April 20, 2020

Forest Plan Revision
Nez Perce – Clearwater National Forests
903 3rd Street
Kamiah, Idaho 83536

ATTN: Cheryl Probert, Forest Supervisor and Zach Peterson, Forest Planner

Sent VIA US Mail with electronic copies of the comment via the Internet portal and email

Enclosed are comments from the organizations and individuals listed below on the *Draft Revised Forest Plan Revised Land Management Plan for the Nez Perce-Clearwater National Forests* and *Draft Environmental Impact Statement Land Management Plan Revision for the Nez Perce-Clearwater National Forests*. If you have questions about these comments, please direct them to Katie Bilodeau katie@friendsoftheclearwater.org or Gary Macfarlane gary@friendsoftheclearwater.org.

The Nez Perce and Clearwater National Forests hold a key position in the ecological integrity of the US Northern Rockies. This bioregion of the U.S. encompasses one of America's last strongholds of native biodiversity. As far as we know, it contains virtually all the species present at the time of the Lewis & Clark Expedition over two hundred years ago, including grizzly bear, wolverine, lynx, and fisher. At nearly 4 million acres, these public lands and other surrounding wildlands are the northern half of the Big Wild, the largest intact ecosystem in the continental United States. What perhaps defines the Big Wild best is the watershed integrity in its roadless and Wilderness lands. This ecosystem is centrally located within the larger Northern Rockies bioregion and has the most tremendous diversity, from low-elevation habitat with coastal disjunct species in wet cedar forests to wind swept alpine ridges.

Because of the importance of this area, we have numerous serious concerns with the draft plan and draft environmental impact statement that are detailed in the comments and attached documents. The proposals in the draft plan do a disservice to the American people and the other life forms that depend on this unique place.

Sincerely,

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P.s. Early Happy Earth Day.

Friends of the Clearwater et al. Draft Forest Plan Comments

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Abbreviations

RFP/DFP = draft revised forest plan

DEIS = draft environmental impact statement

NEPA = National Environmental Policy Act

NFMA = National Forest Management Act

BMP = Best Management Practices

INTRODUCTION

All undersigned parties to the cover letter request to be updated by mail on everything related to this planning, pursuant to 40 C.F.R. section 1506.6. Please also email notice on everything related to this plan to gary@friendsoftheclearwater.org and katie@friendsoftheclearwater.org, as well all of the signature blocks that have email addresses. We incorporate the comments of Friends of the Clearwater's member, Harry Jageman, into our comments and raise those concerns not covered below.

What we have submitted we conclude to be the best available science. If the Forest Service relies on science we haven't provided, we request an explanation as to why that science is better than the science we have given you. There are many issues, described below, where the premise upon which the Forest Service begins analysis is faulty. Because the premise was not based on the best available science, it has spoiled both the analysis and conclusions. We point these out for each issue below; an environmental impact statement that starts with a faulty premise is an insufficient environmental analysis.

We have provided numerous comments and submissions to the Forest Service on the revision of two plans for the Clearwater and Nez Perce National Forests, which will be combined into one Nez Perce – Clearwater National Forests' Plan. The Draft Revised Land Management Plan for the Nez Perce-Clearwater National Forests (hereinafter DFP) and its accompanying draft environmental impact statement (DEIS) are totally inadequate in that they do not comply with the National Environmental Policy Act (NEPA), the National Forest Management Act (NFMA), the Wilderness Act, the Wild and Scenic Rivers Act, and other legislation and regulations. Our past submissions and comments also detail inadequacies and these comments go into detail about these failings, including the failure to analyze an adequate range of alternatives such as the one we submitted. These comments also raised important science and other issues. Because the DEIS do not seem to address these comments, the comments in blue are direct quotes from previous comments and are not formatted as quotes (the only exceptions being the ending references). In a few instances, we quote briefer portions of earlier comments in the general body of this comment letter and don't, in those instances, indicate the comment in blue.

As a general note, in the EIS we noticed at least one reference to a "final" assessment, and see bits in the FOIA response provided indicating that some (or all?) of the 2014 assessments might have been updated with 2019 material. We searched the Forest Service's website, however, and could not find any updated assessments. If assessments have been updated and not released to the public through mediums like online posting, that is problematic.

Additionally, some specific interactions with citizens during the process created expectations that were not met in the draft plan/DEIS with regard to a range of alternatives. This sends the signal that the agency either has acted in bad faith or has been incompetent in dealing with us.[1]

Similarly, the uneven pace of the revisions of two plans should not go unnoticed. The Forest Service took considerable time in the revision, for example over 25 years from the federal register announcement of the intent to revise the Clearwater National Forest Plan. The 2006

[1] Not all interactions were as disappointing and many with specific specialists were quite helpful. It is this inconsistency that is so perplexing.

revision effort[2] was aborted. This latest effort, which took more time to produce the draft plan than expected, was rushed at the end. This is evident by the numerous errors in the draft plan and DEIS, many of which will be pointed out in the comments. Two examples illustrate this problem. On page 96 of the draft plan it states, "Forest Service policy for managing designated wilderness is found in FSM 2350." Forest Service policy for wilderness is actually found in FSM 2320. This also makes the DEIS hard to read and understand.

There are a few instances where the term National Forest Service lands or Forest Service lands (pages 43 and 95) are used to indicate national forest system lands. These are not lands owned by the Forest Service, yet the wording gives one that impression. We recognize the agency, in its interactions internally and sometimes with the public, uses we or us to refer to the Nez Perce and Clearwater National Forests. Unfortunately, this inaccuracy in communication can shift the attitudes of agency personnel from that of public servant to exclusive owner. This can have a corrosive effect on interactions with US citizens. Please fix this.

The Nez Perce and Clearwater National Forests hold a key position in the ecological integrity of the US Northern Rockies. This bioregion of the U.S. encompasses one of America's last strongholds of native biodiversity. As far as we know, it contains virtually all the species present at the time of the Lewis & Clark Expedition over two hundred years ago, including grizzly bear, wolverine, lynx, and fisher. At nearly 5 million acres, the public lands of the Clearwater River drainage and other surrounding wildlands are the northern half of the Big Wild, the largest intact ecosystem in the continental United States. This ecosystem is centrally located within the larger Northern Rockies bioregion and has the most tremendous diversity, from low-elevation habitat with coastal disjunct species in wet cedar forests to wind swept ridges with whitebark pines on mountain peaks.

According to two World Wildlife Fund studies done in 2001 by Carlos Carroll, et al., the Clearwater River drainage is the most important area in the U.S. Northern-Canadian Southern Rockies for large forest carnivores, even more important than iconic places such as Yellowstone and Jasper National Parks. These include the federally protected lynx and grizzly bear, and the fisher and wolverine. These public wildlands contain some of the highest priority intact ecosystems in the lower 48 states. In addition, this region is home to endangered salmon, steelhead, bull trout, endemic Coeur d'Alene salamanders, rare plants, and unique invertebrates. Woodpeckers, goshawks, resident and migratory songbirds find shelter in both lush forests and those burned by wildfire. The Clearwater and Nez Perce National Forests contain eighty percent of the public lands in the Clearwater region and are at the crossroads of the Northern Rockies bioregion; terrestrial wildlife such as wolverines use the area to travel north and south and the rivers and streams facilitate the east/west migration of anadromous fish.

In the past, Congress made great strides in protecting key portions of this region, designating the Selway-Bitterroot, Gospel –Hump and the Frank Church-River of No Return Wildernesses and Wild and Scenic Rivers such as the Lochsa, Selway, Middle Fork Clearwater, and Salmon. However, approximately 1.5 million acres of unspoiled roadless lands remain unprotected and are increasingly vulnerable to being lost forever through road building, logging, mining,

[2] In meetings with the Forest Service, we were told the 2006 effort was to be one DEIS but two separate plans, one for each national forest. This is similar to what happened on the Idaho Panhandle and Kootenai National Forests. Although two EISs and two plans were done, many other planning documents were shared and covered both national forests.

uncontrolled recreation and other developments which mar the beauty of the landscape and degrade wildlife habitat. The controversial Idaho Roadless Rule offers inadequate protection. For example, the Forest Service is planning to log the Eldorado Roadless Area in its proposed Lolo Insects and Disease timber sale and the Rackcliff-Gedney roadless area in the Lowell WUI.

Introduction References

Carroll, Carlos, Reed F. Noss, and Paul C. Paquet. 2001a. Carnivores as focal species for conservation planning in the Rocky Mountain region. World Wildlife Fund. Toronto.

Carroll, Carlos, Reed F. Noss, and Paul C. Paquet. 2001 b. Modeling carnivore habitat in the Rocky Mountain region: a literature review and suggested strategy. World Wildlife Fund. Toronto.

PROCESS AND PUBLIC INVOLVEMENT

Below, in blue, were our concerns about the public involvement, and they have not changed:

The process to date has had serious problems from a public involvement perspective. It also casts serious doubt on whether both the letter and spirit of NEPA has been followed by the agency.

The proposed action (PA) is so detailed that it seems to preclude real public involvement at this very beginning stage of the forest plan revision, the scoping period. Indeed, the pre-NEPA work has seemed to only make the real analysis process a pro forma exercise. It would appear the decision has essentially been made on the forest plan. 40 CFR 1500.1 requires that "NEPA procedures must insure that environmental information is available to public officials and citizens **before decisions are made** and before actions are taken." (Emphasis added.) Even more pointedly, 40 CFR 1502.5 notes EISs, "shall be prepared early enough" to "serve practically as an important contribution to the decisionmaking process and will not be used to rationalize or justify decisions already made."

Indeed, the Forest Service has conducted pre-NEPA meetings of local citizens to come up with the proposed action. This has resulted in setting up two classes of citizens, those who are part of the behind-the-scenes collaboration, and those, who may be waiting for the formal beginning of NEPA in the federal register on forest plan revision. This is bad public policy and inherently anti-democratic.

Furthermore, NEPA regulations require at 40 CFR 1500.5 that "Agencies shall reduce delay by: (a) Integrating the NEPA process into early planning (§1501.2)." The "scoping process" is to be used for an early identification of what are and what are not the real issues (§1501.7)." In fact, the title of 40 CFR 1501.2 is to "Apply NEPA early in the process." The 2012 planning rule was adopted, in part, to be a faster way to revise forest plans. However, the backroom, crony collaboration has actually increased the time it takes to revise a forest plan. Agency personnel conducting the revision process for the two national forests have admitted as much.

This cart before the horse approach not only could stifle meaningful public input, but it likely has closed the metaphorical mind of the agency to better ideas, better science, and better outcomes. Given the amount of time and energy invested in the PA to date by the agency, it seems almost certainly a forgone conclusion that something very close to the PA will be adopted regardless of the NEPA process.

The assessment was only recently completed in its current form (see elsewhere in this comment for concerns related to that fact). While it should be considered a living document subject to change, it certainly appears the plan components in the PA were developed long before the assessment. That is just the opposite of what the planning rule requires.

This is a problem the Forest Service has not remedied.

NEPA - 120 days prejudiced public engagement because that time period was too short given the timing, the availability of the planning file, the complexity of combining two forests into one, and the complications added by a pandemic

The 120-day comment period should have been longer, and you have prejudiced the public by not fully utilizing the 180 days allowed. The Forest Service first released this draft EIS on December 20, 2019, and provided the public a 90-day comment period. The first problem was that this was just before Christmas and a holiday period (New Year's Day was on a Thursday), many Forest Service employees were unreachable until after January 6, 2020 and did not return phone calls or emails until after that. For example, Friends of the Clearwater (FOC) sent a Freedom of Information Act (FOIA) request for the planning file the day it was released, December 20, 2019, at about 9:00am. The Forest Service sent an email on January 7, 2020, assigning the request a tracking number. While the agency only backdated this request to December 23, 2019, the Forest Service then took a 10-day extension for unusual circumstances.

Although the agency extended the comment period by 30 days, which we certainly appreciate, the extension was not long enough to fully and fairly engage the public. When one figures in how soon the public could first reach agency employees about general questions on the forest plan, approximately 18 days after it was released on December 20, this extension was really only about 12 days. Additionally, the FOIA time period operates on workdays when the federal government is open, excluding holidays and weekends. This means that even though the clock to get FOC and the public the planning file started on December 23, 2019 (the date the Forest Service claimed to receive an email that was sent on December 20, 2019), the deadline for the information, counting the agency's claimed 10-day extension for "unusual circumstances" was February 6, 2020. And the Forest Service even missed this deadline, finally providing a link to a drop box with the information on February 7, 2020. But, even though the Forest Service issued a response on February 7 that indicated the entire FOIA request was complete, the agency continued adding files to the drop box the following week. Because FOC downloaded these files on February 8, relying on the Forest Service response letter that the information had all been provided, FOC did not discover the Forest Service additions until late February, and when notified the Forest Service of this did not receive the full record until approximately a week later after it had been mailed, giving FOC even less time with the planning record. As a result, the full planning file was not received until late February, giving the public approximately 45 days with thousands of pages of material. As we have accessed it for references in the DEIS, it has become apparent that this response was incomplete. This FOIA violation also violated NEPA and the resulting prejudice has undoubtedly prevented meaningful participation. The supporting docs to illustrate this paragraph are in the "FOIA planning file" folder submitted with our supporting materials.

Even without a FOIA violation, 30 days is not a long-enough extension because of the incredible amount of information for anyone to sift through that has gone into the draft EIS and draft plan. The agency is combining two forest plans into one that will govern roughly four million acres, so there are two forest plans to compare against the draft released. This draft plan and environmental impact statement has been scheduled to be released and then delayed for years now. The Forest Service thought the planning file was so voluminous and so complex that the Forest Service cited and used the extra 10-day extension under FOIA to simply ***gather*** the information. If the Forest Service is taking extra time for unusual circumstances in gathering the information, why isn't the Forest Service allowing extra time for the public to digest and comment on this voluminous and complex information?

Finally, 30 days is not long enough for an extension because the Forest Service has had other ongoing project comment periods within this same time frame, and those interested in projects on these two forests have also had to allocate time to comment on those projects as well. The following are the projects in the Nez Perce-Clearwater National Forests that had public comment deadlines during this forest plan DEIS comment period:

Hungry Ridge: a logging project with approximately 7,164 acres of logging, burning on 12,372 acres, and road construction involving 9 miles of new roads, 23 miles of temporary roads, and 34 miles of road maintenance, among other activities. Objection due January 10, 2020.

Gold Hill: a logging project with 825 acres and involving 10 miles of temporary road construction. Objection due January 16, 2020.

Black Skull/Lost Toboggan: a 60,000-acre burn project the Forest Service is trying to do with a categorical exclusion, citing no potential significant circumstances, comments due February 4, 2020

Hisloc Fuels: logging project in lieu of firewise landscaping around the agency's "historic" ranger station, due February 12, 2020

East Saddle Restoration Project: A logging and burning project that proposed to log 400 acres and burn 3,500 under a categorical exclusion.

Stray Creek Project: A 500-acre logging project, comments due around March 20, 2020

Green Horse Project: A 1,500 logging project with approximately 600 acres of burning, comments due around March 20, 2020.

Section 16 Project: A 380-acre logging project where the Forest Service stated that the comments on the proposed action would be the only open comment period before the objection, comments due April 15, 2020.

Dead Laundry Project: A 3,500+ acre logging project with 1,300+ acres of burning, comments due April 15, 2020.

These comment periods require comments on many aspects of each project, including the assumptions the Forest Service is making on why these projects are necessary, what impacts the project will have to various species of wildlife and fish, including ESA-listed species and sensitive species, confirming that projects are happening in management areas that the Forest Service is asserting, checking the proposed action against the plan for fish, wildlife, and old-growth standards (among others), and introducing the best available science. And several of these project comments overlapped with each other as well as overlapping with the planning comment period. There is simply no way for the public to keep up with these new project proposals and comment on the agency's 2,000+ pages of environmental analysis that will set the trajectory of this forest for the next 30 years. The time our organization has had to spend thoughtfully addressing the many projects released during the draft revised plan comment period has detracted from the attention we would have otherwise given this plan. So many comments have greatly prejudiced our members and the public who have full-time jobs and spend their off-work hours on meaningful review and comment. These numerous comments have prejudiced us and the public from meaningful review and comment of the forest plan.

Why hasn't the Forest Service--given the holiday season, given the delay in releasing the entire planning file to anybody after the comment period began, given that at least nine project comment periods have overlapped throughout this period, and given the complexity of combining two forests into one four-million-acre land-management plan--utilized the full 180-day comment period? Utilizing the full 180-day comment period possible would demonstrate the agency so sincerely cares about public involvement that it is going to utilize all tools available to empower public comment on this DEIS. After all, the Forest Service, with many specialist employees whose job it was to focus on different parts of this forest-plan revision, has taken ***since 2014*** to prepare and release this DEIS. Now you are asking the public to comment on all these aspects in a much shorter time frame, and won't even provide the extra two months you could to give the public the fullest and fairest chance to comment. Given these factors and the years it took the Forest Service to draft and release an EIS, what is the agency's reason for not utilizing the full 180 days available for public comment? Why was it unreasonable to deny the public another 60 days?

This denial is compounded by the impact of COVID-19 on our communities, beginning in March 2020. The Nez Perce – Clearwater National Forest should have suspended the public comment period for its draft forest management plan and environmental impact statement in light of the statewide CORVID-19 pandemic and resulting statewide shutdown order issued by Governor Brad Little on March 25, 2020 that has recently been extended until the end of April. Idahoans were told to cease unnecessary travel and shelter in place. This has been true in other states as well.

We asked, several times, for an extension because of the hardship this has imposed on much of the general public through disruptions in work and school as well as access to resources. For example, parents have become teachers as well as are expected to work from home. We've had members report to us that they have requested hard copies of the revised forest plan draft and/or draft environmental impact statement only to be denied them by the forest planner and told to visit Forest Service offices or regional libraries where a hard copy would be on file.

The following notice was posted on the Nez Perce – Clearwater National Forest website immediately after Governor Little's initial statewide shut down order:

Date(s): Mar 26, 2020

All Nez Perce-Clearwater National Forests offices are operating virtually until further notice. This means most employees are teleworking and we are no longer doing any business in person. To protect the health and safety of our employees and customers, we are not scheduling face-to-face meetings at our offices.

However, continuing our service to you during this time is very important. Our regular office receptionists are either operating with new phone numbers, or regularly calling in to check the voicemails at our offices. Please visit www.fs.usda.gov/detail/nezperceclearwater/about-forest/offices for the best way to reach your local ranger district. You may also submit an online inquiry at www.fs.usda.gov/contactus/nezperceclearwater/about-forest/contactus.

We appreciate your patience and understanding as we all work together to minimize the impacts and spread of the COVID-19.

The statewide closure order issued by Governor Little (as well as other states) and the resulting closure of Forest Service offices immediately meant that hard copies of the draft forest plan and DEIS would not be available for public review. Libraries closed, too. This meant that only online copies were available of these massive documents, putting individuals with poor--if any--access to broadband internet at a distinct disadvantage. Our own staff was prevented in accessing the library for necessary research on some of the assumptions the Forest Service has made and the best available science in the forms of scientific articles and historical archives that cannot be accessed through the Internet. These are just some examples, but demonstrate ways our organizations, our members, and the public have been injured in the time and resources required to prepare meaningful comments in ways we would have if the Forest Service had diligently involved the public and given it a full and fair opportunity to comment in compliance with NEPA. We again ask you to reopen this DEIS comment period when resources like Forest Service offices, libraries, schools, and daycares start to open and the hardships from the pandemic lessen.

Making plan documents available at convenient locations during the comment period has special significance to individuals who do not have broadband internet or computer access in their homes.

In order to comply with the National Forest Management Act's and NEPA's public participation requirements, the Forest Service should have suspended the ongoing public process for the Nez Perce – Clearwater draft forest plan and DEIS until the pandemic was well enough under control to allow for appropriate public engagement and hardcopies of the plan documents can be available at accessible locations for the duration of the comment period. The Forest Service has extended other deadlines, such as timber contract deadlines and proposals to the Resource Advisory Committee, so it is possible.

NEPA - ALTERNATIVES

Alternatives are the heart of the environmental impact statement. "Based on the information and analysis presented in the sections on the Affected Environments...and the Environmental Consequences...it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among the options by the decisionmaker and the public." The Forest Service's range of alternatives is deficient according to 40 CFR section 1502.14.

NEPA requires the agency to "[r]igorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from study, briefly discuss the reasons for their having been eliminated." 50 CFR section 1502.14(a). The Forest Service's purpose was stated as "to revise the 1987 land management plans for the Clearwater and Nez Perce Forests into a single revised land management plan under the 2012 Planning Rule." DEIS Ch. 1, p. 19. The Forest Service stated the need was to "revise the two 1987 Forest Plans under the provision of the 2012 planning regulations to provide the combined forests consistent, adaptable management guidance in consideration of the best available scientific information while continuing to provide a range of social, economic, and ecological benefits for the present and into the future." DEIS Ch.1 p. 20. Friends of the Clearwater submitted a citizen-science alternative, which garnered over 10,000 comments of support.

FOC asked the Forest Service to develop an alternative that emphasized the following core issues:

- Reducing carbon emissions and promote climate stability;
- Protecting wildlands (roadless areas and research natural areas);
- Protecting water soil, and aquatic resources;
- Allowing natural processes to occur;
- Promoting terrestrial and vegetative diversity (through protecting existing old growth, allowing mature forests to develop into old growth, curtailing clearcutting and silvicultural prescriptions that result in large openings)
- Emphasizing public ownership and agency accountability by adopting enforceable standards that are informed by monitoring
- Emphasizing landscape connectivity for wildlife linkage corridors (which includes reducing roads)

In our scoping comments, below in blue, we stated the following:

II-A CITIZEN CONSERVATION BIOLOGY ALTERNATIVE FOR THE NEZ PERCE AND CLEARWATER NATIONAL FORESTS PLAN REVISION

Rather than repeat the elements of the alternative, which we submitted earlier (Attachment 3) this section deals with clarification of the alternative as per some questions asked in meetings we have had with the planning staff of the Forest Service. Also, elements of our proposal are included in the various other sections of this comment. If you have other questions, please don't hesitate to Friends of the Clearwater at 208-882-9755.

The science behind climate change suggests that logging for sequestration of carbon, logging to reduce wild fire, and other manipulation of forest stands does not offer benefits to climate. Rather, increases in carbon emissions from soil disturbance and drying out of forest floors are the result. The Forest Service can best address climate change through minimizing development of forest stands, especially stands that have not been previously logged, by allowing natural processes to function.

Furthermore, any supposedly carbon sequestration from logging are usually more than offset by carbon release from ground disturbing activities and from the burning of fossil fuels to accomplish the timber sale, even when couched in the language of restoration. Reducing fossil fuel use is key. Everything from travel planning to agency monitoring would have an important impact in that realm.

Excluding logging in Roadless areas, existing and potential Wild and Scenic river corridors and proposed and existing Research Natural Areas (RNAs) is more than simply declaring those areas as unsuitable. The PA and current agency policy actively promote logging in unsuitable areas. Rather, this alternative would not allow commercial logging, as opposed to cutting a few trees for trail maintenance, for example, in those areas. Indeed, the Forest Service is currently proposing logging in two Idaho Roadless Rule areas on the Nez Perce and Clearwater National Forests.

Furthermore, the PA allows exemptions for PACFISH and INFISH (see for example FW-STD-TBR-13 and 14, FW-GDL-TBR-1 and 08). The alternative we have proposed would not allow for these exemptions.

Please also note that the Citizens Conservation Biology Alternative Outline previously submitted by Friends of the Clearwater has support from many other organizations. To date, they include:

Alliance for the Wild Rockies

Center for Biological Diversity

Conservation Congress

Friends of the Bitterroot

Friends of the Wild Swan

Heartwood

Kootenai Environmental Alliance

Swan View Coalition

Tennessee Heartwood

WildWest Institute

WildEarth Guardians

Wilderness Watch

Yellowstone to Uintas Connection

The Forest Service did not choose to analyze an alternative that focused on these things. While recognizing that this request was "endorsed by numerous commentators," the agency stated,

> Elements of this alternative within our scope that meet the purpose and need for action are included as parts of Alternatives W, Y and Z. Other concepts presented in this alternative do not meet the purpose and need, are not within the scope or are not within the legal authority of the agency. The alternative presented was conceptual in nature and no specific plan components or suitability of uses recommendations were made to consider specifically. Conceptually the elements within our legal framework were included in alternatives analyzed in detail.

DEIS, Ch. 2, p. 16.

The agency's purpose and need, as quoted above, is very broad. Which concepts, precisely, do not fulfill the purpose and need? Please be specific because we would like the opportunity to respond with how we believe they fill the purpose and need of a revised forest plan under the National Forest Management Act.

Also, which of these concepts did the Forest Service include in the alternatives? We ask because we see very little of our "conceptual" suggestions actually considered or incorporated. As discussed below, the agency does not recognize the anthropogenic causes of climate change, thus doesn't discuss how it can reduce fossil fuel emissions or promote climate stability. The agency doesn't protect roadless areas or roadless areas because there is no restriction on logging any of these areas in the draft forest plan--again, as discussed below, the agency punts the entire issue to the Idaho Roadless Rule, which is notoriously poor on protecting the majority of roadless areas. The Forest Service cannot demonstrate that this plan protects soil, water, or aquatic resources because measurable, quantifiable standards are gone. The Forest Service isn't allowing natural processes to occur because the agency sets up a description of how an area should look (i.e., warm-dry, cool-moist, etc.) and every action alternative actively manages to try to achieve this look. The Forest Service isn't promoting terrestrial and vegetative diversity because (as we describe below) protecting old growth means not logging it, and the action alternatives allow logging in old growth and significant acreages of regeneration logging, which creates trees of the same age. Additionally, there are no enforceable standards because, again, measurable, quantifiable standards are missing--qualitative standards are not enforceable. Finally, we see little by way of the agency recognizing, much less protecting, habitat corridors. Please let us know specifically which of these concepts the agency incorporated into which alternative so we might see our suggestions at work. Based on the specifics in the alternatives we see, we are concerned you may have misinterpreted our comments.

The Forest Service did not analyze the citizen alternative because it stated there were aspects that were "are not within the scope or are not within the legal authority of the agency." Under NEPA regulations, the agency must "include reasonable alternatives not within the jurisdiction of the lead agency." 40 CFR section 1502.14(c). Please describe the scope and legal authority to which the Forest Service is referencing. We are concerned you are either misinterpreting our suggestions or ignoring a NEPA regulation when it states the agency should be considering something.

The Forest Service also dismissed the citizen alternative because "The alternative presented was conceptual in nature and no specific plan components or suitability of uses recommendations were made to consider specifically." This is an unlawful reason for refusing to analyze the citizen's alternative. NEPA states that "**agencies** shall [] [r]igorously explore and objectively evaluate all reasonable alternatives…." 40 CFR sections 1502.14, 1502.14(a) (emphasis added). It is not our responsibility to develop an alternative for the agency in detail. It is **the Forest Service's responsibility** to rigorously explore a reasonable alternative. After sending you an outline of an alternative broadly supported by the public, FOC's staff asked the Forest Service *on multiple occasions* whether the agency needed any other science or materials to develop this alternative. When FOC submitted scoping comments in November 2014, FOC stated, concerning the citizen alternative, "If you have any questions about this [scoping] comment, particularly about the Citizens' Conservation Biology Alternative, don't hesitate to contact our office. We strongly feel this alternative should be fully analyzed in the Draft Environmental Impact Statement (DEIS)." There was never a written response to our offers for more information, and the Forest Service's forest planners always vocally assured FOC staff that they needed nothing else. If the agency needed anything more specific from FOC, there were plenty of opportunities to ask for such specificity, and FOC invited those opportunities both vocally and in written comments. Yet, the Forest Service ignored opportunities to do so and now uses that lack of specificity as justification for not rigorously exploring this alternative. This is not only disingenuous, it is unlawful. We ask you again to rigorously explore the citizen alternative, release a supplemental DEIS, and allow public comment on it. Such an alternative will sharply contrast with both the 1987 plans and the alternatives with a direction that is entirely missing from this DEIS. And again, if there is something more you need from us to rigorously explore this alternative, please do not hesitate to contact Friends of the Clearwater. There is a lot of science that backs up the merits of this alternative, while science undercuts claims of ecological sustainability of the other alternatives. The alternative that the Forest Service has neglected to rigorously explore and objectively evaluate is more responsive to global warming than any of the proposed alternatives. The reasons why are discussed in our "CLIMATE" section below and throughout when we discuss how global warming is impacting each individual resource.

The range of alternatives is missing in terms of recommended wilderness and reductions in logging. The Forest Service analyzed Alternative X, which recommended no wilderness and increased logging levels to the highest amount of all the alternatives, yet the Forest Service did not examine an alternative that would recommend all eligible areas as wilderness and reduce logging levels below the current direction. The existence of a viable but unexamined alternative will render an EIS inadequate. And there are reasons for considering an alternative that decreases logging levels. One, as we describe below, is global warming and the potential of Pacific Northwest forests to mitigate in terms of carbon sequestration more successfully than other western forests. Another reason for considering an alternative that decreases logging is that, as discussed in our fire ecology and fire management section below, science has repeatedly suggested that vegetation management might increase fire severity while areas that are currently protected from logging are not experiencing an increase in fire severity. The science suggests that the agency should be considering a forest plan that protects more forests from logging and management, yet the Forest Service has neglected an alternative that might provide such a sharp comparison. Why one end of the range and not the other end? You cannot sufficiently analyze a forest plan direction without this contrast.

Alternative X is not a reasonable alternative because the logging levels proposed are unsustainable. Additionally, the Forest Service has adopted the counties' proposed plan, from which they would benefit from timber sales, and it minimalizes the undeniable ecological damage that would occur. Yet, the Forest Service refused to analyze the citizens' alternative, which could allow lower levels of logging subject to restrictions that would limit ecological impacts.

The Forest Service is violating NEPA because it has not indicated a preferred alternative in the EIS. This raises many questions with the draft forest plan. Many of the desired conditions, objectives, and standards are vague and qualitative, and many are the same for every alternative. There are some instances where an extra element is added to the draft plan and the agency noted from which alternative it originated. But, for the most part, these goals, objectives, and standards don't indicate specificity to any single alternative. (See the Fire Management section of the DEIS as an example.) Unvarying elements suggest that these goals, objectives, and standards will not change for any alternative. Without different goals, objectives, and standards, the agency has no real basis to compare alternatives. The agency also has no real basis to compare how stricter, quantifiable standards might protect the ecological world from some of the adverse impacts of logging. Additionally, many goals, objectives, and standards are not based on the best available science. But, if they are also unchanging despite the alternative chosen, the agency has not really analyzed an adequate range of alternatives.

Chapter 3 of the DFP includes Standard FW-STD-TT-01: “Agency actions that are detrimental to the protection and preservation of Native American religious and cultural sites, practices, and treaty rights shall not be authorized.” We note the words, “agency actions that are detrimental ...shall not be authorized.” As long as “detrimental” is clearly defined for the various resources being discussed, this is a good template for Standards the Forest Service needs to employ throughout the revised forest plan.

NEPA - SCIENTIFIC INTEGRITY

The Forest Service is required to insure the professional and scientific integrity of discussions and analyses in environmental impact statements. 40 CFR section 1502.24.

