of the landscape (Lyon et al. 1985). This 66% level of hiding cover is likely sufficient to provide a minimum of 30% security on the landscape (Christensen et all 1993; Hillis et al. 1991). These security blocks require a minimum of 250 acres of contiguous forest cover to qualify as security. It is thus unlikely that a 40% hiding cover level would be sufficient to meet the 30% security recommendation.

If the project will reduce hiding cover below the minimum recommended level of 40%, then the project will have significant adverse impacts on elk, which would require completion of an Environmental Impact Statement (EIS).

Please analyze the project impacts on elk security.

As noted above, the recommended level of big game security is 30% (Christensen et al. 1993; Hillis et al. 1991).

Please provided an assessment of project impacts on the wolverine, a vulnerable species that is proposed for listing under the ESA; as a result of this NEPA violation, the agency is escaping their duties under the ESA to promote conservation of this vulnerable species.

Contrary to agency claims, it is likely that most of the project area is suitable wolverine habitat at some time of the year. The wolverine is known to prey on snowshoe hares which occur across many mid-elevation habitats, as well as lower-elevation riparian areas (Gehman et al. 2014). Wolverine are also well known to use carrion from winter-killed or weakened big game, as well as carrion left from kills by other predators, as mountain lions an wolves (Scrafford and Boyce 2018). This clearly indicates wolverine use low elevation habitats in the winter. Also, the wolverine is known to prey on elk calves, which again demonstrates they use low elevation habitats in the spring (Kuglin 2018). It is clear that a large part of the Judith Springs project area is big game winter range. And elk calving grounds are generally located relatively close to winter ranges, so a large part of this project area would also include elk calving areas. So the claim by the agency that almost no wolverine habitat exists in this landscape is clearly invalid.

Given that a large percentage of the big game winter range will be logged and burned, and thus remove key elk hiding cover from predators, and remove key thermal cover that provides protection from winter weather and snow for wintering big game species, this project will clearly reduce the availability of food for the wolverine due to elk decreased use of degraded winter range and calving habitat.

Monitoring of wolverine habitat use on the HLC National Forest has demonstrates that wolverine habitat use is quite variable, depending upon the specific landscape (Gehman et al. 2014). For example, a high density of understory dense vegetation can provide good security for this species, and boulder fields that preserve ice into the summer also provide colder wolverine habitat. Id. Agency attempts to claim that wolverine use only the "rocks and ice" at high elevations is just a means of avoiding analysis of the real impacts of logging on this vulnerable species.

In addition, the current best science indicates that wolverine are highly sensitive to motorized activity on roads (Scrafford et al. 2018). The construction of miles of new roads, will clearly have an adverse impact on wolverine. These adverse impacts will also affect elk, which will likely have an increased displacement from these lands in the fall to adjacent private lands, where hunter gut piles and wounding mortality of elk will not provide forage for the wolverine.

The HLCNF RFP has no conservation strategies for this wolverines. The RFP needs to be amended to incorporate the current best science for wolverine in a landscape conservation strategy for this proposed species, given that the current best science indicates persistence cannot be ensured without broad-scale habitat protections and road management limitations.

The failure to complete any surveys for any wildlife species except for the presence/absence of the Flammulated Owl is apparently justified by the large size of the project. Treatment of alproject area would require a massive survey effort to detect nest and roost sites of focal species. It would also require a massive effort to survey for neotropical migratory birds, which includes the Northern Goshawk and Great Gray Owl. The fact that large projects prevents any valid reliable surveys for wildlife means that these project will automatically have significant adverse impacts of a host of wildlife species, requiring an EIS.

Thank you for your attention to these concerns.

Sincerely yours, Mike Garrity

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