Independent peer review

The FS must accept the challenge of objectively and transparently weighing available scientific information to determine what is best available science. Recognizing the problems this raises, Ruggiero, 2007 (a scientist from the research branch of the agency) identifies a fundamental need to demonstrate the proper use of scientific information, in order to overcome doubts over decisionmaking integrity. Ruggiero, 2007 and Sullivan et al., 2006 comment on scientific integrity and the use and misuse of science. And the Committee of Scientists (1999) recommend “independent scientific review of proposed conservation strategies…”

FOC has expressed concerns about the use of science in planning early in the revision process. For example, our August 19, 2014 comments on the Potential Species of Conservation Concern component of the Forest Plan Assessment stated:

> Again, the SCC Assessment is not clear on how the best scientific information was identified, making it seem altogether too arbitrary. And the agency needs to clearly state how it will address other scientific information that conflicts, contradicts, or disagrees with the science it considers “best available” when such information is submitted by the public or other agencies.

In a February 1, 2017 letter to FOC, Supervisor Probert stated:

> The information cited in the June 2014 Assessment may indeed be part of the Best Available Scientific Information (BASI). Other information may be included as BASI as well. Information presented to us since the assessment and at any time up until a decision may be found to be BASI. The decision on what is BASI will be made by myself at the time of signing a Record of Decision. Until that time, we will continue to evaluate what scientific information is used to support our decisions. The Draft Environmental Impact Statement (DEIS), will cite the scientific information used in its preparation and therefore represent our best prediction of what may be deemed to be BASI, but that too will change based on comments and preparation of the Final Environmental Impact Statement (FEIS). We encourage public involvement and comment on the scientific information cited in the DEIS to help ensure we do use the best information available. As always, we sincerely

> appreciate continued public participation in the process, including identification of potential BASI.

Our February 1, 2017 letter suggested some scientific references, and stated:

> In the overall planning process, we believe it's a no brainer that the Forest Service use Committee of Scientists: Sustaining the People's Lands. Recommendations for Stewardship of the National Forests and Grasslands into the Next Century. March 15, 1999 (Committee of Scientists, 1999). The Committee of Scientists report was initiated as part of the original NFMA planning rule revision in the 1990s, as explained in its Synopsis:
>
> In December 1997, Secretary of Agriculture Dan Glickman convened an interdisciplinary Committee of Scientists to review and evaluate the Forest Service's planning process for land and resource management and to identify changes that might be needed to the planning regulations.
>
> Committee of Scientists, 1999 was even cited multiple times in the USDA's responses to comments on the NFMA Rule. These comments identify and cite some important portions of the Committee of Scientists, 1999 report that we believe would improve the Assessment as well as the entire forest plan revision process.

Yet we don't see Committee of Scientists, 1999 cited anywhere in the DFP or DEIS. The FS might be free to choose what it considers to be BASI, but at this point we are compelled to reiterate this from our August 19, 2014 letter:

> In multiple subsections, the NFMA Rule requires that the Forest Service **identify the best scientific information, use it in preparation of the Assessment, and explain how that science was used**:
>
> § 219.3 Role of science in planning. The responsible official shall use the best available scientific information to inform the planning process required by this subpart. In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered. The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in §§ 219.6(a)(3) and 219.14(a)(4). Such documentation must: Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered.
>
> § 219.6 Assessment. (b) *Content of the assessment for plan development or revision.* In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following: (5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area;
>
> (3) Document the assessment in a report available to the public. The report should document information needs relevant to the topics of paragraph (b) of this section. Document in the report how the best available scientific information was used to inform the assessment (§ 219.3). Include the report in the planning record (§ 219.14).
>
> Friends of the Clearwater is concerned that the SCC Assessment:

- Does not clearly state what is considered to be the best available scientific information,
- Does not always properly utilize the best available scientific information where it is identified,
- Documents in several places in a confusing manner how the best available scientific information was used to inform the SCC Assessment, and;
- Omits important scientific information that rightly should be included as best available science.

The DEIS states, "Best available science information was used to determine effects of implementing the revised forest plan... Literature sources that were the most recent, peer-reviewed, and local in scope or directly applicable to the local ecosystem were selected. **Uncertainty and conflicting literature was acknowledged and interpreted when applicable**." (Emphasis added.)

Again, from the Planning Rule: "Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered."

At this point we are still concerned the FS will ignore the scientific information we've submitted to date. The DEIS doesn't even identify it as "conflicting literature."

So, **FOC incorporates all of the scientific information and other documents we've cited so far during the revision process, as comments on the DFP/DEIS.** We've previously provided a copy of many of these documents to the NPCNF. And as we state in our comment letters, we are more than willing to provide copies of those the FS needs us to.

However this issue is resolved upon the signing of the revised forest plan ROD, we believe it's a reasonable step for the FS to **include in the planning record** each of the scientific and other references the public cites in comments, objections, and other submissions. The FS will not be able to credibly say it is unable to do so.

Fortunately, there are well-known and well-documented USDA and Forest Service methodologies for conducting a rigorous and healthy debate about science in order to solve the problem. The documents, "USDA-Objectivity of Regulatory Information" and "USDA-Objectivity of Scientific Research Information" are instructional on this topic, both stating:

> If agency-sponsored peer review is employed to help satisfy the objectivity standard, the review process should meet the general criteria for competent and credible peer review recommended by OMB. OMB recommends that (a) peer reviewers be selected primarily on the basis of necessary technical expertise, (b) peer reviewers be expected to disclose to agencies prior technical/policy positions they may have taken on issues at hand, (c) peer reviewers be expected to disclose to agencies their sources of personal and institutional funding (private or public sector), and (d) peer reviews be conducted in an open and rigorous manner.

Our solution is for the FS to conduct a Science Consistency Review for this revision process. The process of "Science Consistency Review" was designed by the Forest Service itself (Guldin et al. 2003; also *see* Guldin et al. 2003b.) Guldin et al. 2003:

> ...outlines a process called the science consistency review, which can be used to evaluate the use of scientific information in land management decisions. Developed with specific reference to land management decisions in the U.S. Department of Agriculture Forest

> Service, the process involves assembling a team of reviewers under a review administrator to constructively criticize draft analysis and decision documents. Reviews are then forwarded to the responsible official, whose team of technical experts may revise the draft documents in response to reviewer concerns. The process is designed to proceed iteratively until reviewers are satisfied that key elements are **consistent with available scientific information**.

(Emphasis added.)

In other words, the FS can cite all the "best available science" it wants in preparing a forest plan, but it's another matter entirely whether or not such a plan is consistent with the cited science. Guldin et al., 2003 suggest the review ask and answer the following four questions:

> 1. Has applicable and available scientific information been considered?
>
> 2. Is the scientific information interpreted reasonably and accurately?
>
> 3. Are the uncertainties associated with the scientific information acknowledged and documented?
>
> 4. Have the relevant management consequences, including risks and uncertainties, been identified and documented?

Similarly, independent scientific review team Hayes, et al., 2011 conducted a "Science Review of the United States Forest Service Draft Environmental Impact Statement for National Forest System Land Management" (the Planning Rule). The reviewers considered the following three questions:

> 1. Does the information accurately reflect the current peer-reviewed scientific literature and understanding? If not, what is missing or incorrectly presented?
>
> 2. Based on the current peer-reviewed scientific literature and understanding: does the documentation on environmental effects adequately respond to levels of uncertainty and limitations? If not, please describe what is missing or incorrect, and how the documentation can be improved.
>
> 3. What, if any, differing viewpoints should be included that are not mentioned in the DEIS regarding the effects of alternatives on climate change, restoration and resilience, watershed and water protection, diversity of plants and animal communities, sustainable use of public lands to support vibrant communities, forest threats, and monitoring.

Given the importance and potentially controversial nature of the revised forest plan, it is incumbent upon the FS to undertake a Science Consistency Review process. Nie and Schembra, 2014 recommend that agencies solicit independent feedback on it use of science:

> The 1997 (Tongass National Forest) Plan was written using an innovative process whereby scientists within the Pacific Northwest Research Station (an independent research arm of the USFS) were assembled into risk assessment panels "to assist decisionmakers in interpreting and understanding the available technical information and to predict levels of risk for wildlife and fish, old growth ecosystems, and local socioeconomic conditions resulting from different management approaches." In this case, "science consistency checks" were used as a type of audit to ensure that the policy and management branch writing the Tongass Plan could not misrepresent or selectively use

> information in ways not supported by the best available science. The process, at the very least, facilitated the consideration of best available science when writing the Tongass Plan, even if parts of the Tongass Plan were based on factors going beyond science.

Also, in response to an appeal of its 1997 forest plan revision, the Black Hills National Forest was directed by the Forest Service Washington Office to re-evaluate their Revised Forest Plan for its ability to meet diversity and viability requirements set in existing laws, and correct any deficiencies. Forest Service biologists "interviewed accredited scientific experts to obtain information on Region 2 sensitive species for use during the Phase I Amendment" in order to remedy deficiencies in their revised forest plan. (USDA Forest Service 2000b.)

Similarly, the Boise National Forest consulted with an independent scientist to review portions of their "Wildlife Conservation Strategy" proposed to amend its revised forest plan. And a Science Consistency Review was undertaken by the FS in the process of designing the Sierra Nevada Forest Plan Amendments.

From Everest, et al., 1997:

> The authors participated as scientists on the Tongass Land Management Planning Team, and were asked to assure that credible, value-neutral, scientific information was developed independently without reference to management decisions. They examined how scientific information was used in making management decisions relative to the Tongass land management plan and examined and evaluated whether the decisions were consistent with the available information. They also displayed the likely levels of risk to resources and society associated with various management options.
>
> The authors developed and used a set of criteria to evaluate the way in which managers used scientific information in formulating decisions:
>
> A. A management decision was considered to be consistent with available scientific information if the following three conditions were met:
>
> 1. All relevant scientific information made available to managers was considered in the decision.
>
> 2. Scientific information was understood and correctly interpreted.
>
> 3. Resource risks associated with decisions were acknowledged and documented.
>
> All three criteria had to be met before a decision could receive a summary rating of being consistent, in our assessment, with available scientific information.
>
> B. A management decision was considered to be inconsistent with available scientific information if any of the following circumstances occurred:
>
> 1. Managers misrepresented or reinterpreted information in ways not supported by the original information.
>
> 2. Managers selectively used information such that a different decision was reached than would have been made if all available information had been used.
>
> 3. Decisions were stated and documented in such a way that implementation effects could not be predicted.

> 4. Projected consequences of management actions were not consistent with scientific information.

Failure to meet any of these criteria resulted in a summary rating of being inconsistent, in our assessment, with available scientific information.

Thomas J. Mills, Station Director of the Pacific Northwest Research Station states in the Preface of Everest, et al., 1997:

> Any reasoned decision about the management of natural resources must be based on a sound foundation of scientific information. The complexity of natural systems and their importance to people depending on them demand this. Scientists …should determine whether the decision is consistent with the science information.

Everest et al., 1997 described their participation in providing a science consistency review:

> We joined the planning team as full members but maintained separate and distinct roles from National Forest System members. We worked in cooperation with other resource experts from the Forest Service, state and other Federal agencies, and universities to assemble the most complete base of information ever developed for Forest planning in the Tongass National Forest. We were asked to assure that credible, value-neutral, scientific information was developed independently without reference to management decisions. Emphasis was placed on acquisition, assessment, and synthesis of available information. **We displayed options and the likely levels of risk to resources and society associated with various decisions.** (Emphasis added.)

Everest et al., 1997 recognize that "All policy decisions concerning the use of natural resources contain some level of risk to resources as a result of long-term implementation. Potential risks associated with decisions can be numerous and might affect, for example, community stability, wildlife viability, or long-term sustainability of resources."

The DEIS does not properly acknowledge the levels of risk to resources and issues evaluated, associated with the alternatives. In effect the FS does not adequately analyze the tradeoffs involved with the potential adoption of any of the alternatives considered. It provides inadequate basis for its evaluation statements, too often written in highly qualitative, subjective terms. This obstructs the public's ability to evaluate agency integrity as it makes its policy decisions, which will render the ultimate decision highly arbitrary.

In evaluating risks, Everest et al., 1997 further state:

> When making decisions, managers strive to **balance the array of risks** associated with their decisions with the values of goods and services flowing to society from National Forest lands. Such management decisions almost always include compromises for one or more resources.**The appropriate level of risk to accept in management of the National Forests is a policy decision** determined by managers. It is not an issue that can be answered by the scientific method.

We emphasize, we are asking the FS to objectively: **evaluate the risks of the alternatives; disclose the tradeoffs; and most importantly, provide a window into the way these policy decisions are made by utilizing a process the agency has frequently employed--the Science Consistency Review**.

We fail to see how the FS could revise the forest plan, *not* conduct an independent peer review such as the Science Consistency Review, and still comply with the 2012 Planning Rule and NEPA.

Data reliability, modeling and analytic validity

The DEIS does not consider the statistical reliability of the data the FS relies upon for the revision analyses. Since "an instrument's data must be reliable if they are valid" (Huck, 2000) this means data input to models must accurately measure that aspect of the world it is claimed to measure, or else the data is invalid for use by that model. Also, Beck and Suring, 2011 "remind practitioners that if available data are poor quality or fail to adequately describe variables critical to the habitat requirements of a species, then only poor quality outputs will result. Thus, obtaining quality input data is paramount in modeling activities." And Larson et al. 2011 state: "Although the presence of sampling error in habitat attribute data gathered in the field is well known, the measurement error associated with remotely sensed data and other GIS databases may not be as widely appreciated."

Huck, 2000 states:

> The basic idea of reliability is summed up by the word consistency. Researchers can and do evaluate the reliability of their instruments from different perspectives, but the basic question that cuts across these various perspectives (and techniques) is always the same: "To what extent can we say the data are consistent?" …(T)he notion of consistency is at the heart of the matter in each case.
>
> …(R)eliability is conceptually and computationally connected to the data produced by the use of a measuring instrument, not to the measuring instrument as it sits on the shelf.

During litigation of a timber sale on the Kootenai National Forest (CV-02-200-M-LBE, Federal Defendants Response to Motion for Preliminary Injunction), the FS criticized a report provided by plaintiffs, stating "(Its) purported 'statistical analysis' reports no confidence intervals, standard deviations or standard errors in association with its conclusions."

Huck (2000) states, the issue of "standard deviations or standard errors" that the FS raised in the context of that litigation relates to the reliability of the data, which in turn depends upon how well-trained the data-gatherers are with their measuring tools and measuring methodology. In other words, different measurements of the same phenomenon must result in numbers that are very similar to result in small "standard deviations or standard errors" and thus high reliability coefficients, which in turn provide the public and decisionmakers with an idea of how confident they can be in the conclusions drawn from the data.

The DEIS states, "The Region 1 VMap GIS layer is the primary data used for describing the existing vegetation conditions spatially for the Nez Perce-Clearwater National Forests." However, error in VMap data is not fully explored in the DEIS. The 2019 Draft Resource Management Plan and Environmental Impact Statement (Volume II) for the BLM Missoula Field Office discloses:

> The disadvantage of remotely sensed data is that it usually has a certain degree of error. Bitterroot/Lolo National Forest VMap data (Ahl and Brown 2017) concluded, based on a comparison to 4.404 ground-surveyed data points, that the accuracy for canopy closure was 84 percent, whereas the accuracy for cover type was 71 percent, and the accuracy for size class was only 62 percent. The low level of accuracy for size class is of particular

> concern since many forest planning wildlife issues focus of on the availability of certain tree size classes. Based upon other comparable analyses on the Kootenai and Idaho Panhandle National Forests (Ecosystem Research Group 2012) and Flathead National Forest (Ecosystem Research Group 2016) remotely-sensed data typically correctly identifies very young stands (0-to 5-inch DBH stands), or large and very large stands (15- to 21-inch DBH, and >21-inch DBH), but often misclassifies pole (5-to 9-inch DBH) and mature (9-to 15-inch DBH) stands.

A FS forest plan monitoring and evaluation report (USDA Forest Service, 2000c) provides an example of the agency itself acknowledging the problems of data that is old and incomplete, leading to the limitation of models the FS typically uses for wildlife analyses for old-growth wildlife habitats:

> Habitat modeling based on the timber stand database has its limitations: the data are, on average, 15 years old; canopy closure estimates are inaccurate; and data do not exist for the abundance or distribution of snags or down woody material…

In that case, the FS expert believed the data were unreliable, so the usefulness or applicability of the model—its validity—is limited.

So the next level of scientific integrity is the notion of "validity." So even if FS data input to its models are reliable, a question remains of the analysis and modeling methodology validity. In other words, are the models scientifically appropriate for the uses for which the FS is utilizing them? As Huck, (2000) explains, the degree of "content validity," or accuracy of the model or methodology is established by utilizing other experts. This, in turn, demonstrates the absolute necessity for utilizing the scientific peer review process.

In the Clear Creek Integrated Restoration Project FEIS, the NFCNF defined "model" as "a theoretical projection in detail of a possible system of natural resource relationships. A simulation based on an empirical calculation to set potential or outputs of a proposed action or actions." (FEIS at G-14.) From www.thefreedictionary.com:

> Empirical – 1. a. Relying on or **derived from observation or experiment**: empirical results that supported the hypothesis. b. Verifiable or provable by means of observation or experiment: empirical laws. 2. Guided by practical experience and not theory, especially in medicine. (Emphasis added.)

This implies models are "theoretical" in nature and the FS implies that they are somehow based in observation or experiment that support the hypotheses of the models. That would be required, because as Verbyla and Litaitis (1989) assert, "Any approach to ecological modelling has little merit if the predictions cannot be, or are not, assessed for their accuracy using independent data." This corresponds directly to the concept of "**validity**" as discussed by Huck, 2000: "…a measuring instrument is valid to the extent that it measures what it purports to measure."

So we need more evidence that the FS has performed validation of the models for the way they were used to support Forest Plan DEIS analyses.

As Huck, (2000) explains, the degree of "content validity," or accuracy of the model or methodology is established by utilizing other experts. This, again, demonstrates the necessity for utilizing an independent peer review process. No independent expert peer review process of plan modeling has occurred.

Larson et al. 2011 state:

> Habitat models are developed to satisfy a variety of objectives. ...A basic objective of most habitat models is to predict some aspect of a wildlife population (e.g., presence, density, survival), so assessing predictive ability is a critical component of model validation. **This requires wildlife-use data that are independent of those from which the model was developed.** ...It is informative not only to evaluate model predictions with new observations from the original study site but also to evaluate predictions in new geographic areas. (Internal citations omitted, emphasis added).

The DFP relies heavily upon the assumption that the FS knows the "natural range of variation" (aka "natural range of variability" or NRV). The DFP states, "Desired conditions for both dominance types and size class were informed by natural range of variation (NRV) analysis modelled through SIMPPLLE." And the DEIS states, "A critical step in assessing ecological integrity and desired conditions was to determine the natural range of variation (NRV) for selected key ecosystem characteristics and then assess and status of the ecosystem based on projected trends of key ecosystem characteristics."

Among the references to datasets and modeling in the DEIS we find:

- The natural range of variation, current conditions, future trends, and effects of alternatives for vegetation were estimated using the SIMPPLE and PRISM models, which use VMap and Forest Inventory and Analysis data sets for inputs and calibration of the models.
- The Region 1 VMap GIS layer is the primary data used for describing the existing vegetation conditions spatially for the Nez Perce-Clearwater National Forests.
- The SIMPPLLE analysis for the Nez Perce-Clearwater National Forests uses the Region 1 VMap as the existing vegetation conditions layer. SIMPPLLE data was calibrated with Forest Inventory and Analysis data for vegetation species and size classes.
- The PRISM and SIMPPLLE models are used interactively to analyze vegetation conditions. Wildland fire disturbances are first modeled in SIMPPLLE. Resultant disturbance levels are then input into the PRISM model as acres of projected wildland fire and insect disturbance. The PRISM model is then run to schedule treatments to move toward desired conditions in the context of average expected disturbance levels. The outputs from PRISM are then input into the SIMPPLLE model to evaluate treatments in the context of a range of stochastic ecological processes and disturbances (fire, insect, disease, succession) and spatial analysis of the change in vegetation conditions over time. Figure 1 displays the interaction and relationship between the PRISM and SIMPPLLE models.

Very little discussion in the DEIS is devoted to uncertainty of modeling. We do find:

> As discussed earlier, even though best available information was used to develop and update the model, there remains relatively high uncertainty in the results (in absolute terms) due to the ecological complexities and lack of ability to predict the future. Actual amounts of fire or bark beetle activity on the landscape in the future, for example, and the impact to vegetation could be quite different from that modeled. Up to 50 model simulations were run to better capture the variability and uncertainties associated with disturbance events and resulting vegetation change. Nevertheless, **the model is**

> **extremely valuable as a comparative tool to understand relative differences among alternatives**.

(Emphasis added.)

This begs the question: Was the range of alternatives based upon the results of the range of multiple model simulations? Or are you somehow using modeling to compare the alternatives that were designed based upon other considerations (social, ecological, etc.)?

It is one thing to conduct comparisons of modeling results; it's another thing entirely to set fundamental "desired conditions" based upon NRVs into the bedrock of the forest plan while they're already crumbling because of the inherent uncertainty of the models.

This makes conducting a Science Consistency Review a critical process before the FS proceeds any further down the revision pathway. We're not experts on the modeling, but based on the evidence, we're not at all confident the NPCNF Planning Team is expert (nor unbiased) enough to use the modeling to write and decide upon a scientifically sound revised forest plan, either.

The U.S. Department of Agriculture document, "USDA-Objectivity of Statistical and Financial Information" is also instructional on this topic.

USDA Forest Service 1994b states "It is important to realize that all models greatly simplify complex processes and that the numbers generated by these models should be interpreted in light of field observations and professional judgement." (III-77.)

Beck and Suring, 2011 developed several criteria for rating modeling frameworks—that is, evaluating their validity. They state:

> Developers of frameworks have consistently attained scientific credibility through published manuscripts describing the development or applications of models developed within their frameworks, but a major weakness for many frameworks continues to be a lack of validation. Model validation is critical so that models developed within any framework can be used with confidence. Therefore, we recommend that models be validated through independent field study or by reserving some data used in model development.

Larson et al. 2011 state:

> (T)he scale at which land management objectives are most relevant, often the landscape, is also the most relevant scale at which to evaluate model performance. Model validity, however, is currently limited by a lack of information about the spatial components of wildlife habitat (e.g., minimum patch size) and relationships between habitat quality and landscape indices (Li et al. 2000).

The Committee of Scientists (1999) state:

> To ensure the development of scientifically credible conservation strategies, the Committee recommends a process that includes (1) scientific involvement in the selection of focal species, in the development of measures of species viability and ecological integrity, and in the definition of key elements of conservation strategies; (2) **independent scientific review of proposed conservation strategies before plans are published**; (3) **scientific involvement** in designing monitoring protocols and adaptive

> management; and (4) **a national scientific committee** to advise the Chief of the Forest Service on scientific issues in assessment and planning.

(Emphases added.)

A FS scientist, Ruggiero, 2007 stated, “Independence and objectivity are key ingredients of scientific credibility, especially in research organizations that are part of a natural resource management agency like the Forest Service. Credibility, in turn, is essential to the utility of scientific information in socio-political processes.” So there is a fundamental need to demonstrate the proper use of scientific information, in order to overcome issues of decisionmaking integrity that arise from bureaucratic rigidity and political pressure.

Sullivan et al., 2006 also discuss the dangers of the “Politicization of Science”:

> Many nonscientists and scientists believe that science is being increasingly politicized. Articles in newspapers (e.g., Broad and Glanz 2003) and professional newsletters document frequent instances in which the process and products of science are interfered with for political or ideological reasons. In these cases, the soundness of science, as judged by those interfering, turns on the extent to which the evidence supports a particular policy stance or goal. ...Politicization is especially problematic for scientists supervised by administrators who may not feel the need to follow the same rules of scientific rigor and transparency that are required of their scientists.

Ruggiero, 2007 points out that the distinction between the Forest Service’s scientific research branch and its management branch:

> The Forest Service is comprised of three major branches: the National Forest System (managers and policy makers for National Forests and National Grasslands), Research and Development (scientists chartered to address issues in natural resource management for numerous information users, including the public), and State and Private Forestry (responsible for providing assistance to private and state landowners). This article is directed toward the first two branches.
>
> The relationship between the National Forest System and the Forest Service Research and Development (Research) branches is somewhat hampered by confusion over the respective roles of scientists (researchers) and managers (policy makers and those that implement management policy). For example, some managers believe that scientists can enhance a given policy position or management action by advocating for it. This neglects the importance of scientific credibility and the difference between advocating for one’s research versus advocating for or against a given policy. Similarly, some scientists believe the best way to increase funding for research is to support management policies or actions. But, as a very astute forest supervisor once told me, “Everyone has a hired gun…they are not credible…and we need you guys [Forest Service Research] to be credible.”

Ruggiero, 2007 discusses the risk to scientific integrity if that separation is not maintained, that is, if politics overly influences the use of scientific research:

> This separation also serves to keep conducting science separate from formulating policy and the political ramifications of that process. The wisdom here is that science cannot be credible if it is politicized. Science should not be influenced by managers, and scientists should not establish policy. This logic keeps scientific research “independent” while

> ensuring that policy makers are free to consider factors other than scientific understandings. Thus, science simply informs decision making by land managers. As the new forest planning regulations clearly state, those responsible for land management decisions must consider the best available science and document how this science was applied (Federal Register 70(3), January 5, 2005; Section 219.11(4); p. 1059).

Darimont, et al., 2018 advocate for more transparency in the context of government conclusions about wildlife populations, stating:

> Increased scrutiny could pressure governments to present wildlife data and policies crafted by incorporating key components of science: transparent methods, reliable estimates (and their associated uncertainties), and intelligible decisions emerging from both of them. Minimally, **if it is accepted that governments may always draw on politics, new oversight by scientists would allow clearer demarcation between where the population data begin and end in policy formation** (Creel et al. 2016*b*; Mitchell et al. 2016). Undeniably, social dimensions of management (i.e., impacts on livelihoods and human– wildlife conflict) will remain important.

(Emphasis added.)

In a news release accompanying the release of that paper, the lead author states:

> In a post-truth world, **qualified scientists at arm's length now have the opportunity and responsibility to scrutinize government wildlife policies and the data underlying them.** Such scrutiny could support transparent, adaptive, and ultimately trustworthy policy that could be generated and defended by governments.

(Emphasis added.)

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PLAN COMPONENTS AND STRUCTURE

Our scoping and other comments went into considerable detail on plan components and structure. It is obvious that our comments were largely ignored in preparation of the DEIS and draft plan. Some redundancy between past submissions and these current comments is necessary to understand the context of our concerns. It is also an attempt, perhaps futile, to have the government behave in a responsive manner to the citizens who own the national forests on the issue of planning components.

Connection to Past Plans, Iterative Planning, Suitability, Standards, Objectives and Other Plan Components[3]

For a plan to be valid over time, it needs to be iterative and be informed by the past plans. However, the draft plan is not informed by the extant plans in most key ways. Monitoring data from the forest plans are not presented to assess trends. The current plans require regular monitoring and evaluation reports, so minimally assessments should have been updated with the newest information, which shouldn't be more than five years old. It has been over a decade since there was a complete Nez Perce National Forest Plan monitoring report and a decade for the Clearwater National Forest. Yet, the Forest Service stopped publishing monitoring reports on its website in 2009 for the Clearwater and 2004 for the Nez Perce National Forest. FOC checked with the lead forest planner, who confirmed that other than wildlife reports (which exist up to approximately 2012), what is posted is all that the Forest Service has. This is hardly transparent, even if the required monitoring was indeed done. This not only continues to violate the governing forest plans through the present, but this lack of monitoring has created a deficit of information that cannot inform existing conditions or existing baseline, and so also spoils any analysis to predict the likelihood and intensity of environmental impacts. In short, it is not the hard look that NEPA requires. This deficit of information ripples to all resources where the forest plans require monitoring.

Instead the current plan is radically different than the existing plans in almost every way. For example, watersheds and fish habitat are assessed (as in the Assessment) with different protocols than those developed for the extant plans without a clear explanation as to why. This creates apples and oranges comparisons from a scientific perspective and confuses the public and decision-makers. Perhaps this is by design.

Another specific example is the lack of information provided to Friends of the Clearwater. We sent in a FOIA, dated January 15, 2015, about research needs the Forest Service deemed was crucial in the extant past plans. That letter stated:

> The Forest Plan for the Clearwater National Forest includes a section which identifies "Research Needs" (Pp. II-15, 16.) It begins:

[3] Desired conditions are addressed later in this comment.

The following research needs have been identified during development of this Forest Plan; they will be evaluated by the Regional Forester for inclusion in the Regional research program proposal. It is anticipated that more research needs will become apparent during monitoring and evaluation of the Plan as it is implemented.

The Forest Plan for the Nez Perce National Forest includes a similar section, also identifying "Research Needs" (Pp. II-11, 12, 13.):

The following research needs have been identified during development of this Forest Plan; they will be evaluated by the Regional Forester for inclusion in the Regional research program proposal. It is anticipated that more research needs will become apparent during monitoring and evaluation of the Plan as it is implemented.

Both Forest Plans then follow with a list of several "research need" items.

1. We request a copy of all documentation of the results of the Regional Forester's "evaluated… research needs" as mentioned in the two Forest Plans.

2. We request a copy of documentation of the identification of any and all additional research needs that have become "apparent during monitoring and evaluation of" the Forest Plans.

3. We request a copy of all documentation of the research results that responded to the "research needs" of both Forest Plans.

The reply, dated February 23, 2015 stated no documents were available. This demonstrates a complete break from the current plans to the DFP. Those documents are included in the attachments to this comment.

The lack of a link between past and current plans is also reflected in the interplay between the various plan components. Objectives in current plans have not been met for specific resources such as water quality and fish habitat in many watersheds that are roaded and logged even though some of those objectives were also standards.[4] It has been over 30 years since the plans were prepared. What should have happened is that actions taken, based upon monitoring, to correct this problem. It seems apparent that recovery of watersheds with roads and logging takes even more then than previously believed. Rather than improve current standards to meet objectives, the draft plan drops most quantitative standards and adjusts objectives and protocol, thus resetting the clock. The draft plan punts meeting fish habitat and water quality objectives until a later date, ensuring any quantitative or meaningful objectives regarding crucial issues will never be met and the next plan revision will likely create anew a plan, whose objectives will never be met. This *check is in the mail* approach is a failed management strategy and only serves the interests of the logging industry and Forest Service ideologues.

The slide toward the lack of quantifiable and accountable standards—indeed accountability of all sorts--has an example in the existing Nez Perce National Forest Plan. It prohibits roadbuilding and logging and other management actions over which the Forest Service has management control in areas that don't meet forest plan standards for fish habitat and water quality (Plan Appendix A, which has specific numeric standards, including for sediment) unless it can be demonstrated there is an upward trend. The plain language has been twisted to mean that some future projected recovery, based upon flawed models, can substitute for an upward trend. Even

[4] See for example the Clearwater National Forest Plan at II-28 and the Nez Perce National Forest Plan at II-19.

that is apparently too accountable for the Forest Service and the new draft plan has no similar accountable or quantifiable standards regarding sediment.

Forest Plan Monitoring and Evaluation

We continue our discussion on the discontinuity between the original Forest Plans—still in effect—and the DFP.

We observe the failure of the Forest Service to identify a "need for change"[5] of the content of these current plans.

For example purposes, we take Item No. 2e from Table V-1 ("Forest Plan Monitoring Requirements") in the current Forest Plan of the Nez Perce National Forest. This item's "Actions, Effects, or Resources to be Measured" are "Fish habitat trends by drainage." Its "expected precision" is "high", its "expected reliability" is "high" and the required "Reporting Time" is "1-5 Years." The Forest Service does not identify the "need for change" that results in the DFP omitting that monitoring item. What's wrong with wanting to know the habitat trends in each drainage the agency actively manages? Or the population trends of native fish (Item 10)? The public certainly deserves to know how the agency tasked with sustaining and restoring fish habitat in the watersheds has performed in its duties and—if the problem is the forest plan, to give the agency the benefit of the doubt—how did the Plan hinder the Forest Service's efforts to maintain integrity of fish habitat and robust populations? **What is the need for change?**

Another example. Item No. 2f from the same table; the Item's "Actions, Effects, or Resources to be Measured" is "Vegetative response to treatments." Its "expected precision" is "moderate", its "expected reliability" is "moderate" and the required "Reporting Time" is "5 Years." We believe it's reasonable, given the hundreds of thousands of acres logged and/or burned since the forest plan was adopted, to expect the Forest Service to evaluate the results of its various "treatments"—were the vegetative responses as expected? **What is the need for change?**

The Forest Service was required to conduct an analysis of how well those past "vegetation treatment" projects met the goals, objectives, desired conditions, etc. stated in the authorizing NEPA documents, and how well the projects conformed to forest plan standards and guidelines, and met the Purpose and Need as expressed in those NEPA documents. These were commitments made in the Forest Plan and project NEPA documents, but as we discuss below, the Forest Service didn't follow through with monitoring and evaluation.

Same forest plan, same table, Item 11 is for "Validation of resource prediction models; wildlife, water quality, fisheries, timber." Doesn't the Forest Service want to know if those models were accurate, useful, and valid? We want to know. **What is the need for change?**

One obvious change since these original forest plans were adopted was the agency's capability or willingness to monitor as the forest plans required. Monitoring reports over the past 30-plus years became fewer and fewer over time, and the quality of information lower and lower. No

[5] The Federal Register publishing the 2012 Planning rule reminds that "planning efforts are based on an identified need for change…"

doubt a significant part of the problem is that Congress has subverted forest plans by emphasizing resource extraction over monitoring evaluation, but we see bureaucrats cheering on misappropriation instead of acknowledging the imbalance.

So what was forgotten was, as expressed in the Nez Perce Forest Plan:

> Monitoring and evaluation comprise the management control system for the Forest Plan. They will **provide the decisionmaker and the public information on the progress and results of implementing the Forest Plan**.
>
> **Monitoring and evaluation entails comparing the end results being achieved to those projected in the Plan**. Costs, outputs, and environmental effects, both experienced and projected, will be considered. (Emphases added.)

This same ideas are stated in the 2012 Planning Rule:

> The monitoring evaluation report must indicate whether or not a change to the plan, management activities, or the monitoring program, or a new assessment, may be warranted based on the new information. The monitoring evaluation report must be used to inform adaptive management of the plan area.

"Adaptive management", is defined in DFP: "… a **structured, cyclical process for planning and decision-making** in the face of uncertainty and changing conditions with **feedback from monitoring**, which includes **using the planning process to actively test assumptions, track relevant conditions over time, and measure management effectiveness**." (Emphases added.)

Given the agency's track record, how can the public expect the Forest Service to get it right with a revised forest plan—especially without analyzing what was needed for change?

The revised forest plan should include Standard that requires in new project NEPA analyses:

- A list of all past projects (completed or ongoing) implemented in the analysis area.
- A list of the monitoring commitments made in all previous NEPA documents covering the analysis area.
- The results of all that monitoring.
- A description of any monitoring, specified in those past project NEPA for the analysis area, which has yet to be gathered and/or reported.
- A summary of all monitoring of resources and conditions relevant to the new project analysis area as a part of Forest Plan monitoring and evaluation efforts.

Such items are a critical part of a NEPA analysis. The predictions and assumptions made in previous project NEPA documents must be analyzed and validated if there is to be integrity in the planning, implementation, monitoring, and adaptive management processes.

Furthermore, the Forest Service cannot genuinely comply with NEPA's requirements to analyze and disclose cumulative impacts if it hasn't monitored and evaluated consistent with the commitments made in forest plan and project NEPA documents.

We note a disturbing sign in the Federal Register publishing the 2012 Planning rule: "Refocusing the use of the term 'restoration' to focus on recovery of resiliency and ecosystem functions (**instead of historical reference points**) provides greater flexibility to respond to need-for-change regarding damaged ecosystems." (Emphases added.) This seems to excuse the agency's failure to conduct plan level monitoring well enough to know how forest plan implementation has affected our Forests. It is exactly the wrong direction to be heading. There's a saying, those who are ignorant of their history are doomed to repeat it.

So the Forest Service's new buzzwords are "resiliency", "desired conditions", "sustainability", etc. as seen sprinkled throughout the Planning Rule and this DFP and DEIS. They are to replace previous buzzwords such as "forest health" and "ecosystem management" which have been exposed as tools of industry rather than ways of maintaining ecological integrity. These new buzzwords are being emphasized precisely because measuring them with any objective means is difficult if not impossible, insulating managers from being held accountable by the owners of the national forests as public forests continue to be plundered for private profit.

Frissell and Bayles (1996) put it well:

> Most philosophies and approaches for ecosystem management put forward to date are limited (perhaps doomed) by **a failure to acknowledge and rationally address the overriding problems of uncertainty and ignorance about the mechanisms by which complex ecosystems respond to human actions.** They lack humility and historical perspective about science and about our past failures in management. They still implicitly subscribe **to the scientifically discredited illusion that humans are fully in control of an ecosystemic machine and can foresee and manipulate all the possible consequences of particular actions while deliberately altering the ecosystem to produce only predictable, optimized and socially desirable outputs.** Moreover, despite our well-demonstrated inability to prescribe and forge institutional arrangements capable of successfully implementing the principles and practice of integrated ecosystem management over a sustained time frame an at sufficiently large spatial scales, would-be ecosystem managers have neglected to acknowledge and critically analyze past institutional and policy failures. They say we need ecosystem management because public opinion has changed, neglecting the obvious point that **public opinion has been shaped by the glowing promises of past managers and by their clear and spectacular failure to deliver on such promises**. (Emphases added.)

In 1999 Roger Sedjo, a member of the Committee of Scientists [FOOTNOTE: Committee of Scientists, 1999. Sustaining the People's Lands. Recommendations for Stewardship of the National Forests and Grasslands into the Next Century. March 15, 1999] convened to advise the agency during the rewrite of the national forest planning rule, expressed concerns about the integrity of the forest planning process in the context of budget imbalances and the chaos of other Congressionally mandated programs (such the Collaborative Forest Landscape Restoration Act):

> (A)s currently structured there are essentially two independent planning processes in operation for the management of the National Forest System: forest planning as called for in the legislation; and the Congressional budgeting process, which budgets on a project

basis. The major problem is that there are essentially two independent planning processes occurring simultaneously: one involving the creation of individual forest plans and a second that involves congressionally authorized appropriations for the Forest Service. Congressional funding for the Forest Service is on the basis of programs, rather than plans, which bear little or no relation to the forest plans generated by the planning process. There is little evidence that forest plans have been seriously considered in recent years when the budget is being formulated. Also, the total budget appropriated by the Congress is typically less than what is required to finance forest plans. Furthermore, the Forest Service is limited in its ability to reallocate funds within the budget to activities not specifically designated. Thus, the budget process commonly provides fewer resources than anticipated by the forest plan and often also negates the "balance" across activities that have carefully been crafted into forest plans. Balance is a requisite part of any meaningful plan. Finally, as noted by the GAO Report (1997), fundamental problems abound in the implementation of the planning process as an effective decision making instrument. Plans without corresponding budgets cannot be implemented. Thus forest plans are poorly and weakly implemented at best. Major reforms need to be implemented to coordinate and unify the budget process. (Committee of Scientists, 1999 Appendix A, emphases added.)

To prevent the debacle portended by the Forest Service's inclination to distract from its failing of the lessons of its history, we propose a Standard that requires the agency to document and maintain the history of each watershed, Geographic Area, or other ecosystem analysis area as actions are proposed on the NPCNF.

The Standard would require the ID Team to explore the history of the analysis area in the NEPA process. The documented history must include all past management and other notable human activities in the analysis area. It would include a baseline, pre-management description of all the natural resources and values and the human connections to those resources and the values as they have evolved. It would include historic and recent photographs, all inventory information, and maps reflecting changing status through the years. Presence of fish and wildlife species and abundance, old growth forests, other special or rare botanical features, the varieties of forest cover, etc. would be on display. Roads built, roads maintained, roads decommissioned. Such a history would explore the successes and failures of management and ultimately provide the public—the owners of the NPCNF—with a chronology of significant events especially as affected by management, other human influences, and natural events such as floods, windstorms, droughts, etc. The information should be made available in the most easily accessed library such as maintained in permanent websites with links to all the aforementioned documentation.

In the context of the knowledge of this history, the wisdom of proposing new management proposals can be judged by all interested citizens.

The Monitoring Plan (DFP Appendix 3)

The 2012 Planning Rule provides the direction for agency monitoring and evaluation of forest plan implementation:

> **The plan monitoring program sets out the plan monitoring questions and associated indicators.** Monitoring questions and associated indicators must be designed to inform the management of resources on the plan area, including by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining the plan's desired conditions or objectives. Questions and

> indicators should be based on one or more desired conditions, objectives, or other plan components in the plan, but not every plan component needs to have a corresponding monitoring question.

The DFP Monitoring Plan lists dozens of plan components[6] for which Monitoring Questions are written. Although this may seem to be a comprehensive monitoring plan, its basis in a set of suspect plan elements raises a red flag. We discuss the inadequacies of plan elements in various sections of these comments. In sum, a high percentage of the plan elements are described quite vaguely, and/or lack observable metrics, so naturally monitoring is problematic. The Monitoring Plan in Appendix 3 does not adequately cure the deficiencies of the plan elements.

Below we discuss more ways these inadequacies have resulted in a Monitoring Plan that is destined to short-change the resources in the NPCNF, and fail the public as well.

Plan component: **FW-DC-TE-05**: "Habitat conditions in the plan area provides ecological conditions that support the diversity of plant and animal communities and provide ecosystem integrity." For Monitoring Question the reader is directed to "See MON-MGS-03." The latter's sole Monitoring Question is: "What is the status of rare plant occupancy?" So how one gets from rare plant occupancy to diversity of plant and animal communities and providing ecosystem integrity is anyone's guess. Our guess is—one doesn't. Furthermore, this confirms our take on plan elements such as that one—they might sound good but cannot be measured and come off merely as wishful thinking instead of directing or restricting specific management practices.

For **MON-MGS-03** the "Indicator(s) – Measure(s)" imply that somebody would be surveying a lot of ground to search for one of many rare plants or uncommon habitat elements. The problem is, there's no context for the surveys. It states no triggering situation for which the surveys would be conducted. It lacks explicit direction.

A similar problem is evident for many of the Monitoring Questions. Who is the qualified person that is supposed to do something, and—when, where, why, how, and at what frequency?

A major public concern **is population viability**, including how the revised forest plan will protect native species' habitats on the NPCNF well enough to ensure well-distributed, robust populations. The Monitoring Plan fails to specify with scientific precision the who, what, when, where and why.

And there are the items that employ circular logic which results in nothing learned through the monitoring exercise. E.g., **MON-TE-03**: "What management actions have occurred to provide vegetation patch arrangements for wildlife connectivity?" The Forest Service proposes to measure "acres of treatments that create desired condition" every ten years. The plan element being monitored with this Monitoring Question is:

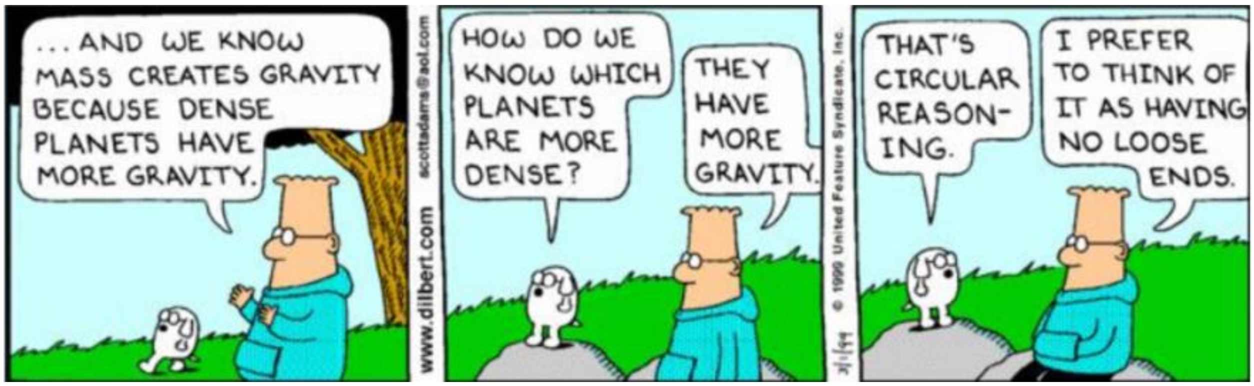
> **FW-DC-TE-06**. The arrangement of vegetation patches ranges widely in size, shape, and structure to provide connectivity for wildlife. Patches are juxtaposed across the landscape, forming a landscape pattern consistent with the natural range of variation. These patterns vary by potential vegetation type, slope, aspect, and topographic position. Wide-ranging

[6] Although the Monitoring Plan uses the undefined term "plan component", from its context clearly the Forest Service means the DFP's plan elements.

species are able to move freely across and between habitats, allowing for dispersal, migration genetic interaction, and species recruitment.

No metrics for measurement are included in **FW-DC-TE-06** but apparently all it takes to verify that wildlife habitat connectivity is being maintained is to count the number of acres logged, every ten years or so!

Circular reasoning is defined as, “A fallacy in which a proposition is backed by a premise or premises that are backed by the same proposition. Thus creating a cycle where no new or useful information is shared.” Scott Adams says it well:



The whole point of monitoring and evaluation—to determine the impacts of management actions, to validate assumptions, determine efficacy of standards, figure out if changes to management approach is necessary—is too often missed in DFP monitoring items.

Another major public concern is the DFP’s proposal to conduct extensive logging in old-growth forests. **MON-FOR-03** is, “Are vegetation treatments meeting the stand characteristics of old growth?” The Monitoring Plan specifies “annual” monitoring but at no particular intensity. One logged old growth stand? One plot? And which “characteristics of old growth”—just a few big trees, or a more comprehensive inventory of the components that scientifically define old growth? How does this monitoring item alleviate public concern that the agency knows not what it’s doing in old growth, except extract volume for private profit?

In regards to the Forest Service’s plans to extensively log old growth on the NPCNF (**MA 2 and MA3-GDL-FOR-04**), the DFP proposes to observe the “Number times the exceptions to the guideline MA3-GDL-FOR-03 were used (optimum location).” In other words, how many “times” (whatever that means) the guideline’s loophole will be used to destroy old growth. Best not to let the public know **how many acres of its old growth** the Forest Service obliterates annually, apparently.

In monitoring implementation of **MA2 and MA3-GDL-FOR-05** which itself states the snag retention guideline is to be “assessed across an entire project area” the Monitoring Plan indicator is “Number of acres or percentage of project area meeting snag guidelines.” While assessing across an entire project area, which “acres” or “100 acres” are to be sampled? What are the numerator and denominator in the equation which is to yield the “percentage of project area”? This reveals the need for better specificity in both MA2 and MA3-GDL-FOR-05 and in MN-FOR-05. And also for many, many other monitoring items.

And too frequently, the monitoring item has no interval for data collection specified. Whenever?

The absence of measures of Detrimental Soil Disturbance confirms our suspicion that the NPCNF is dumping its main quantitative proxy for assuring soil productivity, the 2014 Region 1 Manual.

The closes approximation is for plan element **FW-STD-SOIL-01**, and the Question is: "What is the status of soil productivity and function for project activities?" (**MON-SOIL-01**) The answer is to be determined by measuring "Percent areal extent of soils functioning properly, functioning at risk, not functioning." Those metrics are undefined for soil functioning, as they've apparently been adopted clumsily from the DFP's Watershed Condition Framework.

We could go through the exercise of examining the Monitoring Plan item by item, but by now you get our drift: The failure of plan elements sets up the failure of the Monitoring Plan, and where the plan elements **do** lend themselves to valid Monitoring Questions the imprecise monitoring methods still leave the adequacy of monitoring in much doubt, and the public's valuable national forest values at extreme risk.

Diligent professionals/specialists can take the Monitoring Plan and create scientifically supportable protocols so the monitoring gives results that are useful, but this should be in the DFP already. In any case, such diligence is not required in this Monitoring Plan. Nor is there much in the way of accountability in the DFP if professional efforts lack.

For something as important as the Monitoring Plan, the Forest Service is obligated to seek independent scientists to conduct an objective peer review process. You don't need to just take our word for it.

Suitability and other plan elements

We address suitability within other sections discussing specific resources. We include below our scoping comments that addressed the general topic of suitability, and then restate our critique of plan elements as presented in the 2014 Nez Perce–Clearwater National Forests Proposed Action.

One of the decisions to be made in the Revised Forest Plan (RFP) is "Identification of suitability of areas for the appropriate integration of resource management and uses, including lands suited and not suited for timber production." (P.2.) But we are concerned that the Forest Service proposes to postpone suitability determinations. The PA states:

Identifying suitability of lands for a use in the forest plan indicates that the use may be appropriate, but does not make a specific commitment to authorize that use. Final suitability determinations for specific authorizations occur at the project or activity level decisionmaking process. Generally, the lands on the Forest are suitable for all uses and management activities appropriate for national forests, such as outdoor recreation, range, or timber, unless identified as not suitable.

(P. 8.) The Forest Service cannot evade NFMA rule requirements to determine suitability in the forest-level planning process by postponing "final suitability determinations" until the "project or activity level." Similarly, a blanket statement like the last sentence in that paragraph, which says that every acre is suitable for every uses and management activity unless the agency later says otherwise, is unacceptable.

Then, to add some confusion to the mix the PA presents Table 20, as if all suitability determinations have already been made:

Suitability of Lands

Table 20. Suitable Uses and Activities on the Forest

Area	Timber Production	Timber Harvest	Prescribed Fire	Livestock Grazing	Minerals - Leasable	Minerals Materials-Saleable	New Facilities	Motorized Recreation[1]	Over-snow Motorized Recreation	Mechanized Recreation Travel[1]	New Road Construction
RCAs	N	Y	Y	Y	N	N	N[2]	Y[3]	Y	Y	N[3]
Landslide Prone[4]	N	Y[5]	Y	Y	N	N	N	N[5]	Y	Y	N
Municipal Watersheds	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Developed Recreation Sites	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y
Primitive ROS	N	Y	Y	Y	Y	Y	N	N	N	Y[6]	N
Semi-Primitive Non-Motorized ROS	N	Y	Y	Y	Y	Y	Y	N	N	Y	N
Semi-Primitive Motorized ROS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Roaded Natural, Roaded Modified, and Rural ROS	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Wilderness	N	N	N	**	Y	N	N	N	N	N	N
Recommended Wilderness	N	N	Y	Y	Y	Y	N	N	N	N	N
SMA – Summer Rec	N	N	Y	Y	Y	Y	N	Y	N	Y	N
SMA – Winter Rec	N	N	Y	N	Y	Y	N	N	Y	N	N
Wild and Scenic Rivers - Wild	N	N	Y	N	N	N	N	N	N	Y	N
Wild and Scenic Rivers - Recreation	N	Y	Y	N	Y[7]	Y[7]	Y	Y	Y	Y	Y

** Per designating legislation
[1] On designated routes and areas
[2] Except as needed for resource protection or those inherently located in RCAs
[3] Except at perpendicular stream crossing as designed per plan components
[4] As identified during site-specific project planning
[5] When long-term slope stability can be maintained or improved
[6] Outside of Wilderness and recommended Wilderness
[7] Depending on river management plan.

At the very least, the Forest Service must disclose which uses and management activities will be subject to suitability determination, disclose what specific areas will be evaluated for suitability for which uses, and disclose the criteria to be used to make all suitability determinations, so the public can participate as the law requires instead of having all determinations being predetermined arbitrarily as Table 20[7][3] suggests.

We are especially concerned that the PA contains very few Standards that actually constrain logging and other management activities. On one hand the PA recognizes the unique values represented by the natural qualities of these Forests:

> The extensive acreage of undeveloped lands both on the Forest and interconnected with neighboring public lands provide important habitat security and linkage for wide-ranging species such as lynx, wolverine, and other carnivores.

(P. 14.) But on the other hand the Standards included in the PA are inadequate in terms of quality and quantity, leaving these outstanding natural qualities unprotected. We strongly urge the Forest Service to consider the paper, "The Important Role of Standards in National Forest Planning, Law, and Management" by Nie and Schembra, 2014 as "best available **social** science." (See Attachment 4)

Nie and Schembra, 2014 recommend that:

One way in which the USFS can actively contribute to species conservation and recovery is by providing wildlife and habitat-based standards in forest plans. We recommend that more study,

[7] We note that Table 20 was included in the PA with absolutely no accompanying discussion, which means that removing it entirely from consideration at this time will be a simple action

and guidance, be provided in how synergies might be developed in writing forest plans that are better synced with ESA recovery, from critical habitat determinations to species' recovery plans.

The following two elements must be dropped from all RFP alternatives:

FW-STD-TBR-01. Harvest activities on lands not suitable for timber production are designed to enhance the desired conditions of those lands and are not designed for the purpose of timber production.

FW-GDL-TBR-01. Timber harvest on lands other than those suitable for timber production may occur for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreation and scenic-resource management consistent with other management direction.

These elements render the distinction between "suitable timber land" and "unsuitable timber land" completely meaningless. Practically every NEPA document for "vegetation management" projects prepared over the life of the current forest plans contains statements that include versions of the purposes expressed in FW-GDL-TBR-01.

Another of the "decisions … made in forest plans" is "Forestwide components to provide for integrated social, economic, and ecological sustainability, and ecosystem integrity and diversity, while providing for ecosystem services and multiple uses." (P. 2.) There is an important scientific document we request the Forest Service considers as "best available science" regarding ecological sustainability. This is the report, *Sustaining the People's Lands. Recommendations for Stewardship of the National Forests and Grasslands into the Next Century* (Committee of Scientists, 1999), written at the behest of the agency when it began the process of revising the NFMA regulations.

Also:

The PA uses the term, "elements" of a forest plan, which is undefined and creates confusion. It states:

> There is an important distinction between plan components such as desired conditions, objectives, standards, guidelines, and suitability, and *other elements of the plan*. A plan amendment is required to add, modify, or remove one or more plan components, or to change how or where one or more components apply to all or part of the plan area (including management areas or geographic areas) (36 CFR 219.13(a)).

Other elements of the forest plan that are not plan components provide information and/or background material integral to the successful implementation of the forest plan. As conditions change, this information can be updated with administrative changes.

(P.7, emphases added.) Since the PA does not define "elements of the forest plan" it is not possible to comprehend what changes to the RFP the Forest Service says it may arbitrarily change in the future.

Also, "plan components" itself is not sufficiently defined. The PA vaguely refers to plan components "*such as* desired conditions, objectives, standards, guidelines, and suitability…" (P. 7, emphasis added.)

We are also uncomfortable with the layering of uncertainty and discretion regarding the forest plan component "Guideline." The PA states, "A guideline is a constraint on project or activity decisionmaking that allows for departure from its terms, so long as the purpose of the guideline is met." (P. 8.) Many, if not most, of the guidelines in the PA lack a clearly expressed purpose. Therefore, how a project might be consistent with the purpose of the guideline would arbitrarily be up to the discretion of the Forest Service, which could easily undermine credibility with the public. Nie and Schembra, 2014 believe that the Forest Service should "explain to the public why a particular standard is being used and what purpose it serves." Those researchers also "believe that a more transparent and documented use of science when writing plan standards will generate trust in the writing of plans and improve their overall effectiveness. As discussed in more detail below, we also believe that this type of documentation and transparency could facilitate more adaptive forest planning." (Id.)

So many of the PA's Guidelines state that such-and-such "**should"** occur, instead of **"shall"** occur. The word, "should", although according to the dictionary imparts duty and obligation, is not the Forest Service's preferred interpretation, as the Forest Service managed to get a court to rule in *Lands Council v. McNair*:

"We cannot conclude that (should) creates a mandatory rule that strictly limits… ." Rather, this Court explained, "[t]he section is cast in suggestive (i.e., "should" and "may") rather than mandatory (e.g., "must" or "only") terms. . . . It suggests how old growth should be managed, not how it must be designated."

Guidelines are essentially discretionary standards. We agree with Nie and Schembra (2014), who state that a "discretionary standard is an oxymoron."

Examination of the Guideline, FW-GDL-WTR-01 is instructional. It states, **"**To maintain State of Idaho water quality standards, all land management activities should incorporate best management practices appropriate to that activity." The purpose is expressed—"To maintain State of Idaho water quality standards." But why would that be discretionary? As the Court stated, "We cannot conclude that (should) creates a mandatory rule…" It may be that the Forest Service wants this Guideline to be vague, and in fact it doesn't define what is meant by State of Idaho water quality standards, because there isn't even a regulatory cite. Furthermore, the 2012 Planning Rule requires that plan components ***ensure*** implementation of national best management practices for water quality (36 CFR 219.8(a)(4), emphasis added), Therefore this plan element must be changed to a nondiscretionary Standard.

Also, some elements in the PA contain vague temporal terms, such as:

> Where roads and trails are proposed for reconstruction or reconditioning, activities should avoid **long-term adverse effects** to watershed and stream conditions, and **short-term effects** should be off-set by long-term improvements (e.g. include but are not limited to, hydrologically disconnecting road or trail segments, reducing sediment yield).

(FW-GDL-INF-18, emphasis added.) We've already discussed our discomfort with the level of discretion inherent from use of the term "should." Allowing so-called "short-term" degradation invokes high levels of risk. Only in the long-term, after decades of implementation, would the adverse results of such an approach compel managers to chart a better course. And where the RFP uses the terms "short-term" and "long-term" they must be defined in each specific context.

Wildlife Standard FW-STD-WL-01 would incorporate the Northern Rockies Lynx Management Direction (NRLMD) into the RFP, thus: "Canada lynx habitat shall be managed in accordance with the Northern Rockies Lynx Management Direction (2007) and ROD, and any amendments, updates, or new direction forthcoming." We see that the NRLMD includes its own set of Standards, Guidelines, Objectives, etc. Would the PA definitions of Standards, Guidelines, Objectives, etc. apply identically to those same terms as used in the NRLMD? We ask that the Forest Service explicitly state all of the NRLMD direction the revised forest plan, to add clarity and address ambiguities inherent from their location in some other document.

The PA doesn't even include a single Standard protecting old growth. Only some vague "portion of the (forest) meets the description of old growth" would be desired conditions. Ominously, it states that "Management of stands to retain or move towards old forest characteristics" is likely to occur. (P. 129.) Under this old-growth management scenario, the Forest Service could choose to log large, old trees down to the degree that a stand could barely qualify as old growth, and that would be consistent with the RFP. Detrimentally disturbed soil conditions would affect much of the treated old-growth areas, some being dedicated (essentially permanent) skid trails affecting soil productivity over the long term, and that would be perfectly consistent with the RFP. Logged stands would no longer need to remain effective habitat for any particular species of wildlife, and in fact could lose a considerable proportion of existing snags, large logs, canopy cover, ground vegetation, and other characteristics so vital for supporting wildlife. And if the Forest Service continues to neglect population trend monitoring, the chances of adopting a wiser course would be minimized.

FOC's May 16, 2011comments[8][4] on the NFMA Rule stated:

> Given the lack of alternatives, the inconsistent analysis of impacts, it is difficult to determine long-term impacts of this proposed planning rule. Logic dictates that decreased accountability in terms of required standards will result in degraded resource conditions. The cumulative impacts of implementing a rule that has fewer enforceable standards will result in decreased water quality and species habitat given current and projected uses of the national forests.

From reviewing the PA, we believe it sets a direction that would actualize those fears. And the scientific community echoes these concerns. Schultz, et al., 2013 state:

> (The 2012) regulations represent the most significant change in federal forest policy in decades and have sweeping implications for wildlife populations. …The new planning rule is of concern because of its highly discretionary nature and the inconsistency between its intent on the one hand and operational requirements on the other. Therefore, we recommend that the USFS include in the Directives for implementing the rule commitments to directly monitor populations of selected species of conservation concern and focal species and to maintain the viability of both categories of species. Additional guidance must be included to ensure the effective selection of species of conservation concern and focal species, and these categories should overlap when possible. If the USFS determines that the planning unit is not inherently capable of maintaining viable

[8] We incorporate our comments on the NFMA Rule within these comments, and include them as Attachment NFMA Rule.

> populations of a species, this finding should be made available for scientific review and public comment, and in such cases the USFS should commit to doing nothing that would further impair the viability of such species. In cases where extrinsic factors decrease the viability of species, the USFS has an increased, not lessened, responsibility to protect those species. Monitoring plans must include trigger points that will initiate a review of management actions, and plans must include provisions to ensure monitoring takes place as planned. If wildlife provisions in forest plans are implemented so that they are enforceable and ensure consistency between intent and operational requirements, this will help to prevent the need for additional listings under the Endangered Species Act and facilitate delisting. Although the discretionary nature of the wildlife provisions in the planning rule gives cause for concern, forward-thinking USFS officials have the opportunity under the 2012 rule to create a robust and effective framework for wildlife conservation planning.

Since the Directives have yet to be finalized, the Forest Service ought to proceed as if they will contain the direction as Schultz, et al., 2013 recommend.

Also:

The PA provides no scientific basis for the acres and percentages of each of the various Recreation Opportunity Spectrum classifications expressed in FW-DC-REC-05 and FW-DC-REC-06.

Direction in FW-DC-INF-01 expresses the desirability of having all Forest roads maintained in accordance with Road Management Objectives (RMOs), but actually achieving this rosy picture seems unlikely because the PA includes the very modest Objective of annually meeting maintenance requirements on only 15% of Maintenance Level (ML) 3, 4, and 5 roads (FW-OBJ-INF-04) and contains no direction for ML 1 and 2 roads.

Similarly, the PA does not explain how the agency will identify and implement the Minimum Road System (MRS), as required by the Travel Management Rule, since the PA includes the very modest Objective of decommissioning only 300 miles of unneeded roads (FW-OBJ-INF-01) over the entire life of the RFP. We suspect they are written that way because "Objectives should be based on reasonably foreseeable budgets (36 CFR 219.7(e)(1)(ii))" (P. 7). If that is the case, the Forest Plan EIS must disclose the environmental impacts of such a bleak picture.

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

> Roads have well-documented, significant and widespread ecological impacts across multiple scales, often far beyond the area of the road "footprint". Such impacts often create large and extensive departures from the natural conditions to which organisms are adapted, which increase with the extent and/or density of the road network. Road density is a useful metric or indicator of human impact at all scales broader than a single local site because it integrates impacts of human disturbance from activities that are associated with roads and their use (e.g., timber harvest, mining, human wildfire ignitions, invasive species introduction and spread, etc.) with direct road impacts. Multiple, convergent lines of empirical evidence summarized herein support two robust conclusions: 1) no truly "safe" threshold road density exists, but rather negative impacts begin to accrue and be expressed with incursion of the very first road segment; and 2) **highly significant**

> **impacts (e.g., threat of extirpation of sensitive species) are already apparent at road densities on the order of 0.6 km per square km (1 mile per square mile) or less.** Therefore, restoration strategies prioritized to reduce road densities in areas of high aquatic resource value from low-to-moderately-low levels to zero-to-low densities (e.g., <1 mile per square mile, lower if attainable) are likely to be most efficient and effective in terms of both economic cost and ecological benefit. By strong inference from these empirical studies of systems and species sensitive to humans' environmental impact, with limited exceptions**, investments that only reduce high road density to moderate road density are unlikely to produce any but small incremental improvements in abundance, and will not result in robust populations of sensitive species.**

(Emphases added.) Wisdom et al., 2000, which the Forest Service considers to be best available science, make practically identical statements.

The RFP must also include science-based motorized route (road & trail) density Standards. Scientific information must be incorporated into nondiscretionary Forest Plan direction. For example, Christensen, et al. (1993) is a Region One publication on elk habitat effectiveness. Meeting a minimum of 70% translates to about 0.75 miles/sq. mi. in key elk habitat.

Then there are the Guidelines that don't merely contain loopholes, they *provide* loopholes for previous NEPA decisions, such as FW-GDL-INF-01: "Motorized access inconsistent with MVUM designations may be authorized in writing through special use permits, contracts, or other written authorizations."

Additionally, FW-STD-TBR-11 is written so as to provide a loophole so logging activities won't be constrained by the Long-Term Sustained-Yield Capacity (LTSYC): "Salvage harvest of trees substantially damaged by fire, windthrow, or other catastrophe or in imminent danger from insect or disease attack may be harvested over and above the LTSYC." As with the loophole provided to log lands identified as unsuitable for timber production, this Standard allows for the rationale found in just about every timber sale NEPA document over the life of the 1987 Forest Plan!

Likewise, FW-STD-TBR-12 provides multiple volume-driven loopholes from the constraint on clearcutting if forest areas have not reached or surpassed the culmination of mean annual increment. The PA reads far more like a logging plan than a plan for ecological, social, and economic sustainability. This includes the granddaddy of all clearcutting loopholes: e) "When harvest is on lands not suited for timber production and the type and frequency of harvest is due to the need to protect or restore multiple use values other than timber production."

Then there are Standards that appear to mandate limits on resource damage, but are equipped with language that is loophole-ridden by vague or undefined terminology, such as FW-STD-GRZ-01: "Soils. Rangelands will be managed to maintain 85 percent of the capable range with all five soil ecological functions in a functioning condition *or trending towards improved* soil functions." (Emphasis added.)

FW-STD-TBR-09, in using the nondiscretionary term "shall," reads as a *mandate* to log forests: "Even-aged or two-aged prescriptions other than clearcutting (e.g., seed tree, shelterwood) *shall be used* when appropriate to meet Forest Plan direction." (Emphasis added.) In other words, this proposed Standard is written so a decision to not log an area (when someone makes a case that it meets Forest Plan direction) *inconsistent with the RFP*!

Management and Geographic Areas

The DEIS and draft plan have conflated management areas (MAs) and geographic areas (GAs) so that the differences between them are nonexistent. Indeed, the size of the geographic areas in the draft Plan (generally smaller than even contiguous management areas) and inclusion of standards and other plan components in geographic areas make the distinction meaningless. The definitions in the planning rule of the two are different. A management area (MA) is "A land area identified within the planning area that has the same set of applicable plan components. A management area does not have to be spatially contiguous." (See 36 CFR 219.19). A geographic area (GA) is "A spatially contiguous land area identified within the planning area. A geographic area may overlap with a management area." (Ibid.)

Our comments stated, "If implemented, GAs could be larger landscapes to better facilitate more of an ecosystem approach." We also provided a list of six potential GAs, only one of which was partially adopted (the lower Salmon River drainage), and it appears that was one already in the works. We suggested the following:

> The 2012 rule allows for geographic areas (GAs). If implemented, GAs could be larger landscapes to better facilitate more of an ecosystem approach. If this approach is adopted, potential GAs could be drawn as such: a) Palouse/Potlatch (the Palouse Ranger District); b) upper North Fork Clearwater drainage (essentially the North Fork District), c) Highway 12 corridor, north of the Lochsa and Middle Fork, Selway Bitterroot Wildlands (including the wild areas south of the Lochsa and all of the Selway drainage, and Middle Fork Clearwater south of Highway 12, including Meadow Creek), South Fork Clearwater, and Salmon River.

We also stated:

> Another issue with the GAs is whether the Forest Service intends that they drive management options. The PA gives no real information, but we infer that GAs would largely be treated as an afterthought and that the management areas (MAs) are the crucial categories which capture management direction. If that is not the case, will maps of each GA show specific management allowed in specific areas of each GA? Will specific standards and objectives be developed for each GA? Will there be different water quality standards for different streams in each GA, if the GA encompasses a large area?

At the same time, a Gospel Hump GA (with three distinct units), a relic of the 1987 Nez Perce National Forest Plan, is incorporated into the draft plan.[9] However, the Endangered American Wilderness Act did not dictate management of the area, as suggested by the draft plan on page 113, so as to preclude roadless consideration in a future plan for those area that are still roadless. It did not dictate hard release for the portions of that area that remain roadless. Indeed the legislation states the "multipurpose resource development plan shall comply with the provisions of … the National Forest Management Act of 1976 (90 Stat. 2949; 16 U.S.C. 1600), including the regulations, guidelines and standards promulgated" from NFMA. Current regulations require you to "Identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend any such lands for wilderness

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[9] This is about the only instance of anything iterative about the revision of these two forest plans. However, it is one of the only items that must be updated to be consistent with regulations.

designation.” (See 36 CFR 219.7 (c) (2) (v)). You have clearly failed in that regard as our past and current comments demonstrate regarding the remaining roadless areas that are contiguous to the Gospel-Hump Wilderness. More detail on this issue is found elsewhere in this comment.

In addition, the small size of the three separate geographic areas within the Gospel Hump GA and the numeric specificity of the objectives for vegetation, for example “treated through silvicultural methods” (read logging, draft plan at 113), are such that any site-specific NEPA document and associated decision would be a pro forma exercise. Yet, you have not evaluated the impacts of this very specific direction and what it means for this restricted geographic area, in particular the roadless areas. In sum, this is a catch-22. When a site-specific project is proposed the agency will claim that the forest plan requires it be done. Yet, objections to this plan based upon the specificity of the plan direction will not be deemed ripe for review. Thus, this is a cynical attempt by the Forest Service to evade full NEPA compliance.

Our earlier comments noted the proposed management areas (MAs) are too generic. We included a list of potential management areas in our scoping comments:

Existing Wilderness

Recommended Wilderness (see our section below)

Wild and Scenic Rivers (these could be further broken down into Wild, Scenic and Recreational)

Potential and/or Eligible Wild and Scenic Rivers

True Backcountry Wildlife Protection Zones (non-mechanized and protected, similar to but more protective than C1 and C6 MAs in the existing Clearwater Forest Plan)

True Backcountry Recreation Zones (similar to the Mallard-Larkins Pioneer Area and somewhat similar to the non-motorized A3 areas in the existing Clearwater National Forest Plan)

Research Natural Areas (including new proposed areas)

Riparian Areas (based, at a minimum, on PACFISH/INFISH widths, where additional width would be based upon on-the-ground needs)

Developed Recreation Sites (established campgrounds, not dispersed sites)

Designated Road System (the minimum system as regulations require)

Old Growth Habitat (this could include ancient cedar groves or they could be another MA)

Other Wildlife Protection Areas (perhaps roadless areas over 1000 acres)

Special Recreation Areas (like Elk Creek Falls or Fish Creek Cross-country Ski Area)

Forested areas with more existing development (more of a front country-type area)

It some instances, MAs could overlap. An example would be the Wild Selway River within the Selway-Bitterroot Wilderness. Another example, given the uncertainty of congressional action, would be recommended wilderness and some type of non-motorized (non-mechanized) wildlife protection area or a primitive/semi-primitive nonmotorized (non-mechanized) real backcountry recreation area.

Defining MAs so broadly leads to the foregone conclusion that standards won't and can't be quantitative or accountable or enforceable because the broad MAs don't and won't allow for it. The following example illustrates the problem well.

The current Clearwater National Forest Plan and ROD provide for 100% elk habitat effectiveness (EHE) as a standard for specific management areas: B2, C1, C6 and A3.[10] Other management areas have less stringent standards for EHE ranging from 25 to 75 percent. The draft plan doesn't include large areas where quantifiable security will be maintained. Rather, no standards for elk habitat are provided. There are objectives, but they are almost all detrimental to elk security. Rather the draft plan is aimed at manipulation activities that would harm elk security, at least temporarily, in the name of treating acreage.

Further, the objectives for elk are written in a way that would almost require heavy-handed manipulation in MAs 2 and 3, and, in the case of agency-ignited fire, MA1 (including Wilderness). The agency has done a bait and switch on the public. It has replaced quantifiable and accountable standards with numeric treatment objectives that are so specific as to preclude meaningful site-specific NEPA analysis.

These objectives are not based on any credible monitoring data or scientific research applicable to the Nez Perce and Clearwater National Forests. Rather, the assumption is that elk need more forage absent any range condition or trend analyses. Even if the assumptions were scientifically supported, the objectives are written in terms of acres of "treatments" (often logging) rather than in terms of forage production.[11]

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[10] There are similar elk habitat effectiveness requirements for the current Nez Perce Forest Plan for the various management areas.
[11] Other sections of this comment go into more detail about elk and other wildlife.

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DESIRED CONDITIONS AND NATURAL RANGE OF VARIATION

The DFP's Desired Conditions plan element approach is too static

The DFP and DEIS reflect an overriding bias favoring vegetation manipulation and resource extraction via "management" to "move toward" a narrowly selected set of Desired Conditions, along the way deemphasizing the ecological processes driving these ecosystems. Essentially this rigs the game, since DFP Desired Conditions can only be achievable by resource extraction activities. Since the Desired Conditions must be maintained through repeated management/manipulation, the management paradigm conflicts with natural processes—the evolutionary drivers of the ecosystem.

Fire, insects & tree diseases are endemic to these forests and are natural processes resulting in a self-regulating forest. This provides for greater diversity of plant and animal habitat than management/manipulation can achieve. In areas that have been logged there is less diversity of native plants, more invasive species, and less animal diversity.

In any case, these processes also provide benefits. For example, cavity-nesting birds rely on insects in forests. Just as cavities excavated by woodpeckers provide benefits for other birds and wildlife, there are benefits from mistletoe, bark beetles, root rot fungi and other pathogens. The DEIS provides too little information about benefits of insects and tree diseases.

The DFP strategy which strives to "move toward" the natural range of variation (NRV) focuses on achieving ***static conditions***, instead of allowing the natural dynamic characteristics of ecosystems to provide ecosystem services. An abundance of scientific evidence indicates the DFP's static desired conditions should be replaced by ***desired future dynamics*** to align with best available science. Hessburg and Agee, 2003 emphasize the primacy of natural processes for management purposes:

> Ecosystem management planning must acknowledge **the central importance of natural processes and pattern–process interactions, the dynamic nature of ecological systems** (Attiwill, 1994), the inevitability of uncertainty and variability (Lertzman and Fall, 1998) and cumulative effects (Committee of Scientists, 1999; Dunne et al., 2001).

(Emphasis added.)

Sallabanks et al., 2001 state:

> Given the dynamic nature of ecological communities in Eastside (interior) forests and woodlands, particularly regarding potential effects of fire, **perhaps the very concept of defining "desired future conditions" for planning could be replaced with a concept of describing "desired future dynamics."** (Emphasis added.)

McClelland (undated) criticizes the aim to achieve desired conditions, in that case retaining specific numbers of snags:

> The snags per acre approach is not a long-term answer because it **concentrates on the <u>products</u> of ecosystem processes rather than the processes themselves**. It does not address the most critical issue—long-term perpetuation of diverse forest habitats, a mosaic pattern which includes stands of old-growth larch. **The processes that produce suitable habitat must be retained or reinstated by managers. Snags are the result of these processes** (fire, insects, disease, flooding, lightning, etc.). (Emphases added.)

Castello et al. (1995) discuss some things that would be lost chasing static Desired Conditions:

> Pathogens help decompose and release elements sequestered within trees, facilitate succession, and maintain genetic, species and age diversity. Intensive control measures, such as thinning, salvage, selective logging, and buffer clearcuts around affected trees remove crucial structural features. Such activities also remove commercially valuable, disease-resistant trees, thereby contributing to reduced genetic vigor of populations.

Hayward, 1994 states:

> Despite increased interest in historical ecology, scientific understanding of the historic abundance and distribution of montane conifer forests in the western United States is not sufficient to indicate how current patterns compare to the past. In particular, knowledge of patterns in distribution and abundance of older age classes of these forests in not available. …Current efforts to put management impacts into a historic context seem to focus almost exclusively on what amounts to a snapshot of vegetation history—a documentation of forest conditions near the time when European settlers first began to impact forest structure. …The value of the historic information lies in the perspective it can provide on the potential variation… I do not believe that historical ecology, emphasizing static conditions in recent times, say 100 years ago, will provide the complete picture needed to place present conditions in a proper historic context. Conditions immediately prior to industrial development may have been extraordinary compared to the past 1,000 years or more. Using forest conditions in the 1800s as a baseline, then, could provide a false impression if the baseline is considered a goal to strove toward.

Noss, 2001, believes “If the thoughtfully identified critical components and **processes of an ecosystem are sustained**, there is a high probability that the ecosystem as a whole is sustained.” (Emphasis added.) Noss 2001 describes basic ecosystem components:

> Ecosystems have **three basic components: composition, structure, and function**. Together, they define biodiversity and ecological integrity and provide the foundation on which standards for a sustainable human relationship with the earth might be crafted.

(Emphasis added.) Noss, 2001 goes on to define those basic components:

> **Composition** includes the kinds of species present in an ecosystem and their relative abundances, as well as the composition of plant associations, floras and faunas, and habitats at broader scales. We might describe the composition of a forest, from individual stands to watersheds and regions.
>
> **Structure** is the architecture of the forest, which includes the vertical layering and shape of vegetation and its horizontal patchiness at several scales, from within stands (e.g., treefall gaps) to landscape patterns at coarser scales. Structure also includes the presence and abundance of such distinct structural elements as snags (standing dead trees) and downed logs in various size and decay classes.
>
> **Function** refers to the **ecological processes** that characterize the ecosystem. These processes are both biotic and abiotic, and include decomposition, nutrient cycling, disturbance, succession, seed dispersal, herbivory, predation, parasitism, pollination, and many others. Evolutionary processes, including mutation, gene flow, and natural selection, are also in the functional category. (Emphases added.)

Hutto, 1995 also addresses natural processes, referring specifically to fire:

> Fire is such an important creator of the ecological variety in Rocky Mountain landscapes that the conservation of biological diversity [required by NFMA] is likely to be accomplished only through **the conservation of fire as a process**… Efforts to meet legal mandates to maintain biodiversity should, therefore, be directed toward **maintaining processes like fire**, which create the variety of vegetative cover types upon which the great variety of wildlife species depend. (Emphases added.)

Noss and Cooperrider (1994) state:

> **Considering process is fundamental to biodiversity conservation because process determines pattern**. Six interrelated categories of ecological processes that biologists and managers must understand in order to effectively conserve biodiversity are (1) energy flows, (2) nutrient cycles, (3) hydrologic cycles, (4) disturbance regimes, (5) equilibrium processes, and (6) feedback effects. (Emphasis added.)

The Environmental Protection Agency (1999) recognizes the primacy of natural processes:

> (E)cological processes such as natural disturbance, hydrology, nutrient cycling, biotic interactions, population dynamics, and evolution determine the species composition, habitat structure, and ecological health of every site and landscape. **Only through the conservation of ecological processes** will it be possible to (1) represent all native ecosystems within the landscape and (2) maintain complete, unfragmented environmental gradients among ecosystems. (Emphasis added.)

Frissell and Bayles (1996) state:

> …The concept of range of natural variability …suffers from its failure to provide defensible criteria about **which factors ranges should be measured**. Proponents of the concept assume that a finite set of variables can be used to define the range of ecosystem behaviors, when ecological science strongly indicates many diverse factors can control and limit biota and natural resource productivity, often in complex, interacting, surprising, and species-specific and time-variant ways. **Any simple index for measuring the range of variation will likely exclude some physical and biotic dimensions important for the maintenance of ecological integrity and native species diversity.** (Emphases added.)

Forest Service researcher Everett (1994) states:

> To prevent loss of future options we need to simultaneously **reestablish ecosystem processes and disturbance effects that create and maintain desired sustainable ecosystems**, while conserving genetic, species, community, and landscape diversity and long-term site productivity.
>
> …We must address **restoration of ecosystem processes and disturbance effects** that create sustainable forests before we can speak to the restoration of stressed sites; otherwise, we will forever treat the symptom and not the problem. … **One of the most significant management impacts on the sustainability of forest ecosystems has been the disruption of ecosystem processes** through actions such as fire suppression (Mutch and others 1993), dewatering of streams for irrigation (Wissmar and others 1993), truncation of stand succession by timber harvest (Walstad 1988), and maintaining numbers of desired wildlife species such as elk in excess of historical levels (Irwin and others 1993). Several ecosystem processes are in an altered state because we have interrupted the cycling of biomass through fire suppression or have created different cycling processes through resource extraction (timber harvest, grazing, fish harvest).

(Emphases added.)

Further, Collins and Stephens (2007) suggest direction to implement <u>restoring the process</u> of fire by educating the public:

> (W)hat may be more important than restoring structure is restoring the process of fire (Stephenson 1999). By allowing fire to resume its natural role in limiting density and reducing surface fuels, competition for growing space would be reduced, along with potential severity in subsequent fires (Fule and Laughlin 2007). As a result, we contend that the forests in Illilouette and Sugarloaf are becoming more resistant to ecosystem perturbations (e.g. insects, disease, drought). This resistance could be important in allowing these forests to cope with projected changes in climate. … Although it is not ubiquitously applicable, (wildland fire use) could potentially be a cost-effective and ecologically sound tool for "treating" large areas of forested land. Decisions to continue fire suppression are politically safe in the short term, but ecologically detrimental over the long term. Each time the decision to suppress is made, the risk of a fire escaping and causing damage (social and economic) is essentially deferred to the future. Allowing more natural fires to burn under certain conditions will probably mitigate these risks. If the public is encouraged to; recognize this and to become more tolerant of the direct,

> near-term consequences (i.e. smoke production, limited access) managers will be able to more effectively use fire as a tool for restoring forests over the long term.

Biologist Payne, 1995 includes a commentary on the kind of hubris represented by the FS's view that it can manipulate and control its way to a restored forest by more intensive management:

> One often hears that because humanity's impact has become so great, the rest of life on this planet now relies on us for its succession and that we are going to have to get used to managing natural systems in the future—the idea being that since we now threaten everything on earth we must take responsibility for holding the fate of everything in our hands. This bespeaks a form of unreality that takes my breath away… The cost of just finding out enough about the environment to become proper stewards of it—to say nothing of the costs of acting in such a way as to ameliorate serious problems we already understand, as well as problems about which we haven't a clue—is utterly prohibitive. And the fact that monitoring must proceed indefinitely means that on economic grounds alone the only possible way to proceed is to face the fact that by far the cheapest means of continuing life on earth as we know it is to **curb ourselves instead of trying to take on the proper management of the ecosystems we have so entirely disrupted.**

(Emphasis added.)

In other places, the FS has recognized natural processes are vital for ecological integrity. USDA Forest Service, 2009a incorporates "ecological integrity" into its concept of "forest health" thus:

"(E)cological integrity": Angermeier and Karr (1994), and Karr (1991) define this as:

> The capacity to support and maintain a balanced, integrated, and adaptive biological system having the full range of elements and processes expected in a region's natural habitat.
>
> "…the ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region." That is, an ecosystem is said to have high integrity if its full complement of native species is present in normal distributions and abundances, and if **normal dynamic functions are in place and working properly**. In systems with integrity, the "…capacity for self-repair when perturbed is preserved, and minimal external support for management is needed." (Emphasis added.)
>
> That last sentence provides a measure of resilience the DFP and DEIS don't acknowledge. In their conclusion, Hessburg and Agee, 2003 state "Desired future conditions will only be realized by planning for and creating the desired ecosystem dynamics represented by ranges of conditions, set initially in strategic locations with minimal risks to species and processes."[12]

[12] Resiliency means different things to different resources at different scales. How does the forest plan address instances when "resilient" for one resource or wildlife species is not resilient for another?

> Likewise Angermeier and Karr (1994) describe biological integrity as referring to “conditions under little or no influence from human actions; a biota with high integrity reflects natural evolutionary and biogeographic processes.”

The DEIS actually supports these points we’re making:

> By allowing natural disturbance to function nearer to historic conditions, the approximate quantity, quality, and pattern of wildlife habitat across the Nez Perce-Clearwater would be nearer to what the native species evolved with in this part of their range. …Active restoration through mechanical treatments can help in moving towards the desired conditions. However, given the predicted budgets, **this tool would have limited success in trending habitat towards the desired conditions. The tool that has the best chance of success is fire and natural disturbance, both active and passive restoration.**

(Emphases added.)

The DEIS considers no alternative that genuinely emphasizes this best tool—allowing the natural processes to maintain ecological integrity—for which we strongly advocate. Although the DEIS claims Alternative Z “responds to requests to have an alternative in which natural processes dominate over anthropogenic influence” this is definitely not true, as the DEIS admits “The vegetation desired conditions do not vary by alternative.”

The DFP and DEIS provide no explicit plan disclosing the details on how its version of a “restored” landscape would be sustained. In other words, how often must management/manipulation on any forest stand occur, how extensive would it need to be across the NPCNF, which kinds of treatments will be necessary, how many miles of roads will be needed (both permanent and temporary), etc. This means we cannot know how many acres at any given time will be suffering reduced productivity because of soil damage or infestations of noxious weeds, or how many acres of wildlife will be subject to diversity impacts from to snag losses due to logging, prescribed fire, safety considerations or firewood cutting.

We maintain that the 2012 Planning Rule allows the Forest Service the flexibility to design Forest Plan “Desired Conditions” to be be written in a way that prioritizes “desired future dynamics.” That is, instead of describing a list of static states as the conditions to “move towards” (and likely never achieve), Desired Conditions should be described in terms of the natural processes that work in harmony with the functions of the various components. Thus, the components would not be pigeonholed by management and its mixed agendas, as does the DFP’s approach. That is what we have been advocating for in our Citizen’s Alternative.

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THE DESIRED CONDITIONS/NRV APPROACH FAILS TO CONSIDER CLIMATE CHANGE

The DEIS states, "Future climate projections suggest that temperature increases will exceed the historical variation for average monthly maximum temperature. Specific changes in ecosystem components due to expected climate change are difficult to predict and are highly uncertain, especially in the diverse terrain of the northern Rocky Mountain region." Also "Changes in regional climate will affect the nexus between current and future forest conditions and vegetation condition class." However the DEIS largely ignores the fact that the effects of climate change means the DFP's vegetation Desired Conditions would likely not be achievable or sustainable. The DEIS simply fails to provide any credible analysis as to how realistic and achievable its Desired Conditions are in the context of a rapidly changing climate, along an unpredictable but changing trajectory.

The Forest Service claims it is considering this. The DEIS states, "The future will not be the same as the past. Therefore, in addition to the natural range of variation, additional factors were considered in the development of desired conditions." Yet it makes statements reflecting strong confusion, including the factor "maintaining conditions that contribute to long-term resilience given uncertainties in future climate and disturbances…" In other words, maintaining the very same static conditions that the DEIS even admits are not expected to be achievable under climate change scenarios.

The DEIS says, "Resilience to climate change and weather disturbance were not specifically used as measures because these are largely related to dominance type and size class diversity (Halofsky et al., 2018)." In other words, the static dominance types and size classes upon which Desired Conditions are based <u>inherently cannot reflect a different climate</u>!

Some FS scientists reflect a more insightful perspective. For example, Johnson, 2016:

> Forests are changing in ways they've never experienced before because today's growing conditions are different from anything in the past. The climate is changing at an unprecedented rate, exotic diseases and pests are present, and landscapes are fragmented by human activity often occurring at the same time and place.
>
> The current drought in California serves as a reminder and example that forests of the 21st century may not resemble those from the 20th century. "When replanting a forest after disturbances, does it make sense to try to reestablish what was there before? Or, should we find re-plant material that might be more appropriate to current and future conditions of a changing environment?
>
> "Restoration efforts on U.S. Forest Service managed lands call for the use of locally adapted and appropriate native seed sources. The science-based process for selecting these seeds varies, but in the past, managers based decisions on the assumption that present site conditions are similar to those of the past.
>
> "This may no longer be the case."

Also, former US Forest Service Chief Abigail Kimbell and Hutch Brown (in USDA Forest Service, 2017b):

> Even if global greenhouse gas buildups were reversed today, global temperatures would continue to rise for the next hundred years, bringing regional warming, changes in precipitation, weather extremes, severe drought, earlier snowmelt, rising sea levels, changes in water supplies, and other effects. As it is, global greenhouse emissions are still rising, exacerbating all of these long-term effects. The capacity of many plant and animal species to migrate or adapt will likely be exceeded. Ecosystem processes, water availability, species assemblages, and the structure of plant and animal communities and their interactions will change. **In many areas, it will no longer be possible to maintain vegetation within the historical range of variability. Land management approaches based on current or historical conditions will need to be adjusted.** (Emphasis added.)

Golladay et al., 2016 state, "In an uncertain future of rapid change and abrupt, unforeseen transitions, adjustments in management approaches will be necessary and some actions will fail. However, **it is increasingly evident that the greatest risk is posed by continuing to implement strategies inconsistent with and not informed by current understanding of our novel future**… (Emphasis added).

Works cited for Desired Conditions/NRV approach fails to consider climate change section

Golladay, S.W.; K.L. Martin , J.M. Vose, D.N. Wear, A.P. Covich, R.J. Hobbs, K.D. Klepzig, G.E. Likens, R.J. Naiman, A.W. Shearer 2016. Achievable future conditions as a framework for guiding forest conservation and management. Forest Ecology and Management 360 (2016) 80–96

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GLOBAL WARMING

Our comments on climate change are broad and specific. In this section, we discuss the overarching issues with the draft environmental impact statement. The specific issues with the draft EIS's deficient analysis of global warming are addressed throughout the document as they pertain to each resource.

We reiterate our scoping comments, in blue:

As discussed above in our critique of the PA's proposed use of Desired Conditions, the PA does not adequately consider the effects of climate change. The effects of climate change have already been significant, particularly in the region encompassing the Nez Perce and Clearwater National Forests. Westerling, et al. 2006 state:

Robust statistical associations between wildfire and hydro-climate in western forests indicate that increased wildfire activity over recent decades reflects sub-regional responses to changes in climate. Historical wildfire observations exhibit an abrupt transition in the mid-1980s from a regime of infrequent large wildfires of short (average of one week) duration to one with much more frequent and longer-burning (five weeks) fires. This transition was marked by a shift toward unusually warm springs, longer summer dry seasons, drier vegetation (which provoked more and longer-burning large wildfires), and longer fire seasons. Reduced winter precipitation and an early spring snowmelt played a role in this shift. Increases in wildfire were particularly strong in mid-elevation forests.

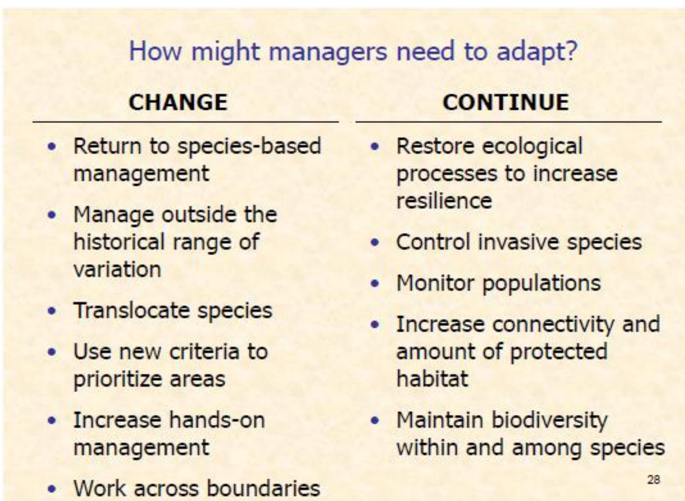
…The greatest increases occurred in mid-elevation, Northern Rockies forests, where land-use histories have relatively little effect on fire risks, and are strongly associated with increased spring and summer temperatures and an earlier spring snowmelt.

Running, 2006 cites model runs of future climate scenarios from the 4th Assessment of the Intergovernmental Panel on Climate Change, stating:

(S)even general circulation models have run future climate simulations for several different carbon emissions scenarios. These simulations unanimously project June to August temperature increases of 2° to 5°C by 2040 to 2069 for western North America. The simulations also project precipitation decreases of up to 15% for that time period (*11*). Even assuming the most optimistic result of no change in precipitation, a June to August temperature increase of 3°C would be roughly three times the spring-summer temperature increase that Westerling *et al.* have linked to the current trends. Wildfire burn areas in Canada are expected to increase by 74 to 118% in the next century (*12*), and similar increases seem likely for the western United States.

The Pacific Northwest Research Station, 2004 recognizes "(a) way that climate change may show up in forests is through changes in disturbance regimes—the long-term patterns of fire, drought, insects, and diseases that are basic to forest development."

Koopman, (undated) is an informative slideshow by the National Center for Conservation Science and Policy in collaboration with the Forest Service's Rocky Mountain Research Station, dealing with potential impacts of climate change on terrestrial wildlife and habitat. We won't attempt to summarize the points in makes in this text, except to reproduce this one slide;



In a research Abstract, Noss, R.F. 2001b states:

Among the land-use and management practices likely to maintain forest biodiversity and ecological functions during climate change are (1) representing forest types across environmental gradients in reserves; (2) protecting climatic refugia at multiple scales; (3) protecting primary forests; (4) avoiding fragmentation and providing connectivity, especially parallel to climatic gradients; (5) providing buffer zones for adjustment of reserve boundaries; (6) practicing low-intensity forestry and preventing conversion of natural forests to plantations; (7) maintaining natural fire regimes; (8) maintaining diverse gene pools; and (9) identifying and protecting functional groups and keystone species. Good forest management in a time of rapidly changing climate differs little from good forest management under more static conditions, but there is increased emphasis on protecting climatic refugia and providing connectivity.

The environmental impact statement does not recognize that anthropogenic forces are why we are at where we are now, which is unacceptable. The EIS states that we are in a natural warming period from Pacific Decadal Oscillation. This is patently false. Our planet is warming—our oceans are absorbing much of this heat. We are not in a period of oscillation, and it is incredibly alarming that a U.S. Government agency cannot recognize as much. The Forest Service must fix this deficiency. We've provided some basic science and articles on this.

- Cheng et al. (Sept. 13, 2017). Taking the Pulse of the Planet, Earth and Space Science News https://eos.org/opinions/taking-the-pulse-of-the-planet.
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- IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Ch. 1. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1535 pp.
- NASA, The Causes of Climate Change, https://climate.nasa.gov/causes/.
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- Trenberth, K., J. Fasullo, and M. Balmaseda (2014), Earth's energy imbalance, J. Clim., 27, 3129–3144, http://dx.doi.org/10.1175/JCLI-D-13-00294.1.
- Zanna et al. 2019. Global reconstruction of historical ocean heat storage and transport. Proceedings of the National Academy of Sciences 116(4): 1126-1131.

There is a very high confidence that global warming is the result of human activities. See IPCC 2013 p. 124. The draft EIS did recognize that climate models are unanimous in projecting increasing temperatures and some of the impacts of that on various resources, (which makes little sense if the Forest Service maintains that we are in a natural warming and cooling cycle). But, by failing to recognize the human activities that contribute to global warming, the Forest Service avoids discussing how the agency's own actions and direction in this proposed plan can accelerate the problem or mitigate it. The draft EIS is deficient in both of these overall aspects.

This global warming is irreversible in our lifetime. Solomon et al. 2008 state, "climate change that takes place due to increases in carbon dioxide concentration is largely irreversible for 1,000 years after emissions stop." Even after emissions stop, it will still be warm because the oceans have retained the heat and will slowly release those. Solomon et al. 2008. This means that we should be doing everything we can to stop adding to it and we should do everything we can to start this mitigation process *now*.

Two anthropogenic causes of climate change are burning fossil fuels and deforestation. And this draft EIS has avoided discussing both—burning fossil fuels, in recreation and to implement logging on the Nez Perce and Clearwater National Forests, and how the Forest Service is going to add to this problem by irresponsibly increasing logging levels. Logging will contribute to global warming. And while logging in places such as the Amazon Rainforest is contributing to climate change and needs to be protected, the U.S. has incredibly high amounts of logging and deforestation. John Muir Project (2018); Prestemon et al. 2015; Hansen et al. 2013. We can't ask the global world to save forests without doing our part to protect these resources in our own region.

We also discussed carbon sequestration in our scoping comments, reprinted below in blue:

The Committee of Scientists, 1999 recognize the importance of forests for their contribution to global climate regulation. Also, the 2012 Planning Rule recognizes, in its definition of *Ecosystem services*, the "Benefits people obtain from ecosystems, including: (2) *Regulating services,* such as long term storage of carbon; climate regulation…"

Harmon, 2009 is the written record of "Testimony Before the Subcommittee on National Parks, Forests, and Public Lands of the Committee of Natural Resources for an oversight hearing on The Role of Federal Lands in Combating Climate Change." The author "reviews, in terms as simple as possible, how the forest system stores carbon, the issues that need to be addressed when assessing any proposed action, and some common misconceptions that need to be avoided." His testimony begins, "I am here to …offer my expertise to the subcommittee. I am a professional scientist, having worked in the area of forest carbon for nearly three decades. During that time I have conducted numerous studies on many aspects of this problem, have published extensively, and provided instruction to numerous students, forest managers, and the general public."

The best available science indicates that the Forest Service's vegetation management emphasis must shift from designing projects focused on extracting natural resources and "vegetation restoration" to carbon sequestration. All old-growth forest areas and previously unlogged forest areas should be preserved indefinitely for their carbon storage value. Forests that have been logged should be restored and allowed to convert to eventual old-growth condition. This type of management has the potential to double the current level of carbon storage in some regions. (Harmon and Marks, 2002; Harmon, 2001; Harmon et al., 1990; Homann et al., 2005; Solomon et al., 2007; Turner et al., 1995; Turner et al., 1997; Woodbury et al., 2007.)

Campbell et al., 2011 address misconceptions—often perpetuated by the timber industry and natural resource management agencies—stating:

It has been suggested that thinning trees and other fuel-reduction practices aimed at reducing the probability of high-severity forest fire are consistent with efforts to keep carbon (C) sequestered in terrestrial pools, and that such practices should therefore be rewarded rather than penalized in C-accounting schemes. By evaluating how fuel treatments, wildfire, and their interactions affect forest C stocks across a wide range of spatial and temporal scales, we conclude that this is extremely unlikely. Our review reveals high C losses associated with fuel treatment, only modest differences in the combustive losses associated with high-severity fire and the low-severity fire that fuel treatment is meant to encourage, and a low likelihood that treated forests will be exposed to fire. Although fuel-reduction treatments may be necessary to restore historical functionality to fire-suppressed ecosystems, we found little credible evidence that such efforts have the added benefit of increasing terrestrial C stocks.

Also, Hanson (2010) states:

Our forests are functioning as carbon sinks (net sequestration) where logging has been reduced or halted, and wildland fire helps maintain high productivity and carbon storage.

Even large, intense fires consume less than 3% of the biomass in live trees, and carbon emissions from forest fires is only tiny fraction of the amount resulting from fossil fuel consumption (even these emissions are balanced by carbon uptake from forest growth and regeneration).

“Thinning” operations for lumber or biofuels do not increase carbon storage but, rather, reduce it, and thinning designed to curb fires further threatens imperiled wildlife species that depend upon post-fire habitat.

Mitchell et al. (2009) also refute the misconception that logging to reduce fire hazard helps store carbon. Although thinning can affect fire, management activities are likely to remove more carbon by logging than will be saved by avoiding fire.

The Proposed Action and Assessment also fail to grasp the implications of healthy soils for sequestering carbon. Keith et al., 2009 state:

Both net primary production and net ecosystem production in many old forest stands have been found to be positive; they were lower than the carbon fluxes in young and mature stands, but not significantly different from them. Northern Hemisphere forests up to 800 years old have been found to still function as a carbon sink. Carbon stocks can continue to accumulate in multi-aged and mixed species stands because stem respiration rates decrease with increasing tree size, and continual turnover of leaves, roots, and woody material contribute to stable components of soil organic matter. There is a growing body of evidence that forest ecosystems do not necessarily reach an equilibrium between assimilation and respiration, but can continue to accumulate carbon in living biomass, coarse woody debris, and soils, and therefore may act as net carbon sinks for long periods.

Kutsch et al. 2010 provide an integrated view of the current and emerging methods and concepts applied in soil carbon research. The research paper contains a standardized protocol for measuring soil CO^2 efflux, designed to improve future assessments of regional and global patterns of soil carbon dynamics. They authors state:

Excluding carbonate rocks, soils represent the largest terrestrial stock of carbon, holding approximately 1,500 Pg (1015 g) C in the top metre. This is approximately twice the amount held in the atmosphere and thrice the amount held in terrestrial vegetation. Soils, and soil organic carbon in particular, currently receive much attention in terms of the role they can play in mitigating the effects of elevated atmospheric carbon dioxide (CO^2) and associated global warming. Protecting soil carbon stocks and the process of soil carbon sequestration, or flux of carbon into the soil, have become integral parts of managing the global carbon balance. This has been mainly because many of the factors affecting the flow of carbon into and out of the soil are affected directly by land-management practices.

(Emphasis added.) That begs a scientific discussion of the effect of “land-management practices” that the Forest Service needs to examine during forest plan revision, because the management actions emphasized in the Proposed Action would contribute further to increased atmospheric CO^2 and thus climate change. Van der Werf, et al. 2009 state:

(T)he maximum reduction in CO^2 emissions from avoiding deforestation and forest degradation is probably about 12% of current total anthropogenic emissions (or 15% if peat degradation is included) - and that is assuming, unrealistically, that emissions from deforestation, forest degradation and peat degradation can be completely eliminated.

In addressing the fossil fuel consuming management activities emphasized in the Proposed Action, Van der Werf, et al., 2009 state that “reducing fossil fuel emissions remains the key element for stabilizing atmospheric CO^2 concentrations.”

Heiken, 2008 is an informative, science-based slideshow laying out myths and facts about forest management and climate change, and suggests solutions. It deals with the following:

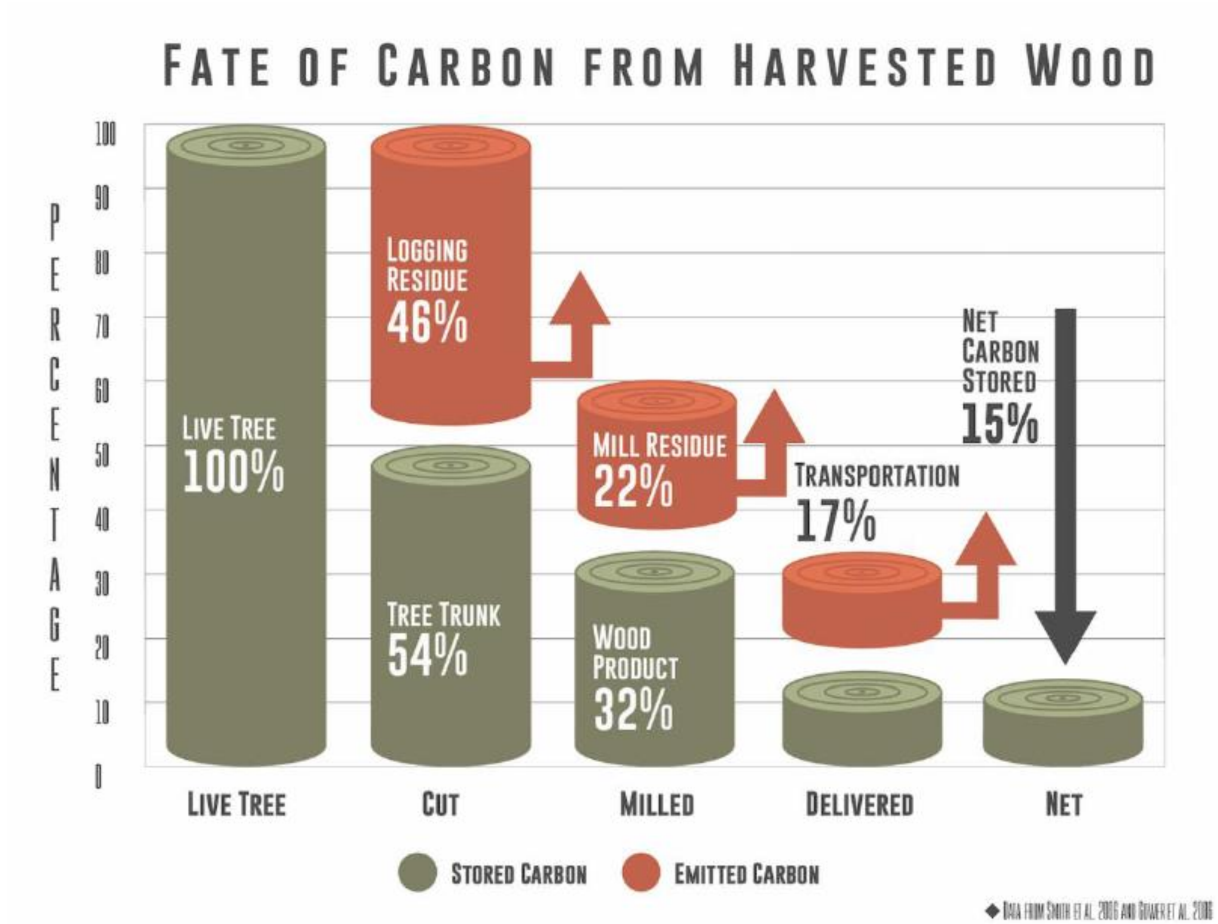
- Young Forest Myth
- Wood Products Myth
- Harvest Myth
- Fire Myth
- Tropical Forest Myth
- Albedo Myth
- Doomsday Myth
- Substitution Myth
- Methane Myth
- No Surprises Myth

In sum, it is clear that the management of the Earth's forests is a nexus for addressing the greatest ecological crisis our civilization faces—climate change. Unfortunately, the PA and Assessment demonstrate the failure of the Forest Service to grasp the magnitude of the crisis, and employ the best scientific information available to address it head-on.

The draft EIS is problematic because premises connected with the climate change analysis are either missing or incorrect. Logging does more damage than it does good in terms of a climate analysis. For example, "Compared with other terrestrial ecosystems, forests store some of the largest quantities of carbon per surface area of land." Achat et al. 2015. Much of the carbon stored is within the soils, with a smaller part in the vegetation. *Id.* Forest management can modify soil organic carbon stocks, losing soil organic carbon when comparing conventional harvests like clearcutting or shelterwood cutting with unharvested forests. Id. Not only does it lose the carbon stored in the soils, but cutting trees eliminates the trees' potential to continue to sequester carbon. *Id.*

Logging also doesn't increase carbon storage in the US by reducing future fire emissions. Research has found high carbon losses associated with "fuel treatment" and only modest differences associated with the high-severity fire and low severity fire that fuel treatment is meant to encourage. Campbell et al. 2012. And where some disturbances like insects, disease, and fire kill trees and lower carbon sequestration, logging has the greater impact--up to ten times the carbon from forest fires and bark beetles together. *See* Harris et al. 2016. The agency fails to recognize this.

Also, logging does not keep carbon out of the atmosphere. The below graphic is from the Josephine County Democrats Webpage, Forest Defense is Climate Defense (https://josephinedemocrats.org/forest-defense-is-climate-defense/), where the illustrator used the information in Gower et al. 2006 and Smith et al. 2006 to create the following illustration of how carbon is lost into the atmosphere from logging.

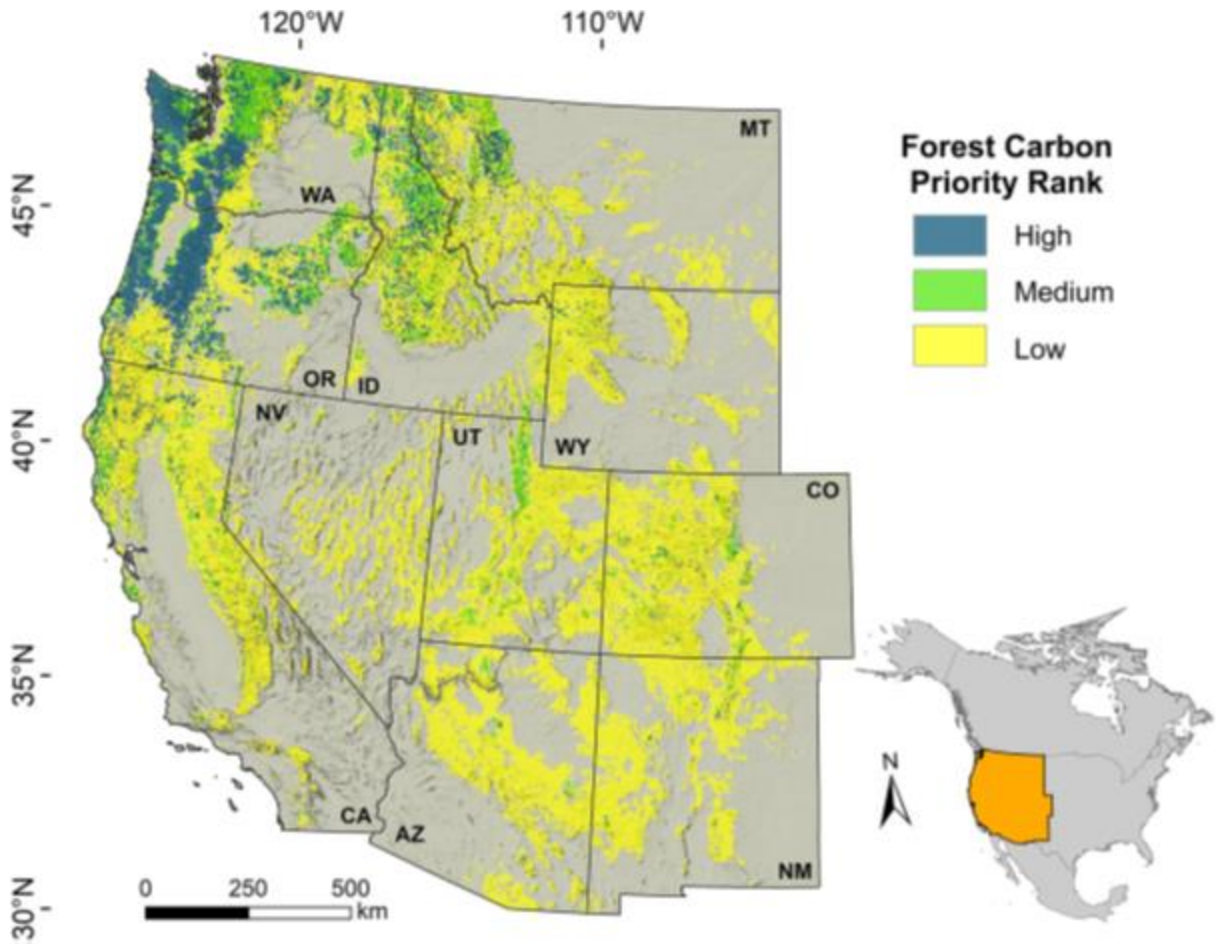


Logging does not serve to increase carbon sequestration in the future. The Forest Service misrepresents McKinley et al. 2011, which the agency cites as science upon which it relies. The Forest Service states, "Many management activities initially remove carbon from the ecosystem, but they can also result in long-term maintenance or increases in forest carbon uptake and storage by improving forest health and resilience to various types of stressors," citing McKinley et al. 2011. McKinley et al. 2011 states, "Because forest carbon loss contributes to increasing climate risk and because climate change may impede regeneration following disturbance, avoiding deforestation and promoting regeneration after disturbance should receive high priority as policy considerations." One specific strategy McKinley et al. also discusses is decreasing forest harvests, either by interval or intensity, to increase forest carbon stocks. McKinley et al. 2011 recognizes, "Generally, harvesting forests with high biomass and planting a new forest will reduce overall carbon stocks more than if the forest were retained, even counting the carbon storage in harvested wood products." The strategy of harvesting and replanting might work for southeastern forests, but not the Nez Perce-Clearwater National Forests. Avoiding deforestation, afforestation, and reducing harvest are the first three strategies that McKinley et al. 2011 list. Because McKinley et al. 2011 recognizes that avoiding deforestation and reducing harvest as strategies for carbon storage in forests, acknowledging that climate change may impede regeneration, this article states something contradictory than the agency's representation of it and this article provides contrary support for a different strategy than the logging that the agency proclaims will help.

Even though the Forest Service cites science that discusses avoiding deforestation and reducing harvest, this is not in the range of alternatives for this draft plan, which, as described above, is a failure to objectively evaluate a reasonable alternative. The Forest Service does not recognize logging as a disturbance that causes carbon losses in the soil and that eliminates what would otherwise be ongoing carbon sequestration by intact forests. The agency must account for all carbon emissions—the whole picture. Hudiburg et al. 2019. Here, all alternatives increase logging, which increases carbon emissions, eliminates potential mitigation through carbon sequestration, and avoids any discussion of CO2 budgets and how this forest plan will increase that, which most of the science we've reviewed suggests that it will. Also, in terms of an accounting of all carbon emissions, the Forest Service is going to have to figure in the reasonably foreseeable standing volume under contract, which are the forest stands that are alive now and that have been sold but have not yet been cut--basically how much logging is already slated to contribute to the existing condition before any one of the draft revised forest plan alternatives might be put into place.

Likewise, the Forest Service does not recognize that forest preservation, i.e., reducing timber harvest or eliminating it in select areas, is an action the agency has the power to implement and that this action can mitigate climate change. Forests protected from logging and development can contribute greatly to carbon mitigation goals. Griscom et al. 2017. Deforestation and land-cover changes impact biomass (which stores carbon) and can reduce it 53-58% of its carbon-storing potential. Erb et al. 2018.

Preservation of Pacific Northwest forests is a legitimate alternative to mitigate global warming. Please review Law et al. 2018. "Forest preservation offers a cost-effective strategy to avoid and mitigate CO2 emissions by increasing the magnitude of terrestrial carbon sink in trees and soil, preserve biodiversity, and sustain additional ecosystem services." Buotte et al. 2019. Last year, researchers prioritized forest lands for preservation based on "carbon priority ranking with measures of biodiversity." The "high carbon priority forests in the western US exhibit features of older, intact forest with high structural diversity[], including carbon density and tree species richness." Buotte et al. 2019. Here is the map from that article:



As you can see, the Nez Perce-Clearwater National Forests have a medium ranking with pockets of high rankings. This forest is worth preserving—it has an incredible ability to sequester carbon. Profita (Jan. 1, 2020). Yet, the paradigm under which the Forest Service developed this whole draft forest plan is that the Forest Service needs to log and replace trees with a more homogenous-species makeup—only trees the Forest Service has concluded are more resistant to fire and disease. This is a mistake given that Douglas-fir, a tree the Forest Service implies is undesirable by omitting any standards that could protect Doug-fir and aiming for trees with other species dominance--has co-evolved with fire and is very adapted to it. (See our comments on fire ecology and fire management). The Forest Service is concluding--with little evidence--that this landscape-level replanting will work. See Johnson 2016. And the Forest Service failed to analyze even one alternative that highlights forest preservation and reduces timber harvest from the status quo--an alternative that could combat global warming.

Finally, logging is going to generate fossil fuel emissions and the plan will lead to more roads and motorized trails that encourage fossil fuel emissions, also not discussed as part of the larger climate change analysis.

In planning for climate change impacts and the proposed road activities, the FS should consider: (1) protecting large, intact, natural landscapes and ecological processes; (2) identifying and protecting climate refugia that will provide for climate adaptation; and (3) maintaining and establishing ecological connectivity. (Schmitz and Trainor, 2014.)

Make sure you include a standing volume under contract and the disappearance of those trees in cumulative impacts in addition to the carbon emissions/carbon sequestration reductions that every alternative will have. And analyze an alternative that preserves forests and reduces logging.

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FIRE ECOLOGY AND FIRE MANAGEMENT

Much of the Forest Service's assumptions and narrative about fire are overly simplistic and not supported by the best available science. And some statements that are uncited in this section are simply incorrect. This section of the DEIS requires major revisions, which includes acknowledging what we discuss below. Please review George Wuerthner's February 24, 2020 article in The Wildlife News, "Crater Lake Wilderness best tool to reduce large fires," because it introduces many of the concepts we discuss below.

The Forest Service discusses that as the climate changes, the number of severe fires could continue to increase. We incorporate our discussion on climate change here because logging will accelerate the future that the Forest Service describes in this section. First, all alternatives, which increase logging, will impair the Nez Perce-Clearwater's ability to sequester carbon. As we noted in our climate section, logging doesn't increase carbon storage in the US by reducing future fire emissions. Research has found high carbon losses associated with "fuel treatment" and only modest differences associated with the high-severity fire and low severity fire that fuel treatment is meant to encourage. Campbell et al. 2012. And where some disturbances like insects, disease, and fire kill trees and lower carbon sequestration, logging has the greater impact--up to ten times the carbon from forest fires and bark beetles together. *See* Harris et al. 2016. If logging is going to increase carbon emissions, then every direction the Forest Service has proposed in the DEIS will catapult us towards a self-fulfilling prophecy. When the Forest Service combines that impairment inflicted by logging with the fire-science--that vegetation management, or logging, actually coincides with more severe fires--the cumulative effects of what the agency proposes will exacerbate global warming and become a self-fulfilling prophecy for regional fires on this forest. Alternatives W, X, Y, and Z will catapult us towards the very thing the Forest Service is describing. The Forest Service fails to recognize the contribution of each alternative to the end described.

The Forest Service's statements in the Wildland Fire Management section of the DEIS contradict your representations elsewhere—we request clarity. Throughout the DEIS, the Forest Service touts the natural role and importance of fire. Yet, in section 3.2.1.4, page 1 (Fire Management), the Forest Service states that "Wildfires are not simply allowed to just burn." If the Forest Service monitors fires, does it not mean that they are allowed to just burn? Or is something more done when the agency is monitoring? If no fire will be allowed to occur naturally anymore, it's difficult to understand how fire can play a natural role versus fire playing a human-management role. Also, we take issue with the following description of a management response: "[M]onitoring the fire under conditions that are conducive to obtaining natural resource benefits." Who decides these benefits? What are they? Are they the same as the "resource objectives" mentioned in a following paragraph? This vagueness concerns us because institutional memories are sometimes lost, so these terms, if not specifically defined in the plan itself, could be interpreted several different ways over the course of a forest plan, and there would be no consistency or accountability in this land-management plan.

Alternatives W, X, Y, and Z do not have a range of alternatives in the Fire Management section. For most of this DEIS section, impacts to other resources are the same no matter what alternative. This is not a range. For example, there is no change for "Restoration and Maintenance of Ecological Role of Fire/Year; Percentage of Low, Mixed, Stand Replacing Severity" from the table on page 19 of section 3.2.1.4. This is only one example. What does this mean? Why doesn't the future fuels/treatments/ year not change the restoration and maintenance? What does "fire management flexibility" mean? Can you please explain this table? It does not make a lot of sense.

Additionally, as explained with more detail below, all alternatives begin with the faulty premises that fuel treatments work and that they work miles from the immediate vicinity of a structure. For example, on page 13 of the Fire Management section of the DEIS, the agency has a range of the "Average mechanical treatment acres per decade over five decades by alternative" (Table 2). This assumes that mechanical treatment acres across the forest reduces fire. As discussed below and in many scientific articles in the works cited for this section, that premise is not supported by the best available science, which supports the opposite, in fact, that "mechanical treatment" contributes to more severe wildfire, and the areas protected from management do not tend to burn as severely. *See* Bradley et al. 2016 (and discussion below). Because every alternative is based on the faulty presumption that logging ("mechanical treatment") avoids severe fire, then not only is every alternative inaccurate, but the Forest Service has not evaluated even one alternative that has a sound scientific foundation. This means that every objective in the draft forest plan is misguided and not based on science.

Other ambiguously phrased foundations for all alternatives are "uncharacteristic and undesirable wildland fires." As stated repeatedly, we live in a region where stand-replacing high-severity fires are part of the mixed severity fire regime. What in the world does the Forest Service mean by "uncharacteristic" and "undesirable"? Please define these terms. They do not serve to inform the public of anything, and suggest that the Forest Service is basing its entire management direction on an esthetic that is scientifically unfounded.

The font in blue are scoping comments we have already provided, but because they have not been adequately addressed in this DEIS, we introduce them again.

FIRE

The wildland fire issue is, in many ways, the most daunting and perplexing one facing management of these Forests. On one hand, the PA implicates fire as a catastrophic event, with all the negative connotations. On the other hand, it recognizes fire as "an essential ecological process in maintaining healthy, resilient ecosystems." Fire creates and sustains practically all components of the forest ecosystems—wildlife, fish, soil productivity, species composition, landscape pattern and structure. In addressing the issue of wildland fire, we see the occasion of the revision of the forest plan as the defining moment when overall management can either shift boldly towards sustainably, or lurch in the present direction towards ecological disintegration.

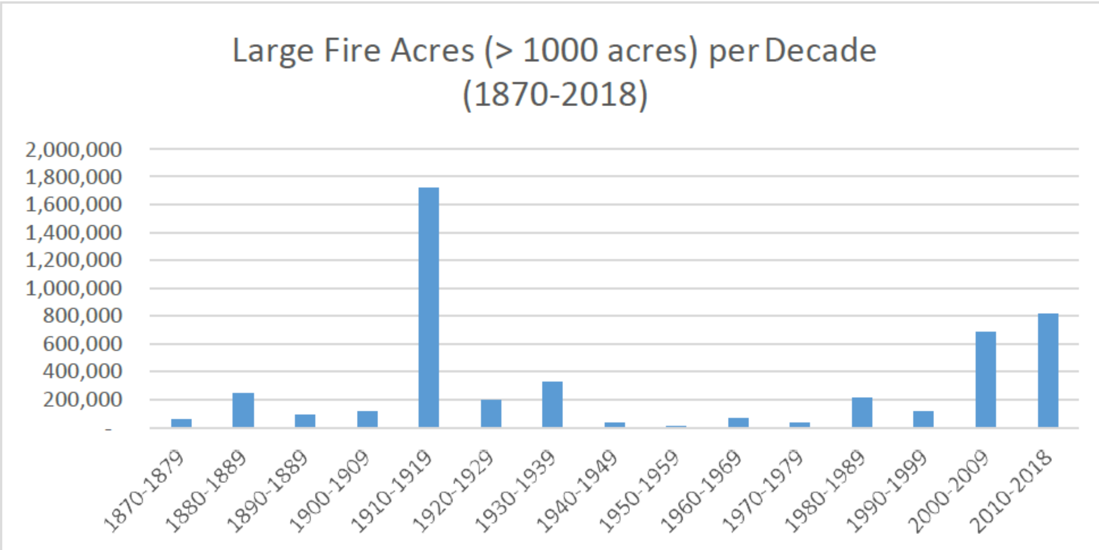
Given that a major driving purpose for much proposed vegetation management is compensation for what is often claimed to be landscape-level adverse effects of fire suppression, we encourage you to recognize the current forest plans are out-of-date on this issue, and propose solutions that will allow fire to play a natural role. We fear, however, that the pressing unmet need for public education on this issue, coupled with the vested economic interests in carrying on fire suppression (limited only by equipment and firefighter availability), other political forces that prioritize timber over ecology, and the culture of the agency itself (favoring manipulation and control rather than embracing wildness)—all stand as significant barriers to accomplishing the necessary change in fire policy.

We reiterate our earlier the comments above in blue. Not only is fire an important part of the ecosystem in these forests, stand-replacing fire is an important part of this ecosystem, and altering that process will impact the ecosystem. The Forest Service ignored rigorously evaluating an alternative that lets fire have a more natural role as opposed to forest-wide "fuel treatments" (which do not work) and salvage logging in addition to Forest Service ignitions of places that the agency thinks should burn based on the science provided in the DEIS.

The Forest Service incorrectly states, "The previous policy of excluding all fires eliminated fires of low to moderate severity resulting in a higher probability of high-severity fires. This has resulted in a landscape with an increase in flammable vegetation, which has increased the potential for high severity fires." DEIS section 3.2.1.4 p. 4. The agency does not cite any science to support this authoritative assertion. In the DEIS, the Forest Service stated that there has been a trend towards frequency of large wildfires due to both climate change **and** previous land-use effects, citing Westerling et al. 2006. But, if the Forest Service read the article it cited, Westerling et al. 2006 stated that fires in this region, the Northern Rockies, has not been impacted from previous land-use effects; the ecosystem feature of stand-replacing fire is part of the reason why fire suppression has had minimal impact on the fire regime in the Northern Rockies. *See* Westerling et al. 2006. Noss et al. 2006 agrees that fire suppression has very likely not impacted the historical variability of fires in the Northern Rockies. The Forest Service must acknowledge this science and correct its incorrect assertion that fire suppression leads to and has caused high-severity fires because this is not true in the Northern Rockies. The Forest Service should conclude that wildfire suppression has little impacted this region because the natural range of variability includes high-severity fires on the order of centuries. *See, e.g.,* Brunelle and Whitlock 2003; Westerling et al. 2006.

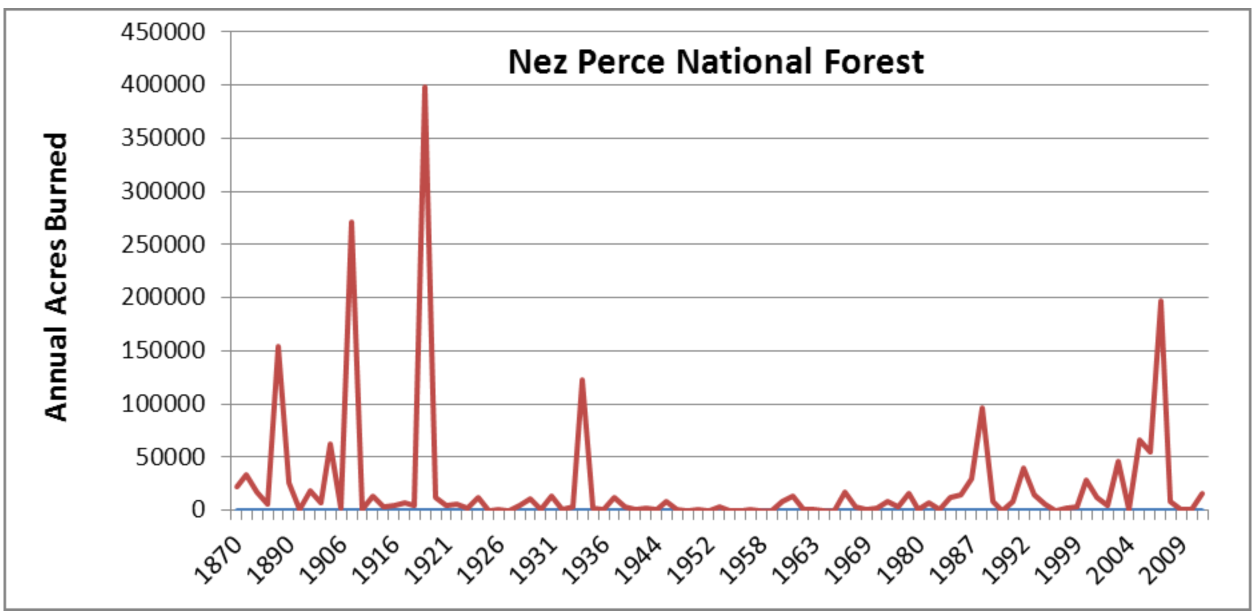
The Forest Service provided the public with this graph:

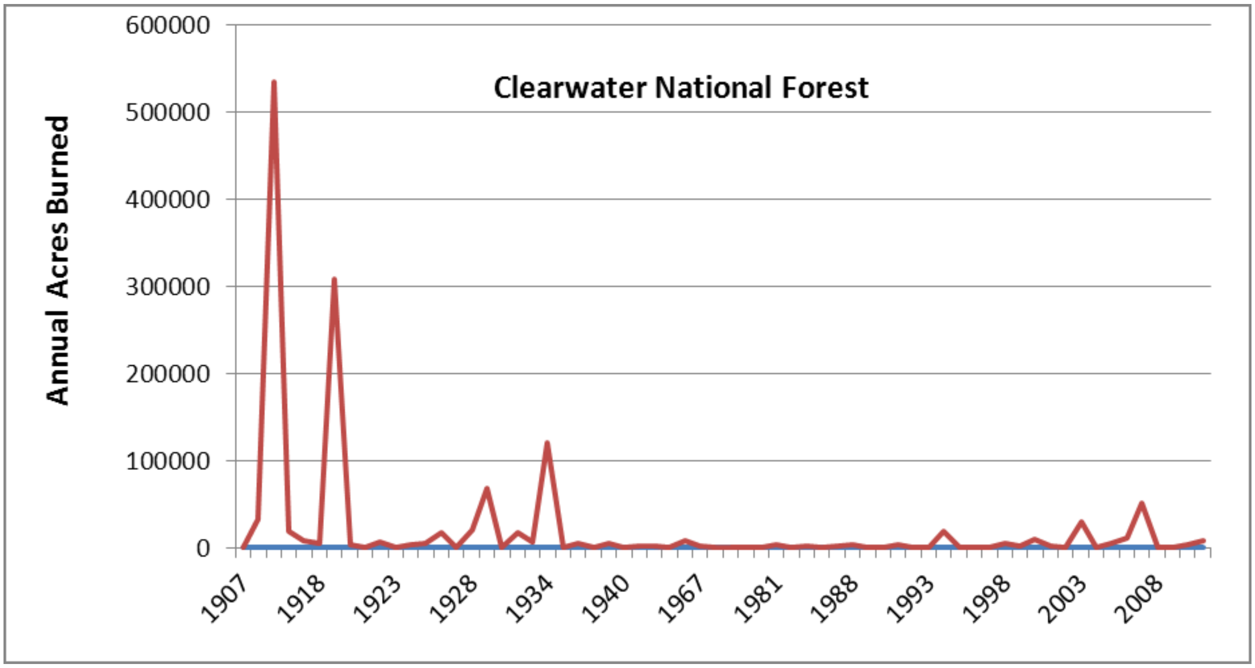
Figure 1. Large fire acres greater than 1000 acres per decade from 1870 to 2018 on the Nez Perce-Clearwater.



DellaSala and Hanson 2019 also found that there was an increase in total patch area, but unlike the Forest Service with the above graph, DellaSala and Hanson 2019 tested the increase for statistical significance. These researchers found that there has been no statistically significant increases in patches of fire in more recent time periods.

Additionally, the Forest Service should consider parsing out a discussion on fire in the Nez Perce National Forest with fire in the Clearwater National Forest. The Forest Service's Baseline Assessment for Carbon Stocks (Ch. 4.0) suggest that fire plays out differently in these two forests:





Assessment Ch. 4: p 9. We also know that the Clearwater is a more mesic forest.

Also, later in the DEIS on page 4 of this section, the Forest Service recognizes that the fire regime includes large stand-replacement fires. Can you explain why here you are stating that large fires are on the rise while also maintaining that there are large stand-replacement fires that have over 200- or 250-year return intervals when we appear within that interval? How are both statements true? Can you provide some peer-reviewed scientific studies on this or can you provide any findings that demonstrate a statistical significance?

The Forest Service maintained that, "[S]ince the late 1980s, there has been a trend toward increased frequency of large wildfires with longer durations and longer wildfire seasons due to both climate change and previous land-use effects." DEIS 3.2.1.4, p. 5. Again, this is false. Westerling et al. 2006, which the Forest Service cites, does not attribute previous land-use effects as a reason for any fire change in this region (the Northern Rockies), so asserting that previous land-use effects are contributing to an existing condition is completely incorrect. And if fire suppression has had little impact, then the deviation in historic conditions, if it is indeed deviation, is either from global warming, which cannot be reversed, or the deviation stems from Forest Service's own timber production activities of the past three-quarters of a century, which can be addressed by reducing timber production (which again the Forest Service has not addressed in any alternative, which is unreasonable). But, we are not convinced that there has been an increase in fire activity that departs from historical levels because the Forest Service is not using the time frame science explains should be used to reach this conclusion.

It is problematic that the agency has represented there is a "trend" towards increased frequency "since the late 1980s" because a 30-40-year window within a 100-year sample is too small to see trends when the natural fire regime in the Northern Rockies is much, much longer than that. Whitlock et al. 2015 discusses constructing fire baselines are best done with a very long-term perspective of time regimes because it can "describe fire and consequences over a wide range of climate conditions, land-use activities, and vegetation types…[F]ire history should be viewed not as irrelevant storytelling, but rather as vital information that describes the range of possible fire conditions under a broader array of spatial and temporal scales than we can observe at present." Whitlock et al. 2015, p. 267. So, the Forest Service should be constructing a more robust scientific history of fire. Please review Whitlock et al. 2015, published as Chapter 9 of The Ecological Importance of Mixed-Severity Fires: Nature's Phoenix. Taking a 40-year snippet of what the agency might think is a "trend" is not supported by science that discusses the importance of building a fire history over a long timeframe.

We have provided science that does reconstruct a long-term fire history of the Northern Rockies, and it disagrees with conclusion the Forest Service bases on a 100-year window. Brunelle and Whitlock 2003 reconstructed a fire history of the Clearwater Range to "understand how vegetation and fire regimes responded to large-scale climate changes during the Holocene." Reconstructing a long-term perspective of fire history, going back 14,000 calendar years, the researchers found that the fire frequency of the last two decades doesn't exceed the historical range of past variability. In fact, there are points in this reconstructed fire history where fire frequency exceeded that of the present and the climatic temperatures were warmer than the present. Please review Brunelle and Whitlock 2003. This science also reinforces why a timeframe longer than the Forest Service's chart is important. Because there has been a warmer climate in the distant past and there have been more severe fires in the distant past, this information might actually shed some light on what we might expect from global warming in the next few decades and can help form a direction for the forest plan.

Temperate wet forests in the Pacific Northwest have not been vulnerable to prehistoric human activities. Additionally, the Forest Service does a disservice to the role and value that Douglas-fir plays in our forest, especially as it pertains to the natural fire regimes. We discuss this more in the vegetation section, but the Forest Service must recognize that, in part because Douglas-fir has coevolved with fire in this region, that it has been a naturally occuring tree well before the Forest Service started logging in the Nez Perce-Clearwater National Forests. "This conifer has evolved with fire and displays several life-history traits that allow it to persist across a wide range of fire frequencies and severities (Tepley et al., 2013)." Whitlock 2015, p. 273. (Studies from the western side of the Pacific Northwest are informative for the Clearwater Basin because of the comparative phylogeography. *See* Brunsfeld et al. 2001.) Additionally, Odion et al. 2014 noted that in the Northern Rockies, FIA plots in areas protected from logging showed a majority of plots where Douglas-fir was the dominant overstory tree.

The Forest Service's following assertion is also incorrect and misguided: "In the absence of vegetation management, there is an increased potential for further loss of biological diversity in the event of future high severity large fires that damage or eliminate components of the ecosystem (Martin and Sapsis, 1991)." We looked for this publication, but could not find it online or in the Forest Service's FOIA response with the forest-planning file. So, we respond to the assertion the Forest Service has made using this publication. Logically, "[b]iodiversity is likely to be threatened where changes in fire regime become incompatible with evolutionary history (Bond & van Wilgen 1996; Swetnam et al. 1999)." Odion et al. 2004. But, as discussed above, the fire regime in this history has not diverged from its long-term range. We provide science that supports the assertion that high-severity fires are necessary for biodiversity in this region, and request the Forest Service acknowledge and use that concept as the basis for the agency's analysis, which it hasn't done.

Mixed severity fire, which includes patches of natural high-severity fire, *creates* biological diversity in this region, and wildlife rely on it. When we discuss high-intensity fire, we mean stands with over 75 percent tree mortality. Snag forest habitat "is one of the most ecologically important and biodiverse forest habitat types in western U.S. conifer forests (Lindenmayer and Franklin 2002, Noss et al. 2006, Hutto 2008)." Hanson 2010. "Many plant and animal species are adapted to post-fire conditions, and populations of some (eg many bird species; Figure 1) decline after fire exclusion or post-fire logging." Noss et al. 2006. Hutto 2008 found that the black-backed woodpecker is a specialized species on severely burned forests. Hutto found a distribution of black-backed woodpeckers, which "suggests that conditions created by severe fires probably represent the historical backdrop against which this species evolved." And, "[t]he desire to rid our forests of severe fire beyond the urban interface is, for many forest types, not well grounded in ecological science." Hutto 2008. Please also see LeQuire 2009 and Odion et al. 2014.

Fire severity is not greater where fire has been absent. Odion et al. 2004 found "three times more high-severity fire in areas last burned since 1920 (recently burned landscape). The amount of high-severity fire in all areas previously burned in 1920 or earlier (long-unburned landscape)." Bradley et al. 2016 has found this, too.

Another concept totally ignored by the DEIS's fire section is fire refugia. *See* Krawchuk et al. 2016, and Zimmer 2018. The term "fire refugia" focuses "on the idea of locations disturbed less frequently or less severely by wildfire relative to the surrounding vegetation matrix. Fire refugia provide habitat for individuals or populations in which they can survive fire, in which they can persist in the postfire environment, and from which they can disperse into the higher-severity landscape." Meddens et al. 2018. Sometimes refugia can be forecasted, but sometimes these areas survive by happenstance. Zimmer 2018 and Krawchuck et al. 2016. The Forest Service ignores the likelihood that the more acreage it "treats" by trying to burn or log, the more likely the agency will eliminate what might have served as fire refugia. These islands provide pockets of shelter for animals, and they disperse seeds to burned areas. *See* Zimmer 2018. The agency needs to discuss the importance of fire refugia in the DEIS and analyze the impact of so much proposed logging and burning across the forest in every alternative. Has the agency ever tried to map out refugia? Or recognized that if an area is long-unburned, it might have potential to serve as a fire refugia?

We also request the agency stop fear-mongering about fire because there are steps forest visitors and those living next to the forest can take to protect their homes to the extent they can be protected. But, the agency has to recognize that often fire severity is linked to extreme weather conditions, which fuel reduction projects cannot abate. *See* Westerling et al. 2006.

Instead of reducing fire, logging can increase the probability of fire where it might not have otherwise burned, which is a concept the Forest Service must recognize in the face of the best available science. Even-aged silviculture practices can increase fire hazard. Odion et al. 2004 found that "tree plantations had twice the burn severity of closed-canopy forests." Please also review Bradley et al. 2016, which found that burn severity tended to be higher in areas with less protection status, i.e., increased vegetation "management" authorized by the Forest Service. Areas more protected from logging had lesser high-severity fires. Zald & Harold 2018 found that plantation forestry with young forests and spatially homogenized fuels were more significant in predicting wildfire severity than pre-fire biomass. And Lesmeister, et al., 2019 discusses the positive role that old-growth plays in countering impacts from high-severity fires--protecting these areas are the solution, not the problem to be logged. All of this science suggests that if there is any change in the frequency of fire-severity on the landscape, it is likely due to the

Forest Service's own silvicultural practices. This also suggests that, because every action alternative the Forest Service has proposed increases logging, and considering that global warming is going to provide longer summers with hotter conditions, that the impact of Alt W, X, Y, and Z will be more severe fires on lands the agency harvests timber, especially previously unlogged areas, than if the agency had adopted a direction that protects the unlogged and continues protection of currently protected areas. In addition to the DEIS's failure to recognize any of this science or the possibility that Forest Service management has caused more severe fires, the best available science suggests that the action alternatives might cause even more severe fires. The agency needs to recognize, discuss, and account for this possibility.

In our proposed action comments, we reiterated,

In order to evolve management of wildland fire, plan elements must provide clear direction on the specific contexts within which natural fire is accepted, and on the other hand where suppression actions (and their host of associated negative environmental effects) are considered acceptable. Vague terminology such as "areas where resource objectives and infrastructure limit the desirability of a wildland fire event" are not helpful.

The draft forest plan is vague and does not provide this direction. In our earlier comments, we noted that the Proposed Action stated,

The quantity of timber that may be sold per decade (except for salvage or sanitation harvesting of timber stands that are substantially damaged by fire, windthrow, or other catastrophe or which are in imminent danger from insect or disease attack) will be less than or equal to the long-term sustained-yield capacity (LTSYC). Salvage harvest of trees substantially damaged by fire, windthrow, or other catastrophe or in imminent danger from insect or disease attack may be harvested over and above the LTSYC.

(FW-STD-TBR-11.) As well as revealing that the amount of logging would not really be limited by the RFP, this highlights another problem—that there is an undefined category of natural processes the Forest Service calls "catastrophe." In reality, the Forest Service sees the potential loss of economic opportunity as the catastrophe, and couches absurdly in terms of a natural process being ecologically harmful.

As discussed above, trees impacted by fire, windthrow, or other natural disturbance regime (like insects and disease) have an ecological role to play. Tree death is a natural process, Franklin et al. 1987, and eliminating trees that you call "damaged" impacts the natural process going forward.

We noted in our scoping comments,

The PA included direction to "treat …acres of fuels" or reduce "hazardous fire fuels" in various places. What does an **acre of fuel** look like? What *is* a fuel?

The DEIS highlights treating "fuels," but the Forest Service still has not defined fuel, despite our questions. The glossary defines "fine fuel" as things like grass, leaves, and needles--"fast-drying dead or live materials." If "fine fuels" are needles and leaves, does this mean a "fuel" is simply a tree? The Forest Service must define what it thinks is a fuel because that is very ambiguous and violates disclosing high-quality information to the public. Anything could be a fuel, and thus anything could be logged. This is especially problematic because the undefined term "fuel" appears in the following definitions in the draft revised forest-plan glossary: "Fuels Management"; "Fuel Model"; "Fuel Reduction"; and "Fuel Treatment."

Also, if fine fuels are fast-drying materials, then when the Forest Service authorizes logging and logging leaves behind leaves and needles, doesn't logging create fine fuels?

The Objective, FW-OBJ-FIRE-02 directs that "within 5 years of plan approval, remove or reduce the volume of hazardous fire fuels in municipal watersheds such that the risk of high-severity fire is low." The PA does not define high-severity fire. The PA does not disclose how often the municipal watershed hazardous fuels would have to be treated to keep the risk low. Since stand-replacing fire is the norm over most of the Forest, the PA is directing that municipal watersheds be kept in manipulated, heavily managed state all of the time. The PA does not address the implications of all the roads and other soil-disturbing activities that would be needed to manipulate and control "fuels" which would dirty the municipal water more, and for longer durations, that natural fire disturbance.

We noticed that the agency has eliminated this objective from the fire section of the proposed action and could not find it anywhere else. Is the Forest Service dropping this objective? If so, we support that. We noticed that the Forest Service has defined "high-severity fire" with "See 'stand-replacing fire.'" When one looks up "stand-replacing fire," this is the definition:

"A fire that is lethal to most of the dominant above ground vegetation and substantially changes the vegetation structure. Stand-replacement fires may occur in forests, woodlands and savannas, annual grasslands, and shrublands. **They may be crown fires or high severity surface fires** or ground fires."

High-severity fire leads a reader to another definition that then refers to "high severity" fires without defining it. What is a "high-severity fire"?

The definition of "stand-replacing fire" should be revined. For example, the Forest Service states that it is a "fire that is lethal to most of the dominant above ground vegetation and substantially changes vegetation structure." For example, Hanson 2010 defines stand-replacing fire as over 75 percent tree mortality. The word "most" is very vague. It could mean 99 percent (just above all) or 51 percent (a simple majority), and the public would not know until the agency more specifically defines it when proposing a project it wants to authorize. For example, say the agency approves a forest plan that allows salvage logging in stands that have had "stand-replacing fire." With the definition the agency has proposed, it could log a stand of trees with only 51% tree mortality by defining "most" as a simple majority. Because of the ambiguity with this definition, this is not a definition that would serve to provide the public with high-quality information as to how the Forest Service plans to manage this forest. Please be more specific.

(Also, on a very random note, in your glossary, "Landslide Potential" and "Mass Movement Potential" are not in their proper alphabetical order. Also, "Mass Movement Potential" is defined with "See 'high landslide potential'" but "high landslide potential" is not a term that exists in the glossary.)

In our scoping comments on the RFP's proposed action, we stated,

Also, FW-DC-FIRE-03 must be omitted from the RFP. It perpetuates the myth that vegetation conditions in areas outside of the immediate vicinity of homes could lead to loss of homes. Reams of "best available science" bust this myth and therefore neither Assessment nor PA can cite anything of scientific repute as basis.

The section now states,

Fuels conditions adjacent to private property, administrative sites, and infrastructure promote lessened fire behavior that facilitates safe, effective fire management opportunities. Wildfire occurs at smaller scales and lesser severities in areas where resource objectives and infrastructure limit the desirability of a wildland fire event.

FW-DC-FIRE-03. While someone has reworded this section, the premise underlying this desired condition is unchanged, and is still not informed by the best available science. The Forest Service's own research, Cohen 2000, states that the ignitability of structures start with the structure itself and the land immediately around the structure, i.e., the 40 meters surrounding it. So, it still perpetuates the myth that vegetation condition outside of the immediate vicinity of homes could lead to the loss of homes. Unless a landowner has built a structure with 40 meters of a property line with National Forest System lands, this desired condition doesn't involve the land-management agency or the management of public lands.

In our scoping comments, we stated,

FW-DC-FIRE-01 is one of those DCs in the PA that mostly state scientific fact, with the exception of the words, "and other resource objectives." Those other resource objectives are not identified. The inclusion of those four words has the effect of nullifying the priority of the rest of FW-DC-FIRE-01. And those words, along with FW-DC-FIRE-02, FW-DC-FIRE-03, and FW-DC-FIRE-05 are not reconciled with inherently conflicting language in most of FW-DC-FIRE-01 as well as the entirety of FW-DC-FIRE-04.

The Forest Service traded the original FW-DC-FIRE-01 for the following language:

Restore and maintain landscapes: Landscapes across the Nez Perce-Clearwater are resilient to fire-related disturbances in accordance with management objectives. Natural fuel conditions emulate the structure, species mix, spatial pattern, extent, and resiliency of the historic fire regime of the area. Wildland fires burn with a range of intensity, severity, and frequency that allows ecosystems to function in a healthy and sustainable manner and meet desired conditions for other resources.

FW-DC-FIRE-01. This still perpetuates the myth that all of the Nez Perce-Clearwater National Forest needs to be restored or maintained, which is untrue. Large stand-replacing fires are the fire cycles in this region, and the Forest Service has provided no science that we are outside of this regime. *See, e.g.* Westerling et al. 2006. We refer you to our entire works cited at the end of this section for the science. Additionally, we still find many of the guidelines, desired conditions, and objectives vague.

What kind of impact is the agency going to have on old growth and snags if the objectives are to log to open up the forest?

The PA is also vague as to where exactly the "Wildland Urban Interface" (WUI) is located. This is because its glossary definition places it in the context of the undefined term, "at-risk community."

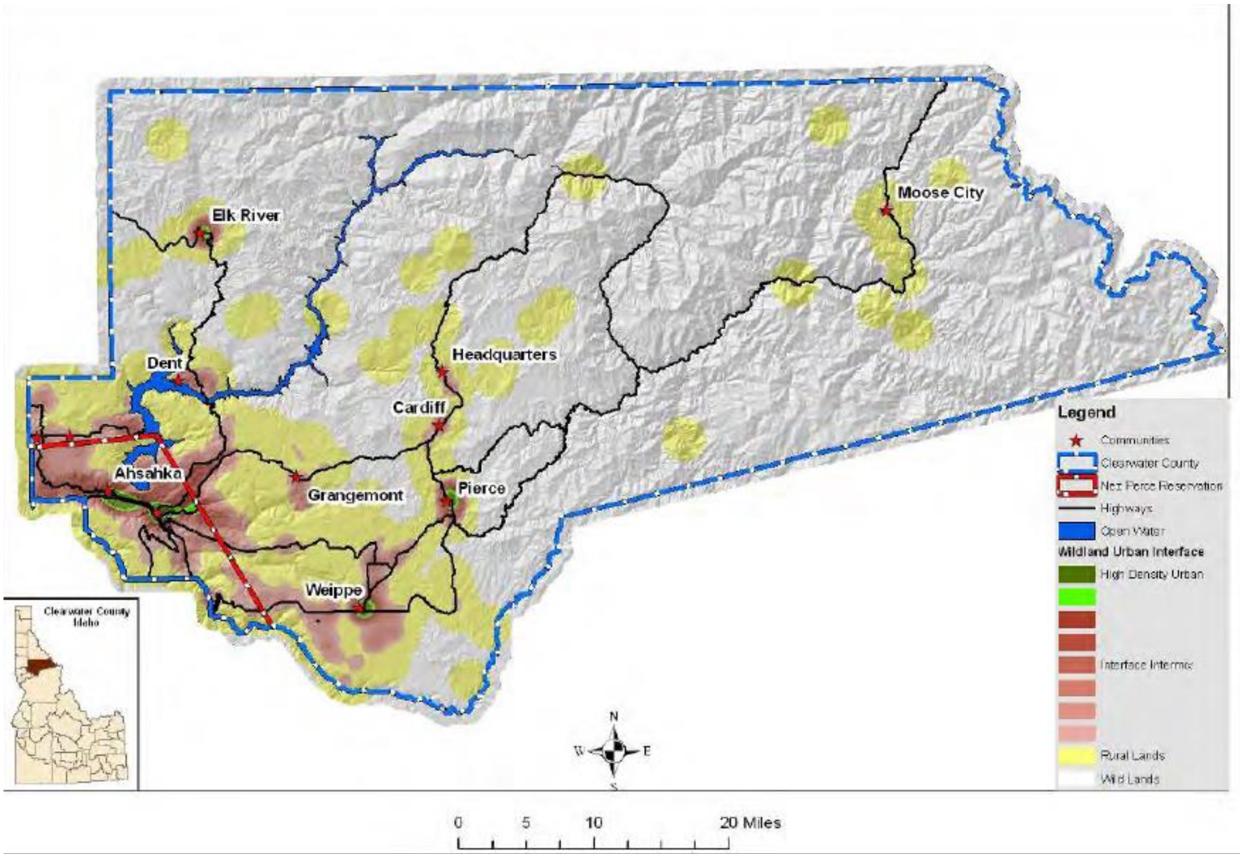
The "Wildland Urban Interface" is still vague: "The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels." As stated elsewhere, the Forest Service hasn't defined "fuels," which presently appears to be any vegetation at all. Also, the "Wildland Urban Interface" definition doesn't quantify how big this zone is. Perhaps the agency should use the science that the DEIS Fire Management section cited, Cohen 2000, who quantifies the ignition zone as 40 meters. Cohen 2000 states, *Because home ignitability is limited to a home and its immediate surroundings, fire managers can separate the W-UI structure fire loss problem from other landscape-scale fire management issues. The home and its surrounding 40 meters determine home ignitability, home ignitions depend on home ignitability, and fire losses depend on home ignitions. Thus, the W-UI fire loss problem can be defined as a home ignitability issue* ***largely independent of wildland fuel management issues.*** *This conclusion has significant implications for the actions and responsibilities of homeowners and fire agencies, such as defining and locating potential W-UI fire problems (for example, hazard assessment and mapping), identifying appropriate mitigating actions, and determining who must take responsibility for home ignitability.*

(emphasis added). Cohen 2000 also states, "[T]he wildland fire threat to home is not a function of *where* it happens related to wildlands, but rather to *how* it happens in terms of home ignitability." These are simply issues that belong to the homeowners and not the Forest Service.

We also stated in our scoping comments.

Furthermore, the definition of WUI is also partly based on "recommendations to the Secretary in a community wildfire protection plan." Our understanding is that community wildfire protection plans are written by folks such as county employees, outside of any public process such as NEPA. However well-meaning those planners might be, they are not accountable to the owners of these **national** forests. The WUI must be established in the context of NEPA, and therefore be subject to the test of good science and full and fair analysis, unlike the present delineations.

We would like to re-emphasize this. If the Forest Service is going to rely on "Wildland Urban Interfaces" and county wildfire protection plans, both the definition and the county plans must be reviewed under the National Environmental Policy Act and subject to the best available science. These county plans recommend "fuel treatments" on the forest lands owned by the public without any science and very suspect Wildland Urban Interface definitions. For example, in Clearwater County, forty acres with only one structure (any structure, even a barn) are forty acres that county considers a "wildland urban interface." Clearwater County also considers small clusters of structures separated by miles a "Rural Condition" that falls into a Wildland Urban Interface. Using these very liberal definitions of Wildland Urban Interface and ignoring Cohen's research that states that most ignitability begins with the structure itself, it's easy to see how the county arrives at recommendations to log well into the forest, even though the efficacy of these treatments are not supported by science. Here is a map of "Potential WUI Treatments" that Clearwater County recommended on Forest System Lands:



Note that there are treatment recommendations that are miles away from cities, even in some instances, away from and highways. On this map, they look like they are in the middle of the National Forest System. This vagueness and lack of science is why, if the Forest Service chooses to use these county fire plans, they must be subject to environmental review. NFMA and NEPA both require it. Logging on federal lands will do little to reduce wildfire risk to communities because ignition sources, topography, and weather all play a role. The odds of fuel treatments in the wrong areas are high. In fact, the better way for communities to address home ignition is land-use planning, i.e., zoning.

Writing a fire management section in the RFP that are geared at projects and not based on science is a deficient premise upon which to base any alternative. Homeowners who have chosen to live out near National Forest System Lands are the ones who are directly capable of protecting their own property. One of Friends of the Clearwater's staff members was on a field trip last October (2019) in which your district ranger, Terry Nevius, told those in attendance that these types of "community protection" projects (again, not effective according to the best available science) are so expensive for the Forest Service that it would be more cost efficient to buy out the homeowners.

There is nothing in this section that is enforceable and even informative. For example, the one standard in Fire Management is "All wildfires shall have a management response that considers risk to life and safety, taking into account the costs and effects to resources and values at risk." What does that mean? That you just think about it before you respond. What about, instead of a standard to "have a management response," the agency is more specific and actually uses the land-management plan to outline what that response would be more than merely "consider[ing]"? For example, what about a standard that allows naturally ignited wildfires burn naturally in recommended wilderness areas and roadless areas, with the Forest Service only monitoring? That is a standard that is more specific and actually provides direction, as compared to considering costs and effects to undefined resources and values.

The Forest Service need to entirely rework the premises that form the foundations upon which the goals, guidelines, objectives, and the one standard are based. A failure to do so will render this section of the DEIS completely inadequate. Please see below for best available science on fire ecology.

Fire ecology and fire management works cited

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Westerling et al. 2006. Warming and Earlier Spring Increase Western U.S. Forest Wildfire Activity.

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Zimmer, C. Oct. 12, 2018. 'Lifeboats' Amid the World's Wildfires. The New York Times.

SOIL ECOLOGY

"The social lesson of soil waste is that no man has the right to destroy soil… The soil requires a duty of man which we have been slow to recognize." [U.S. Dept. of Agriculture, 1957 Yearbook (quoting 1938 yearbook), p. vii.]

Soil as a living community

"Soil is a critical component to nearly every ecosystem in the world, sustaining life in a variety of ways—from production of biomass to filtering, buffering and transformation of water and nutrients." (Lacy, 2001.)

The DEIS recognizes the importance of soil:

> Soil is the primary medium for regulating the movement and storage of energy and water and for regulating cycles and availability of plant nutrients (Quigley, Haynes, & Graham, 1996). Soils have biological, chemical, and physical properties that are fundamental to the productivity of forest ecosystems and play an integral role in the hydrological behavior of watersheds (Neary, Klopatek, DeBano, & Ffolliott, 1999). Other resource values, such as water quality and quantity, wildlife habitat, and biomass production, are often dependent on and closely related to properly functioning and productive soils.

The most complex web of biodiversity is found in the organic soil layers of the forest floor. From Harvey et al., 1994:

> The ...descriptions of microbial structures and processes suggest that they are likely to provide highly critical conduits for the input and movement of materials within soil and between the soil and the plant.

The relation between forest soil microbes and N[13] is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.)

Bunnell et al., 2002 state:

> Dead wood makes its greatest contribution to biological richness as substrate for fungi, cryptogams, and invertebrates.

Well-rotted logs also serve as foci for dispersal of mycorrhizal fungi critical to tree productivity (Maser and others, 1978). Some "saprophytic" vascular plants (e.g., *Allotropa*, *Hemitomes*) rely upon mycorrhizal fungi that often are found in down wood for delivery of nutrients (Leake 1994). In British Columbia, 526 species of macrofungi are dependent on down wood, including some harvested commercially (Lofroth 1998).

Fungi are some of these microbial structures and processes, which perform keystone functions in the ecology of the forest. Without fungi, little of the diversity in the forest would be possible. Simard et al., 2015 have conducted research on relationships between some fungi and plants, how nutrient transfers are facilitated by fungal networks. The authors state, "resource fluxes though ectomycorrhizal (EM) networks are sufficiently large in some cases to facilitate plant establishment and growth. Resource fluxes through EM networks may thus serve as a method for interactions and cross-scale feedbacks for development of communities, consistent with complex adaptive system theory." The DEIS fails to examine such important ecological functions, and the DFP provides no assurance these functions will be maintained.

"The big trees were subsidizing the young ones through the fungal networks. Without this helping hand, most of the seedlings wouldn't make it." (Suzanne Simard: http://www.ecology.com/2012/10/08/trees-communicate/.) Simard et al., 2013 state, "Disrupting network links by reducing diversity of mycorrhizal fungi… can reduce tree seedling survivorship or growth (Simard et al, 1997a; Teste et al., 2009), ultimately affecting recruitment of old-growth trees that provide habitat for cavity nesting birds and mammals and thus dispersed seed for future generations of trees." (Also see the YouTube video "Mother Tree" embedded within the Suzanne Simard "Trees Communicate" webpage at: https://www.youtube.com/watch?v=-8SORM4dYG8&feature=youtu.be).

Also, Gorzelak et al., 2015:

> …found that the behavioural changes in ectomycorrhizal plants depend on environmental cues, the identity of the plant neighbour and the characteristics of the (mycorrhizal network). The hierarchical integration of this phenomenon with other biological networks at broader scales in forest ecosystems, and the consequences we have observed when it is interrupted, indicate that underground "tree talk" is a foundational process in the complex adaptive nature of forest ecosystems.

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[13] Nitrogen

Complex Adaptive Systems

Underground 'tree talk' is a foundational process in the complex adaptive nature of forest ecosystems. Since plants form the basis of terrestrial ecosystems, their behavioural interactions, feedbacks and influences are important in generating the emergent properties of ecosystems (Levin 2005). Given the connectivity inherent in the formation of MNs[14] and the impressive array of plant behavioural interactions that can be mediated through them, plant behaviour and MNs are intricately linked. In the interior Douglas-fir forests of British Columbia, seedlings regenerate within the MN of old conspecific trees. The architecture of the MN is scale-free, where hub trees are highly connected relative to other trees in the forest (Beiler et al. 2010), and this is characteristic of a complex adaptive system (Simard et al. 2013; Beiler et al. 2015). The scale of the MN is at least on the order of tens of metres (Beiler et al. 2010) and potentially much larger, with a single fungus sometimes spanning hundreds of hectares of forest (Ferguson et al. 2003). Recent work on the diversity of plant–fungal connections in forests revealed multiple levels of nestedness in the associations between host plants and fungal symbionts (Toju et al. 2014; Beiler et al. 2015). Each individual component (plant or fungus) of the ecosystem-wide network will, therefore, have a different potential to influence the behaviour of every other individual based on the extent, diversity and hierarchical level of its connections. As discussed above, the connections created by mycorrhizal fungi are agents for both positive (Song et al. 2010) and negative (Achatz et al. 2014) feedbacks to complex adaptive plant behaviour, which lead to self-organization of ecosystems (Simard et al. 2013; Beiler et al. 2015). Resilience is an emergent property of the interactions and feedbacks in scale-free networks (Levin 2005). Targeted loss of hub trees, however, can cross thresholds that destabilize ecosystems. Through the study of MNs, we are beginning to characterize the connections that are important to behaviour of system agents and thus ecosystem stability.

Also see Song et al., 2015; Beiler et al., 2009; and "Dying Trees Can Send Food to Neighbors of Different Species via Wood-Wide Web".

The scientists involved in research on ectomycorrhizal networks have discovered connectedness, communication, and cooperation between separate organisms. Such phenomena are usually associated within single organisms, e.g. the interconnections between neurons, sensory organs, glands, muscles, etc. in humans necessary for individual survival. Essentially, the function of ectomycorrhizal networks facilitate the soil community and thus, forest ecology.

The regulatory environment

In mandating the Forest Service to prepare regulations governing the creation of forest plans, the National Forest Management Act (NFMA) states:

> The regulations shall include, but not be limited to …specifying guidelines for land management plans developed to achieve the goals of the Program which:
>
> …insure research on and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land; **16 USC 1600 Section 6 (g)(3)(C)**

[14] MN = mycorrhizal network

> …insure that timber will be harvested from National Forest System lands only where …soil, slope, or other watershed conditions will not be irreversibly damaged; **16 USC 1600 Section 6 (g)(3)(E)(i)**
>
> The regulations shall include, but not be limited to …specifying guidelines which … provide for obtaining inventory data on the various renewable resources, and soil and water, including pertinent maps, graphic material, and explanatory aids; **16 USC 1600 Section 6 (g)(2)(B)**

The DEIS states:

> The objectives of **current national direction** on National Forest System lands are 1) to maintain or restore soil quality and 2) to manage resource uses and soil resources to sustain ecological processes and function so that desired ecosystem services are provided in perpetuity. (Emphasis added.)

Impacts or signs of stress include:

- surface and subsurface erosion
- compaction
- lack of ground cover and a dearth of coarse woody debris
- high severity burns, or
- mass movement.

The DEIS isn't explicit about what is meant by "current national direction" although it appears the agency is referring to "soil management direction in the Forest Service Manual 2500 series, Chapter 2550 …published in 2010 (which) gives overarching direction and definitions for soil quality management and soil inventory (U.S. Department of Agriculture, Forest Service, 2010)."

> The objectives of current national direction on National Forest System lands are 1) to maintain or restore soil quality and 2) to manage resource uses and soil resources to sustain ecological processes and function so that desired ecosystem services are provided in perpetuity (U.S. Department of Agriculture, Forest Service, 2010). The Nez Perce-Clearwater proposes to focus soil management on these objectives and move away from the current disturbance tracking as described in the No Action alternative.

Does this mean the NPCNF does not consider the "current policy in the Region 1 Soil Manual (USDA, 2014)" as binding, nondiscretionary direction?

That appears to be what the DEIS is saying, yet the DEIS states, "Regionally, Chapter 2550 was supplemented most recently in 2014." So the NPCNF is saying the Forest Service Manual 2500 series, Chapter 2550 is its policy, but not the Region 1 Soil Manual? The DEIS is confusing.

We do note that nothing in the DFP very much resembles the content of the "current policy in the Region 1 Soil Manual (USDA, 2014)" (DEIS.) There isn't even an explicit statement of intent (e.g., Desired Condition) to comply with in the Region 1 Soil Manual. This is mysterious.

The Forest Service Manual 2500 series, Chapter 2550 definitions include:

> Permanent Soil Impairment. Detrimental changes in soil properties (physical, chemical, and biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource that lasts beyond a land management planning period.

How does the DFP direct the NPCNF to measure, monitor and inventory these **permanent soil impairments** (detrimental changes which last beyond the 15 years of the life on the forest plan)?

The Forest Service Manual 2500 series, Chapter 2550 definitions also include:

> Substantial Soil Impairment: Detrimental changes in soil properties (physical, chemical, or biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource that lasts beyond the scope, scale, or duration of the project causing the change.

How does the DFP direct the NPCNF to measure, monitor, and inventory these **substantial soil impairments** (detrimental changes that lasts beyond the scope, scale, or duration of the project causing the damage)?

The Forest Service Manual 2500 series, Chapter 2550 states, "Regional foresters have the **responsibility** to …**Establish soil quality objectives and/or standards** and revise when new scientific information or management direction is developed. … **Maintain consistency in procedures and methods for determining soil quality**. That appears to be the role of the aforementioned 2014 Region 1 Soil Manual (Region 1 Supplement).

The 2014 Region 1 Soil Manual states it is the responsibility of Forest Supervisors to:

a. Ensure that Forest-wide and project-level plans include soil quality standards.

b. Assess the extent to which soil quality standards are being met and whether they are effective in maintaining or improving soil quality.

c. Provide training in the application of soil quality standards.

d. Evaluate the effectiveness of soil quality standards and recommend adjustments to the Regional Forester.

e. Report monitoring results to the Regional Forester.

Since 2014, what has the NPCNF Forest Supervisor done to comply with b, c, d, and e? Please cite and provide the documentation.

Did the Forest Service prepare the 2010 Forest Service Manual 2500 series Chapter 2550 and/or the 2014 Region 1 Soil Manual using a National Environmental Policy Act (NEPA) process?

Did the Forest Service prepare the 2010 Forest Service Manual 2500 series Chapter 2550 using the planning process specified under the NFMA Regulations in effect at that time?

Did the Forest Service prepare the 2014 Region 1 Soil Manual using the 2012 Planning Rule?

The DEIS states, "Operationally, the Forest Service mitigates actions using a series of design criteria in projects following standard best management practices in Forest Service Handbook 2509.22 (USDA, 1987)…" Is this FSH direction on this subject from 1987 the most recent?

Forest Service Manual, Chapter 2550 directs the Washington Office Director of Watershed, Fish, Wildlife, Air, and Rare plants to "coordinate validation studies of soil quality criteria and indicators with Forest Service Research and Development staff to ensure soil quality measurements are appropriate to protect soil productivity." Please cite these validation studies. Are these studies considered best available scientific information for forest management and planning purposes?

The DEIS Analysis

Cites in this section are from the DEIS unless otherwise indicated.

> "Soil productivity has been altered to varying degrees where past land use has occurred. These human-caused stressors include timber harvest and associated skid trails; landings and temporary roads; fuels reduction activities; landscape prescribed burning; livestock grazing; mining; road and trail construction; wildfire suppression operations; dispersed camping; introduction of invasive plant species; invasive plant treatment; and off-road motor vehicle use."
>
> "The greatest impacts to the soil resource have resulted from log yarding and temporary road construction associated with timber harvest. Yarding actions compact and displace soil from skidding logs using ground based equipment or skyline systems. Road building and landing construction removes surface soil. In addition, timber extraction reduced ground cover, altered vegetative conditions, decreased infiltration rates, increased runoff and surface erosion rates, and diminished site productivity depending on the intensity and efficacy of operations."
>
> "Since it can take 800 to 1,000 years for one inch of soil to form, it is very important to minimize impacts to the soil resource." Yet the DEIS's analyses of plan implementation focus very narrow temporally: "This analysis takes a programmatic look at the outcomes that may result from implementing the proposed management direction for each alternative **over the life of the forest plan, an estimated 15 years**." (Emphasis added.)

The DEIS states, "This programmatic forest plan analysis focuses on broad-scale estimated effects related to soil productivity on National Forest System lands. **The analysis area for soils include all the lands within the boundary of the Nez Perce-Clearwater**." (Emphasis added.) Yet the DEIS fails to provide any quantitative estimates of forestwide reductions of soil productivity due to management actions. This includes "timber harvest and associated skid trails; landings and temporary roads; fuels reduction activities; landscape prescribed burning; livestock grazing; mining; road and trail construction; wildfire suppression operations; dispersed camping; introduction of invasive plant species; invasive plant treatment; and off-road motor vehicle use."

The DEIS states:

> Soil productivity relies on complex chemical, physical, and climatic factors that interact within the soil. These factors regulate the soil environment that sustains soil microbes and nourishes plants. For any given site and soil, a change in a key soil variable, such as compaction, soil loss, and nutrient availability, impacts potential soil productivity. The rebound after disturbance, such as from erosion or tractor compaction, will depend on climatic context for rebuilding organic matter and soil properties. Soil disturbance on dry sites recover slower than wet sites since rainfall accelerates regrowth of soil microbes and vegetation. This varied site recovery complicates using soil disturbance criteria. (Emphasis added.)

The DEIS says that "Since soil productivity is difficult to measure and varies according to seral stage and site, the Forest Service uses soil disturbance criteria to evaluate soil productivity.

These disturbance criteria provide benchmark values that relate to the capacity for soils to function, otherwise called soil quality. **If disturbance intensity exceeds established thresholds, then the <u>disturbance is considered detrimental</u> and long-term soil productivity could be potentially impaired**." (Emphases added.)

It seems the NPCNF is now planning to ignore its own best available scientific information by completely forgoing the measurement, estimation, and monitoring of detrimental soil disturbance (See above under **<u>The regulatory environment</u>**). So please explain what "established thresholds" means and how the NPCNF will measure, monitor, and inventory "the disturbance …considered detrimental"?

The DEIS states:

> The Forest Service also initiated a cooperative research project called the North American Long-Term Soil Productivity Study in the early 1990s to better understand soil disturbance impacts on productivity, including understanding site recovery. …The ongoing Long-Term Soil Productivity Study provides the best available science to resource professionals. At ten years, no observed reduction in tree growth were detected as a result of compaction or organic matter removal in plots with soils generally similar to those found on the Nez Perce-Clearwater (Powers et al., 2005).

However, the DEIS also admits, "The lack of long-term study results… creates controversy on the judgment of "irreversible damage" as defined in the National Forest Management Act."

So it appears that, despite regulatory requirements beginning with the NFMA (and even before that, regarding sustained yield with the MUSYA), the agency still does not know if it is managing consistently with NFMA's mandate to avoid long term impairment of the productivity of the land and soil.

The DEIS states, "soil has the ability to either store or release greenhouse gases, thereby potentially influencing climate change. The potential impacts of anthropogenic climate change on the forest soil resource are not well known at this time." Climate change impacts on soils is an important issue, but the Forest Service is basically ignoring the fact that its land management practices degrade the carbon sequestering ecosystem service provided by intact, fully functioning soil. Kutsch et al., 2010 provide an integrated view of the current and emerging methods and concepts applied in soil carbon research. They use a standardized protocol for measuring soil CO2 efflux, designed to improve future assessments of regional and global patterns of soil carbon dynamics:

> Excluding carbonate rocks, soils represent the largest terrestrial stock of carbon, holding approximately 1,500 Pg (1015 g) C in the top metre. This is approximately twice the amount held in the atmosphere and thrice the amount held in terrestrial vegetation. Soils, and soil organic carbon in particular, currently receive much attention in terms of the role they can play in mitigating the effects of elevated atmospheric carbon dioxide (CO2) and associated global warming. Protecting soil carbon stocks and the process of soil carbon sequestration, or flux of carbon into the soil, have become integral parts of managing the global carbon balance. This has been mainly because **many of the factors affecting the flow of carbon into and out of the soil are affected directly by land-management practices**. (Emphasis added.)

The 2012 Planning Rule recognizes, in its definition of Ecosystem services, the "Benefits people obtain from ecosystems, including: (2) Regulating services, such as long term storage of carbon; climate regulation…"

Soil wood

Quantities of (organic materials) and their distribution, especially decaying wood and humus, have integral and sometimes critical roles to play in supporting the growth of forest trees. (Harvey et al., 1987.)

The retention of coarse woody debris is essential to maintaining soil organic matter, soil productivity, and sustainable forest ecosystems (Graham et al., 1994). USDA Forest Service, 2006d states, "Coarse wood is an important element for recovery after harvest and burning given the ameliorative effects. The wood provides microsites for microbial activity, retains carbon on site, and may moderate soil moisture (Graham et al 1994, Brown et al 2003)."

USDA Forest Service, 2006d states:

> Although often overlooked in forest management plans, the importance of soil organic matter cannot be overstated (Okinarian, 1996; Jurgensen et al. 1997). This organic component contains a large reserve of nutrients and carbon, and is dynamically alive with microbial activity. The character of forest soil organic matter influences many critical ecosystem processes such as the formation of soil structure, which in turn influences soil water infiltration rates and soil water holding capacity. Soil organic matter is also the primary location of nutrient recycling and humus formation, which enhances soil cation exchange capacity and overall fertility.
>
> These processes have direct and tremendous effect on site productivity and sustainability. Fortunately, organic matter is the one component of the soil resource that, if managed correctly, human activity can actually improve. Manipulation of the organic constituents of the soil may be the only practical tool available for mitigating effects of harvesting systems that remove standing trees and dead and down trees, or cause extensive soil disturbance. Of the many organic materials incorporated in a forest soil, the woody component is in many ways the most important. To protect the sustainable productivity of the forest soil, **a continuous supply of organic materials must be provided**, particularly in harsh environments (Harvey et al. 1987). **A clear understanding of fungal processes and the creation of soil organic matter are essential for forest management and forest soil restoration.** (Emphases added.)

USDA Forest Service, 2006d states:

> Promoting biologic activity is the best way to remediate damaged soils (Powers, 1998). Soil flora and fauna break-up compacted soils. Soil fungal processes are especially important, primarily mycorrhizae fungi and those associated with organic matter decomposition. Biologic activity influences many physical characteristics of the soil; for example, soil aggregation and associated water infiltration and gas exchange.

USDA Forest Service, 2006d states:

> Typically, forest litter contributions should balance with organic decomposition rates. This process depends on an adequate supply of needles and wood from the forest canopy or

dying trees. Silvicultural prescriptions should consider this issue. If too many trees are removed from a forest, organic matter is lost in several ways:

- Reduced canopy cover reduces the source of annual organic matter contributions.
- Reduced canopy cover and associated forest floor heating increase organic matter decomposition rates.

USDA Forest Service, 2006d states:

> (T)he role of fungi is essential for the continuance of many ecosystem processes.
>
> Wood decay fungi in the coniferous forest ecosystem have three major roles:
>
> 1) breaking down plant residues and recycling carbon to the soil or the atmosphere;
>
> 2) releasing mineral nutrients from plant residues and making the nutrients available to living organisms; and
>
> 3) producing the physical character of the soil organic matrix.
>
> The outcomes of these processes promote soil water infiltration rates, soil water-holding capacity, cation exchange capacity, nutrient availability, nitrogen fixing activity, and habitat for mycorrhizae associations, to name a few.

Silvicultural plans that promote fungal processes will prescribe harvests that preserve a cool, moist microclimate and provide for a continuous source of large woody debris for use by fungi.

However the DEIS and DFP do not consider best available scientific information indicating pieces of large wood only meeting the DFP minimum size criteria are not large enough to facilitate and support vital soil processes. Stevens, 1997 states:

> In the Pacific Northwest, the moisture content of a decaying Douglas-fir tree bole increased as the decay class increased until at about decay class IV the moisture content in summer was 250% of the dry weight (Maser et al. 1988). All size classes of decaying wood act as a moisture store and provide refugia for tree roots and ectomycorrhizal fungi during dry periods; however, **the larger pieces can hold more water and are therefore more effective at holding moisture and acting as refugia through long, dry spells.** When moisture returns to the site, it is a much faster process to reinvade the organic layer of soil with ectomycorrhizal root tips when refugia are scattered throughout the forest floor.

(Emphasis added.)

Heilmann-Clausen & Christensen 2004 note that "**small diameter wood appear to be unable to support heart-rot agents** and other species depending on a long and diverse infection history …Therefore, we strongly recommend that **whole, naturally dead trees, representing the full range of CWD habitats**, are prioritised for natural decay in managed forests whenever possible." (Emphases added.)

How these relatively large dead logs facilitate vital soil processes is explained in USDA Forest Service, 2006d (emphases added):

> No discussion about forest woody debris and biological activity would be complete without promoting the values of brown cubical rot, and recommendations that may

increase the amount of the product of this unique decomposition process across the landscape.

The brown-rotters belong to the *Basidiomycota*. Their most interesting and telltale characteristic is their ability to utilize only cellulose, and their *inability* to degrade lignin.

Residue left after advanced brown-rot decay is a brown, crumbly mass composed largely of lignin. In healthy forest ecosystems, especially coniferous forests, the upper-most soil horizon contains a significant portion of brown-rotted wood residues. The sponge-like properties of advanced brown-rotted wood act as a moisture and nutrient sink. Because of the high lignin concentrations, and little carbohydrate, it persists in the forest for a long time (Blanchette, 1995).

The lignin product of brown rot is tremendously important in the forests of Western Montana. Since brown rot typically effects only heart wood, **it is important that large trees are allowed to die and decompose naturally in the woods**. For example, a Ponderosa pine 36 inches in diameter may possess **24 inches of heart wood**. This in turn decomposes to a **16 inch zone of brown cubical residue**. **This stuff is often referred to as soil wood**. Early logging techniques that dozed forest debris into piles then burned the organics significantly reduced the occurrence of soil wood in our forests. Soil wood possesses one characteristic that make it important; the ability to hold water. This high water holding capacity provides:

- Plant available water – especially during the driest months.
- Excellent underground habitat for all types of soil biological activity.
- Appropriate conditions that cause a hub of mycorrhizae fungi activity.

Jurgensen et al., 1997 state:

> Virtually all of the soil wood in Inland Northwest forests is a product of brown-rot decay and comes from individual site differences, such as slope, parent material, and large residues with appreciable amounts of heartwood, soil depth, also make regional organic matter/productivity especially pine species and Douglas-fir (Harvey et al. extrapolations difficult. 1987a). **Brown-rotted wood remains in the soil for hundreds of years (McFee and Stone 1966, Harvey et al. 1981), thus affecting soil properties for long periods**. (Emphasis added.)

In order to reconstitute adequate supplies of decayed wood in soils depleted in this resource, lag periods in the 100-to 300-year range can be expected. (Harvey et al., 1981). This indicates a large percentage of the logged portion of the NPCNF is centuries away from being within the NRV for fundamental ecological soil structures and soil process. The Forest Service cannot claim to be sustaining forest resources under the DFP Alternatives' vegetation management paradigm.

The DEIS states:

> Soil organic matter is extremely important in regulating soil function for plant nutrition and water (Jurgensen et al., 1997). … Page-Dumroese and Jurgensen (2006) outlined the variable amounts of nitrogen and carbon – two essential elements for productivity – in habitats that cover the Nez Perce-Clearwater. Their work underscores the importance while also giving baselines for these important nutrients. Similarly, research was

> completed during the last planning cycle that gives explicit ranges for coarse wood debris (Graham et al., 1994). These recommendations acknowledge the strong above ground and below ground connections between ecto and endo mycorrhizae for tree and understory growth (Harvey, Jurgensen, Larsen, & Graham, 1987) (Perry et al, 1989). These recommendations endure due to the long-term work that went into describing these ranges and the re-enforcement by more recent research of explicit connections across tree fungal networks.

Graham, et al., 1994 state:

> Organic materials, especially humus and buried residue in the advanced stage of decay, are excellent sites for the formation of ectomycorrhizal root tips (Harvey and others 1981). Even though these materials may make up only a small portion of a soil horizon they may contain the majority of ectomycorrhizae. Ectomycorrhizae help woody plants take up water and nutrients, and their fruiting bodies play important roles in the food chains of many small rodents and larger predators (Maser 1990; Maser and others 1986; Reynolds and others 1992).

Ectomycorrhizae absorb moisture and nutrients, and translocate them to their host plants, making ectomycorrhizae essential for the development of forest ecosystems (Harley and Smith 1983; Harvey and others 1979; Harvey and others 1987; Marks and Kozlowski 1973; Maser 1990). Therefore, we assume their presence and abundance to be a good indicator of a healthy, functioning forest soil. Ectomycorrhizae have a strong positive relationship with soil organic materials (Harvey and others 1981).

Also see our discussion of this subject above under **<u>Soil as a living community</u>**. The DEIS fails to consider the ecosystem impacts from industrial management activities on soil mycorrhizal networks, and the DFP is written in virtual ignorance of these ecological relationships in the soil. The industrial forestry management paradigm represented by the DFP inevitably destroys what it fails to recognize.

The DFP plan elements

Here, we discuss how the DFP plan elements represents the overall inadequacy of existing regulatory mechanisms for protecting soil productivity on national forests as recognized by Lacy, 2001.

For the issue of protecting soil productivity, the DFP is an example of the watering down of a strong statutory requirement into weak forest plan direction that doesn't meet legal mandates. How, for instance, can the Plan conform to the NFMA requirement to "not produce substantial and permanent impairment of the productivity of the land" if the Forest Plan allows extensive, almost permanent soil property degradation on a significant portion of the productive timber base of the Forest?

The DFP sets absolutely no limit to the amount of soil loss or damage that is allowed in livestock grazing allotments or pastures, logging or burning units, temporary roads or landings, etc.

The DFP defines Soil Quality as "The capacity of the soil to **function** within ecosystem boundaries to sustain biological productivity, maintain environmental quality, and promote plant and animal health relative to inherent conditions prior to any activity caused soil disturbance." (Emphasis added.)

The "Regional direction (USDA, 2014)" (DEIS) defines Soil Function as "Primary soil functions are: (1) the sustenance of biological activity, diversity, and productivity, (2) soil hydrologic function, (3) filtering, buffering, immobilizing, and detoxifying organic and inorganic materials, and (4) storing and cycling nutrients and other materials."

The DFP contains these three Desired Conditions for soil:

> **FW-DC-SOIL-01.** Soil productivity and function contributes to the long-term resilience of ecosystems.
>
> **FW-DC-SOIL-02.** Soil organic matter and down woody material support healthy microbial populations, protect soil from surface erosion, facilitate soil moisture retention, provide nutrients, and maintain soil development and biochemical processes.
>
> **FW-DC-SOIL-03.** Volcanic ash-influenced soils are intact and retain unique properties, including high soil porosity and high water and nutrient holding capacity.

With those three DCs, the Forest Service doesn't have to do anything—the soil is the protagonist. Management actions by the Forest Service are the antagonist.

In regards to the soil organic matter and down woody material issue raised in FW-DC-SOIL-02, there is no mandate to actually provide sufficient structure following vegetation management actions. Guideline MA2 and MA3-GDL-FOR-01 provides some direction:

> To ensure sufficient organic materials to maintain nutrient cycling and soil biology and to provide habitat structure for various terrestrial wildlife, the levels listed in Table 11 of downed coarse woody material greater than 3 inches should be retained onsite following regeneration harvest and fuels management and site preparation activities. The following amounts are recommended by Graham et al (1994) and are intended to give general direction for retention of coarse woody debris within potential vegetation type groups. If sufficient downed coarse woody material is unavailable, standing retained trees and snags may be counted toward meeting the numbers in the table below. Exceptions to vary from the ranges listed may occur in areas near administrative sites, developed recreation sites, sensitive natural resources, or historic properties. Coarse woody material should be well distributed across each treatment unit.

The DEIS also states, "Regional direction (USDA, 2014) for organic material recommends following guidelines outlined in Graham et al (1994), which recommends maintaining between 7 to 33 tons per acre of coarse wood material depending on habitat type, moisture regime, and aspect." Yet "recommendations" do not constitute mandatory, nondiscretionary direction. Perhaps this explains why "Post activity monitoring found coarse wood levels were overall low; 33 percent of the harvest units met minimum coarse wood thresholds." (DEIS) The Forest Service doesn't take it seriously.

The DFP, as well as Regional direction (USDA, 2014) omit a critical issue concerning soil organic matter—that being the <u>size of the down logs</u> as they are incorporated into the soil. The DFP defines Coarse Woody Debris (CWD) as: "Woody material derived from tree limbs, boles and roots in various stages of decay that is larger than three inches in diameter." This size specification is derived from Graham et al (1994). By adopting a definition that fails to recognize the critical functions and processes represented by much larger logs (e.g., MA2 and MA3-GDL-FOR-01), the DFP falls far short of meeting its claims of sustaining forest resources. See our above discussion under <u>**Soil Wood.**</u>

In regards to FW-DC-SOIL-03 the DEIS states:

> Most soils have surface layers formed in loess that has been influenced by volcanic ash. The most significant and influential layer of this loess was deposited on the Nez Perce-Clearwater approximately 6,700 years ago by the eruption of Mount Mazama, or Crater Lake, in Oregon. Additional loess that has been influenced by volcanic ash was deposited by eruptions of Mount Saint Helens and Glacier Peak. These ash deposits range from over 36-inches thick in depressions to very thin deposits that may be mixed with underlying materials on steep southerly aspects at lower elevations to no deposits remaining on the most southerly end of the Nez Perce-Clearwater. The ash deposits produced highly productive soils with excellent water-holding characteristics (Geist & Cochran, 1991).

Soils with a surficial volcanic ash deposits, or ash cap, are another group of sensitive soils on the Nez Perce-Clearwater and are instrumental to the high productivity of the Nez Perce-Clearwater. Using forest mapping, ash soils cover approximately 825,000 acres, or 20 percent of the Nez Perce-Clearwater, and increase in depth to the north and west. Elevationally, ash occurs from 1,000 to 5,900 feet (Kimsey et al, 2006).

Ash caps are extremely susceptible to decreased soil quality due to compaction, erosion, and soil mixing (D. Page- Dumroese, Miller, Mital, McDaniel, & Miller, 2007). Ashy soils do not recover from compaction as quickly as other soil types. Since volcanic ash is not replaced, the effects of erosional losses of the ash cap can be permanent.

We further note that the NPNF's American River/Crooked River FEIS states:

> Decompaction can at least partly restore soil porosity and productivity. Soil displacement that mixes or removes the volcanic ash surface layer reduces soil moisture holding capacity, which may be irreversible and irretrievable.

Page-Dumroese, 1993 is a Forest Service research report investigating logging impacts on volcanic ash-influenced soil in the Idaho Panhandle National Forest.

The Forest Service will not manage consistent with FW-DC-SOIL-03 under any Alternative.

Objective FW-OBJ-SOIL-01 is to "Restore impaired soil acreage within timber harvest units annually." Soil Restoration is defined in the DFP as "Management actions taken specifically to restore soil physical, chemical, or biological properties that have been degraded due to either management caused or natural disturbances." The biggest problem with this Objective is, perversely, if 1000 acres of soil are damaged by a timber sale, and 250 are "restored" this Objective is being served. This should only apply to damage existing prior to a Decision being made that includes soil restoration.

The 2014 Region 1 Soil Manual definition of Soil Restoration recognizes, "It is recognized that **treatments may need to occur over a period of years and may need to be maintained**" and suggests "restoration treatments could include, but are not limited to, tillage, ripping, seeding, mulching, recontouring if temporary roads, and water barring." (Emphasis added.) USDA Forest Service, 2006d agrees: "Soil quality restoration takes time. No technique works immediately."

The 2012 Planning Rule doesn't use the word "restore" in its definition of restoration, thankfully, but it does mix in some unmeasurables at the end: "The process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary **to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions**. (Emphasis added.)

Also, the acres should not apply to soils not needing restoration now. That is, this objective could potentially be abused as a mitigation for new activities that degrade soil.

In addition, the DEIS states:

> An example of irreversible damage to soils is when management activities excavate soil for temporary road construction that removes volcanic ash cap topsoil. Soil recovery could still occur in the remaining subsurface soils yet the exceptionally high porosity and water-holding properties of the Mazama ash cap would likely be irrecoverable.

Temporary roads, excavated skid trails, and landings are considered 100 percent detrimental disturbance with reduced soil productivity until vegetation, organic matter, and hydrologic function are restored. The greatest disturbance associated with the activities is the displacement or mixing of the topsoil, including the Mazama ash cap, during excavation.

Doesn't this mean every acre detrimentally disturbed by temporary roads or other soil displacement represents "permanent impairment of the productivity" of the soil?

The DEIS states:

> Methods have been shown to improve soil structure and soil porosity based on road decommissioning trials on the Clearwater National Forest. Local research by Lloyd et al (2013) found these techniques improved infiltration rates and soil bulk densities to values similar to never-roaded areas at 1, 5, and 10 years following decommissioning.

In regards to this, the DEIS states, "the restored temporary road is far more productive than the untreated road." True, but in reality, DSD is <u>mitigated</u> on these sites—it's not genuinely **restored**.

The DEIS should not imply that Lloyd et al., 2013 demonstrate that a heavily disturbed road template can be decommissioned to the degree the site no longer meets the definition of DSD. That's not what Lloyd et al., 2013 show. The researchers found improvement in soil quality, however the researchers did not use presence, absence, or improvements using metrics of DSD to document improvement. The study's main point was to show that some recovery of soil functioning was achieved by recontouring highly disturbed old road templates rather than merely abandoning them to natural recovery. Lloyd et al., 2013 state, "(T)hese findings support the prediction that recontouring accelerates the rehabilitation of key ecohydrologic properties toward reference dynamics." That's "toward" recovered conditions, not recovered to natural or non-DSD conditions.

The DFP does not mandate soil restoration any more urgently than recent projects on the NPCNF. Of those projects, the DEIS states:

> Some timber sale projects have included soil restoration to achieve a net decrease of detrimentally disturbed soil to meet forest plan standards. **Unfortunately, post-harvest surveys using the national soil disturbance monitoring protocol (D. S. Page-Dumroese et al., 2009a, 2009b) indicate that the restored soils are still technically considered determinately disturbed by definition.** (Emphasis added.)

Standard FW-STD-SOIL-01 is “Land management activities shall be designed and implemented in a manner that maintains soil function and productivity.” Please explain what is measurable concerning that standard.

Standard FW-STD-SOIL-02 is “In order to maintain long-term soil productivity, impaired soil function created through management activities, including fire suppression, shall be rehabilitated to reestablish soil function to the appropriate site potential. Limited short-term or site-scale effects from soil rehabilitation actions may be acceptable when they support long-term benefits to soil resources.” Please explain what is measurable concerning the first part of this standard. Concerning the second sentence, this means short-term damage is okay if the damage “supports” (?) long-term benefits.

“Reestablish soil function to the appropriate site potential” “Limited short-term” “site-scale” “long-term benefits”—the terminology is too vague. Nobody could be held accountable if there’s no given way to evaluate performance. This would fail to serve as a Standard.

Standard FW-STD-SOIL-3 is “Project specific best management practices and design features shall be incorporated into land management activities as a principle mechanism for protecting soil resources.”

BMPs and design features—the “principle mechanism”?

The DFP doesn’t state these mechanisms allegedly being at the pinnacle of soil protections, instead pointing to locations outside the Forest Plan:

Federal and State Best Management Practices

Federal National Best Management Practices Program: The goal of the National Best Management Practices Program is to improve agency performance, accountability, consistency, and efficiency in protecting water quality, and is a significant component of the Agency’s water strategy. The National Best Management Practices Program enables the Agency to readily document compliance with the management of nonpoint source pollution at local, regional, and national scales and address the planning rule requirement for national BMPs (36 CFR 219.8(a)(4)). BMPs are outlined in the **National Core BMP Technical Guide (USDA FS, 2012).** Direction for the implementation of this program is found in Forest Service Handbook 2509.19 and additional guidance is located at https://www.fs.fed.us/naturalresources/watershed/bmp.shtml.

Idaho Forest Practices Act (IDAPA 20.02.01): Since 1974, the State of Idaho has encouraged sustainable forest management on Idaho forestland through compliance with minimum **Best Management Practices detailed in the “Rules Pertaining to the Idaho Forest Practices Act, Title 38, Chapter 13, Idaho Code**. (Emphases added.)

These BMPs, allegedly the DFP’s “principle mechanism for protecting soil resources” must be spelled out in the Forest Plan, not stashed away in a place where the public would not be informed if they are modified/amended. Again, the agency should be offering the public ways the agency can assisted if it stumbles, and be held accountable if it chooses to disregard. BMPs must be written as Standards.

Guideline FW-GDL-SOIL-01 is “To maintain soil stability, ground-disturbing management activities should not occur on field verified mass movement areas if they have the potential to trigger a slope failure. Vegetation management activities may be authorized to provide for long-term slope stability."

Where's the mandate to locate such sites? What is the definition of a "mass movement area"? And this also appears to open a loophole to log on mass movement areas ("may be authorized to provide for long-term…"). This Guideline may not turn out to restrain anything at all.

Guideline FW-GDL-SOIL-02 reads, "Project activities should provide sufficient effective ground cover, such as litter, fine, and coarse wood material, or vegetation with a post-implementation target of 85 percent aerial extent of an activity area to retain soil moisture, support soil development, provide nutrients, and reduce soil erosion. The depth and distribution of organic matter reflects the amounts that occur for the local ecological type and natural wildland fire regime."

Again, this is rife with ambiguity. "Reflects the amounts that occur for the local ecological type and natural wildland fire regime"—how is that measured, what is the criteria for "sufficient effective"?

Guideline MA2 and MA3-GDL-SOIL-01 states, "To maintain soil productivity, ground-based equipment used for vegetation management should only operate on slopes less than 45 percent. Tractor skidding of logs should only occur on slopes less than 35 percent to limit detrimental soil disturbance. Exceptions can be authorized where soil, slope, and equipment are determined appropriate to maintain soil functions.

This is generally steeper than existing forest plans, with no best available scientific information cited as justification. "Exceptions can be authorized" based upon fuzzy criteria to make this Guideline completely discretionary, a total loophole.

The DEIS says: "A recent shift in timber practices that may increase soil disturbance over the next planning period includes the use of cable assisted logging, which is a mixed ground-based and skyline system on grounds with greater than 45 percent slope. In these steep areas, feller bunchers harvest the trees and skyline systems yard the material to landings. Monitoring has shown mixed results ranging below and above what is typical of ground-based equipment operations." This Guideline reads like a lose-lose proposition.

Guideline MA2 and MA3-GDL-SOIL-02 states, "To limit additional soil disturbance, existing or past disturbed areas should be utilized before creating new soil disturbance for temporary roads, skid trails, or landings."

We note that this guideline assumes the Forest Service failed to restore and rehabilitate its past actions appropriately and so this seems to be piling more damage upon the result of omissions or failures of previous mitigation.

Also, this largely assumes the locations of the trees selected to be logged previously are the same this time. Geology may not change, but these aren't the same trees in the same locations.

Further, this seems to perversely incentivize the Forest Service to maintain on the landscape the disturbances of temporary roads, skid trails, or landings for future use—without there being any direction to maintain an inventory of such damages or totally eliminate them post-project. At the very least, this Guideline needs to be accompanied by direction to maintain official inventories of such features.

We also note that this basically admits that temporary roads, skid trails, or landings represent permanent soil damage, which—at least without specific limits and a requirement of inventories—violates NFMA. And it basically nullifies FW-STD-SOIL-02.

Guideline MA2 and MA3-GDL-SOIL-03 states, "When conducting management activities that have the potential to impair soil function and productivity, areas of impaired soil function from past management activities should be treated in order to facilitate long-term soil productivity and function."

This Guideline is spot-on where it requires restoration (although it doesn't use that word); however these restoration benefits are only in the context of management that does more damage. This Guideline is totally accepting of the situation where, damaged soil after project > damaged soil before project.

We note the DEIS states, "Old yarding templates and landing areas not used by current timber sales would be reclaimed as part of a net improvement approach." But the Guideline itself doesn't specify net improvement need occur.

The Guideline reflects some good intent, but nothing measurable is specified, there is no mechanism of accountability. This Guideline would be ultimately ineffective.

Guideline MA2 and MA3-GDL-SOIL-04 states, "To maintain long-term soil productivity, when conducting post wildland fire vegetation management activities, avoid permanent soil impairment on soils that have verified high soil burn severity.

All that's required of the Forest Service for logging on soils that have verified high soil burn severity is to declare that the additional damage is not permanent. Decades later is the only time to measure and validate to check Plan consistency.

The DEIS says, "Because salvage harvest occurs on soils that have already been impacted by wildfire, **soils are less resilient to additional impacts from ground disturbance**. This is especially true in areas where soils were severely burned, altering the soil chemical, biological, and physical properties." (Emphasis added.)

This is not a useful guideline. Its purpose is to loophole into the DFP the logging on post-fire landscapes, when conditions are such that "soils are less resilient to additional impacts from ground disturbance."

Guideline MA2 and MA3-GDL-SOIL-05 states, "After a road is decommissioned or after cessation of management activities on temporary roads, soil function appropriate to the site potential shall be restored using demonstrably effective methods.

Good intent, but too vague, nothing measurable is specified, there's no mechanism of accountability.

The DFP defines Activity area:

> A land area affected by a management activity to which soil quality standards are applied. An activity area must be feasible to monitor and includes harvest units within timber sale areas, prescribed burn areas, grazing areas or pastures within livestock allotments, riparian areas, recreation areas, and alpine areas. Temporary roads, skid trails, and landings are considered to be part of an activity area.

The Forest Service Manual 2500 series, Chapter 2550 definitions include:

> Substantial Soil Impairment: Detrimental changes in soil properties (physical, chemical, or biological) that result in the loss of the inherent ecological capacity or hydrologic function of the soil resource that lasts beyond the scope, scale, or duration of the project causing the change.

The DFP contains no plan elements requiring the Forest Service to measure, monitor, and inventory these **substantial soil impairments** (detrimental changes "that lasts beyond the scope, scale, or duration of the project causing the damage").

We conclude that the DFP plan elements for soil would not require the Forest Service to measure anything during projects, surely not as now occurs at the "activity area" level—which the Forest Service has identified as its sole cumulative effects analysis area for soils analyses: "Any direct, indirect, and cumulative effects to the soil resource by vegetation treatment activities will occur in this activity area. The cumulative effects analysis area is the same activity area." (Center Johnson Environmental Assessment, NPCNF, October 2018.)

As the NPCNF's Hungry Ridge FEIS sums it up:

> These Regional Soil Quality Standards[15] require that detrimental management impacts to the soil resource are less than 15 percent of an activity area and that retention of coarse woody material is appropriate for the habitat type. Detrimental impacts include compaction, rutting, displacement, severely burned soil, surface erosion and soil mass movement In areas where more than 15% detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality.

There is nothing in the DFP which requires the Forest Service to measure detrimental soil disturbance (DSD) in project activity areas. DSD is defined in the 2014 Region 1 Soil Manual:

1. Detrimental Soil Disturbance. These disturbances includes the effects of compaction, displacement, rutting, severe burning, surface erosion, loss of surface organic matter, and soil mass movement. At least 85 percent of an activity area must have soil that is in satisfactory condition. Detrimental conditions include:

> Compaction. Detrimental compaction is a 15 percent increase in natural bulk density. The cumulative effects of multiple site entries on compaction should also be considered since compacted soils often recover slowly.
>
> Rutting. Wheel ruts at least 2 inches deep in wet soils are detrimental.
>
> Displacement. Detrimental displacement is the removal of 1 or more inches (depth) of any surface soil horizon, usually the A horizon, from a continuous area greater than 100 square feet.
>
> Severely-burned Soil. Physical and biological changes to soil resulting from high-intensity burns of long duration are detrimental.[16] This standard is used when evaluating

[15] Same thing as the 2014 Region 1 Soil Manual.

[16] Prescribed fire includes slash burning, and according to the DEIS "Burning of piles can impact soils through long duration heating towards the center of the piles. These impacts can be severe enough to alter soil structure and reduce nutrients to the extent where soils and vegetation

> prescribed fire. Guidelines for assessing burn intensity are contained in the Burned-Area Emergency Rehabilitation Handbook (FSH 2509.13).
>
> Surface Erosion. Rills, gullies, pedestals, and soil deposition are all indicators of detrimental surface erosion. Minimum amounts of ground cover necessary to keep soil loss to within tolerable limits (generally less than 1 to 2 tons per acres per year) should be established locally depending on site characteristics.[17]
>
> Soil Mass Movement. Any soil mass movement caused by management activities is detrimental.

Now, the DFP proposes to throw all that away. Its definition of DSD is telling:

> Management-caused soil disturbance **in vegetation management areas** that persists on the landscape for an extended period of time (**minimum of 40 years**) unless restoration actions are taken and is severe and extensive enough to reduce soil productivity and/or the ability of the land to provide desired goods and services.

(Emphases added.)

Besides the above noted problems, this only looks at DSD in areas proposed for logging and burning—not as a result of livestock grazing, recreational activities, etc. It also defines DSD as something that lasts at least 40 years—without explaining the derivation of that time period. Unless, vaguely, if "restoration actions area taken" which means, logically, that such efforts, no matter how ineffectual, excuse DSD lasting over 40 years (it's no longer DSD if the Forest Service sprinkles a little fairy dust over the damaged soil and calls it "restoration" regardless of how long the damages are discernable).

We assert that reduced soil productivity lasting 40 years is significant. Ask any farmer or gardener.

Under FW-DC-GS-01 the DFP states, "Biological soil crusts are found on almost all soil types but are more commonly found in arid areas where plant cover is low and plants are more widely spaced. Bare ground is present because of the warm dry nature of these sites but at low amounts." Nothing in the plan elements for soils actually mandates the FS measure, inventory, and avoid damage to these critical biological crusts.

Proposed plan element FW-MSA-SOIL-17 states, "Soil restoration on skid trails should focus on the beginnings of skid trails, nearest the landings, that receive the most equipment passes, followed by the middle sections of skid trails. The last section of skid trails may not need restorative actions, **because there may be only slight compaction from a few equipment passes, soil layers are intact, and organic matter is still in place.**" (Emphasis added.)

The more heavily trafficked areas may indeed exhibit the most profound damage to soil properties. However, the idea of "slight compaction from a few equipment passes" is incorrect. The Forest Service is ignoring results from research—some of it its own scientific information.

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recover very slowly over time." Also, "Impaired soil conditions within burn pile scars can persist for several decades due the concentrated heating (Jiménez-Esquilín, Stromberger, & Shepperd, 2008) (Rhoades et al, 2015)."

[17] Says the DEIS: "a majority of the plan area has soils easily eroded if ground cover or the forest floor is removed on steep or compact surfaces."

Cullen et al. (1991) concluded: "..most compaction occurs during the first and second passage of equipment." Page-Dumroese (1993), investigating logging impacts on volcanic ash-influenced soil in the Idaho Panhandle NF, stated: "Moderate compaction was achieved by driving a Grappler log carrier over the plots twice." Also, "Large increases in bulk density have been reported to a depth of about 5 cm with the first vehicle pass over the soil." (Id.) Williamson and Neilsen (2000) assessed change in soil bulk density with number of passes and found 62% of the compaction to the surface 10cm came with the first pass of a logging machine. In fine textured soils, Brais and Camire (1997) demonstrated that the first pass creates 80 percent of the total disturbance to the site. Adams and Froehlich (1981) state, "(L)ittle research has yet been done to compare the compaction and related impacts caused by low-pressure and by conventional logging vehicles."

Flawed 2014 Region 1 Soil Manual

The 2014 Region 1 Soil Manual (aka Region 1 Soil Quality Standards or "R1 SQS" for short) has been, in one form or another[18], the Forest Service's primary methodology for supplementing weak Forest Plan direction in the Region since at least 1999. The DEIS disparages both the Clearwater NF and Nez Perce NF soil standards, but as we state above we don't agree with the DFP's proposed solution. Still, our criticism of the DFP's proposed replacement of the 2014 Region 1 Soil Manual (R1 SQS) with ineffectual plan elements doesn't mean we believe retaining former is legally and ecologically sufficient.

The NPCNF's Johnson Bar FEIS attributed the R1 SQS as non-discretionary U.S. Forest Service Northern Region direction:

These Regional Soil Quality Standards require that detrimental management effects (e.g., compaction, displacement, rutting, severe burning, surface erosion, and mass wasting) to the soil resource not exceed 15 percent of an activity area and that retention of coarse woody material be appropriate for the habitat type. In areas exceeding 15 percent detrimental soil conditions as a result of prior activities, the cumulative detrimental effects from project implementation, including restoration, should not exceed the conditions prior to the planned activity and should move toward a net improvement in soil quality.

The Forest Service has for many years represented the R1 SQS as its method of avoiding permanent impairment of the productivity of soil, which is what NFMA requires. Yet the R1 SQS was never properly validated for that purpose.

The Forest Plan's definition of "soil productivity" is instructive: "The capacity of a soil to produce a certain yield of crops or other plants with a specified system of management. Note: Under extensive management inherent productivity equals soil productivity, unless the soil resource has been degraded." Despite the DFP definition's valuing of soils mainly as a tool to produce cattle and lumber, the Forest Service has not come to grips with the fact that its management of cows and timber inevitably and repeatedly damages soils, perpetually maintaining them in a state of reduced productivity.

[18] We are aware of two versions of the Region 1 Soil Quality Standards the FSM 2500 R-1 Supplement No. 2500-99-1 (dated 11/12/99) and the 2014 Region 1 Soil Manual. The latter document states that it "superseded" the former, in that it "(a)dds new direction to allow units to revise soil quality standards through the land management plan revision process. All other direction remains the same."

USDA Forest Service, 2007 states:

> Sustained yield was defined in the …Forest Plan …as "the achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the National Forest System without permanent impairment of the productivity of the land." Sustained yield is based on the lands' ability to produce.

That statement is on point: Since the Forest Service has no idea how much soil has been permanently impaired across the NPCNF, "sustained yield" is a meaningless phrase.

The R1 SQS's only quantitative measurements of soil conditions are, again, detrimental soil disturbance (DSD). In other words, the Forest Service has been depending upon limiting soil damage as a proxy—a substitute—for measures of losses in soil productivity caused by management.

Powers et al., 2005 explains:

> (T)rying to measure the productive potential of a site directly by assaying trends in tree or stand growth is fraught with frustrations and uncertainty. Growth trends in operational stands vary with stand age, structure, stocking and treatment history, and usually lack reference controls for comparison. Alternatively, soil-based indices of productive potential have been proposed as a more objective measure of a site's capacity for vegetative growth. The USDA Forest Service has adopted this approach and first approximation working standards are in place throughout the federal regions. Meant as monitoring tools, these standards are presumed to reflect a site's potential, and to mark thresholds for significantly impaired productivity. (Emphasis added; internal citations omitted.)

How and where R1 SQS thresholds are to be set is part of what we're questioning. The DEIS states:

> The Forest Service also initiated a cooperative research project called the North American Long-Term Soil Productivity Study in the early 1990s to better understand soil disturbance impacts on productivity, including understanding site recovery. …The ongoing Long-Term Soil Productivity Study provides the **best available science** to resource professionals. At ten years, no observed reduction in tree growth were detected as a result of compaction or organic matter removal in plots with soils generally similar to those found on the Nez Perce-Clearwater (Powers et al., 2005).

The DEIS also omits other discussion in Powers et al., 2005. For example: "Trees growing without understory competition generally were unaffected by severe soil compaction through the first 10 years. But 10-year production generally was less on severely compacted plots if an understory was present. Presumably, this reflects differential degrees of root competition for soil resources and access to old root channels. In time, compaction effects should be more evident in stands lacking an understory."

Powers et al., 2005 discuss the limitations of their study:

> Even at 10 years the LTSP study is in its infancy. Installations were established over several years, and only the oldest and most productive are approaching site carrying capacity. Only one-third of our installations have reached a decade in age, and it is

> possible that trends will change as more sites come on line. Given that caveat, we present these early findings as a platform for assessing longer-term trends.

The DEIS states, "The five- and ten-year results were published in the 2000s (Fleming et al., 2006; D. S. Page-Dumroese & Jurgensen, 2006; Sanchez et al., 2006). No examination of the results of those studies is presented in the DEIS. The Forest Service's favorite crop—trees—take decades to mature for harvest as lumber, and well over a century to collectively develop old-growth habitat character critical for so many wildlife species we discussed elsewhere in these comments.

Getting back to the origin of the 15% threshold the R1 SQS uses, there is another issue of Scientific Uncertainty and Controversy as discussed in the NPCNF's Johnson Bar FEIS:

> Defining the threshold at which productivity is detrimentally disturbed is controversial. The rationale for the 15% limit of change in soil bulk density was largely based on the collective judgment of soil researchers, academics, and field practitioners, and the accepted inability to detect changes in productivity less than 15% using current monitoring methods (Powers 1990). Powers (1990) states that the soil quality guidelines are set to detect a decline in potential productivity of at least 15%. This statement does not mean that the Forest Service tolerates productivity declines at this level, but that it recognizes problems with detection limits.

This sidesteps most of the controversy of the R1 SQS methodology for assessing soils—that the limitations of soil productivity measurements are not why the R1 SQS standards were set at 15%. The Forest Service knows that the R1 SQS limits are based on the fact that it is not feasible to do much less damage than 15% of an activity area while carrying out industrial logging a disclosed in USDA Forest Service, 2008b:

> The 15% change in aerial extent realizes that timber harvest and other uses of the land result in some impacts and impairment that are unavoidable. This limit is based largely on what is physically possible, while achieving other resource management objectives.

The Forest Service has never acknowledged the scientific and ecological deficiencies of the R1 SQS.

The Forest Service chose 15% as its upper limit on soil damage within a unit merely because it believes that logging the merchantable trees and disposing of the slash often compacts or otherwise damages up to 15% of the areal extent of an "activity area." This limit has nothing to do with the science of maintaining soil productivity. Rarely does the Forest Service consider or disclose this fact.

Nesser, 2002 reveals the Forest Service' confusion between the threshold for which soil compaction is considered to be detectable (15% increase in bulk density) and the 15% areal limit for detrimental disturbance, which is the R1 SQS upper limit on the sum of the various kinds of DSD:

> The 15% standard for increases in bulk density originated as the point at which we could reliably measure significant changes, considering natural variability in bulk density. It may or may not mean that a 15% increase in BD is detrimental. That may depend on the soil and ecosystem in which it is found. **(A)pplying the 15% areal limit for detrimental damage is not correct... (T)hat was never the intent of the 15% limit ...and NFMA does not say that we can create up to**

> **15% detrimental conditions, it says basically that we cannot create significant or permanent impairment, period. How that works out in terms of practicality is the problem.**

(Emphasis added.)

So we have the R1 SQS 15% areal extent limit being based on mere feasibility rather than concerns over soil productivity, and additionally we have the 15% bulk density increase limit based upon the limitations of detection of available soil compaction measurement methods—not detection of reductions in soil productivity itself.

The DEIS states:

> Sensitive soils on the Nez Perce-Clearwater have attributes that make them particularly vulnerable to ground disturbance or susceptible to mass movement. Sensitive soil types include: grussic, hydric wetland soils, severely burned, soils with a volcanic ash layer, soils with high erosion potential, and soils prone to mass movement. Management mitigates operations on these soil types either by avoidance, or by limiting the level of soil disturbance from mechanical operations.

Yet it doesn't matter how sensitive the soils, how steep the land, how poor the site is for growing trees, the varying aspects, the varying ratings of landslide or mass wasting potential, the varying ratings of erosion risk, the varying underlying geology, the varying presence of ash cap, the varying amounts of ground cover due to recent fire—the R1 SQS standard (15%) does not vary. This is consistent with the R1 SQS's rigid basis in operational feasibility. Page-Dumroese et al., 2000 emphasize that utilization of such thresholds does not account for these real-world variables:

> Research information from short- or long-term research studies supporting the applicability of disturbance criteria is often lacking, or is available from a limited number of sites which have relative narrow climatic and soil ranges. …Application of selected USDA Forest Service standards indicate that **blanket threshold variables applied over disparate soils do not adequately account for nutrient distribution within the profile or forest floor depth. These types of guidelines should be continually refined to reflect pre-disturbance conditions and site-specific information.** (Emphasis added.)

The refinement of the R1 SQS that Page-Dumroese et al., 2000 recommend has not occurred—nothing resembling such a scientific research endeavor is cited in the DEIS.

The EIS does not properly distinguish between the issues of soil disturbance and soil productivity. Whereas soil disturbance measures physical signs of potential soil productivity losses, the FS's measures of soil disturbance do not necessarily provide scientifically valid and reliable measures of **soil productivity**—the latter being the focus of NFMA requirements.

The R1 SQS DSD limits are the most refined quantitative standards that the NPCNF recognizes for the purposes of complying with NFMA's substantive mandate to insure against irreversible losses in soil productivity. Forest Management Handbook at FSH 2509.18 recognizes the need to validate the assumptions underlying the R1-SQS thresholds for soils disturbance. It directs the Forest Service to perform validation monitoring to "Determine if coefficients, S&Gs, and requirements meet regulations, goals and policy" (2.1 – Exhibit 01). It asks what we ask: "Are the threshold levels for soil compaction adequate for maintaining soil productivity? Is allowing 15% of an area to be impaired appropriate to meet planning goals?"

A Forest Service scientific report (Grier et al., 1989) proposed a measure of soil productivity: "the total amount of plant material produced by a forest per unit area per year." They cite a study finding "a 43-percent reduction in seedling height growth in the Pacific Northwest on primary skid trails relative to uncompacted areas" for example. And another Forest Service scientific report (Adams and Froehlich, 1981) states:

> Measurements of reduced tree and seedling growth on compacted soils show that significant impacts can and do occur. Seedling height growth has been most often studied, with reported growth reductions on compacted soils from throughout the U.S. ranging from about 5 to 50 per cent.

The R1 SQS also unfortunately provides management discretion to allow increases in DSD in activity areas already above the standard (15%) as long as the agency asserts it's also taking restorative measures that result in a net downward trend in DSD. The R1 SQS don't specify any degree that DSD must go down. Hypothetically, a 1% net reduction is sufficient to meet the agency's interpretation of the R1 SQS, even if existing DSD is over 50%.

USDA Forest Service, 2016a states that the R1 SQS "created the concept of 'Detrimental Soil Disturbance' (DSD) for National Forests in Region One as a measure to be used in assessing potential loss of soil productivity resulting from management activities." USDA Forest Service, 2016a explains:

> **Without maintaining land productivity, neither multiple use nor sustained (yield) can be supported by our National Forests**. Direct references to maintaining productivity are made in the Sustained Yield Act "…coordinated management of resources without impairment of the productivity of the land" and in the Forest and Rangeland Renewable Resources Act "…substantial and permanent impairment of productivity must be avoided".
>
> Soil quality is a more recent addition to Forest Service Standards. The Forest and Rangeland Renewable Resources Act (1974) appears to be the first legal reference made to protecting the "quality of the soil" in Forest Service directives. **Although the fundamental laws that directly govern policies of the U.S. Forest Service clearly indicate that land productivity must be preserved, increasingly references to land or soil productivity in Forest Service directives were being replaced by references to soil quality as though soil quality was a surrogate for maintaining land productivity. This was unfortunate, since although the two concepts are certainly related, they are not synonymous.**
>
> Our understanding of the relationship between soil productivity and soil quality has continued to evolve since 1974. Amendments to the Forest Service Manual, Chapter 2550 – Soil Management in 2009 and again to 2010 have helped provide some degree of clarity on this issue and acknowledged that **the relationship is not as simple as originally thought**. The 2009 (2500-2009-1) amendment to Chapter 2550 of the Forest Service Manual states in section 2550.43-5, directs the Washington Office Director of Watershed, Fish, Wildlife, Air and Rare plants to "Coordinate validation studies of soil quality criteria and indicators with Forest Service Research and Development staff to

> ensure soil quality measurements are appropriate to protect soil productivity" (USFS-FSM 2009). **Inadvertently this directive concedes that the relationship between soil productivity and soil quality is not completely understood.** In the end, the primary objective provided by National Laws and Directives relative to the management of Forest Service Lands continues to be to maintain and where possible potentially improve soil productivity. (Emphases added.)

USDA Forest Service, 2014a discusses the complexities of management-induced changes on soils:

> Management activities can result in both direct and indirect effects on soil resources. Direct and indirect effects may include alterations to physical, chemical, and/or biological properties. Physical properties of concern include structure, density, porosity, infiltration, permeability, water holding capacity, depth to water table, surface horizon thickness, and organic matter size, quantity, and distribution. Chemical properties include changes in nutrient cycling and availability. Biological concerns commonly include abundance, distribution, and productivity of the many plants, animals, microorganisms that live in and on the soil and organic detritus.

The R1 SQS and definition of DSD consider only alterations to physical properties, but not chemical or biological properties. The R1 SQS does not adequately consider best available science.

One of these biological properties is partly represented by naturally occurring organic debris from dead trees, which we discuss under **Soil Wood**. The DFP includes inadequate, merely discretionary plan elements to address the issue.

Some chemical properties are discussed in Harvey et al., 1994, including:

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

The relation between forest soil microbes and N is striking. Virtually all N in eastside forest ecosystems is biologically fixed by microbes... Most forests, particularly in the inland West, are likely to be limited at some time during their development by supplies of plant-available N. Thus, to manage forest growth, we must manage the microbes that add most of the N and that make N available for subsequent plant uptake. (Internal citations omitted.)

The DFP fails to consider the significance of watershed-level and cumulative implications of chronically compacted or otherwise detrimentally disturbed soils

From USDA Forest Service, 2008f:

> Many indirect effects are possible if soils are detrimentally-disturbed… Compaction can indirectly lead to decreased water infiltration rates, leading to increased overland flow and associated erosion and sediment delivery to stream. Increased overland flow also increases intensity of spring flooding, degrading stream morphological integrity and low summer flows.

However the DFP plan elements do not set limits on, or require a full cumulative effects analyses of, levels of compaction within a watershed.

The NPCNF's American River/Crooked River project FEIS stated:

> Cumulative effects may also occur at the landscape level, where large areas of compacted and displaced soil affect vegetation dynamics, runoff, and water yield regimes in a subwatershed. About 4,849 acres are currently estimated to have sustained detrimental compaction or displacement in the American River watershed due to logging, mining, or road construction. … About 4,526 acres are currently estimated to have sustained detrimental compaction or displacement in the Crooked River watershed due to logging, mining, and road or trail construction. (Emphasis added.)

An estimated 73 percent (208) of past activity areas on NF lands in American River (and an estimated 69 percent (166) of past activity areas on NF lands in Crooked River) today would show detrimental soil disturbance in excess of 20 percent.

American River (and most of Crooked River) is considered similar in soils and logging history to Red River, where 80 percent of sampled tractor logged activity areas did not meet Forest Plan standards. In many instances, these impacts occurred prior to forest plan implementation, but monitoring of more recent activities shows inconsistent improvement in practices. This degree of soil damage is consistent both with other Forest monitoring (USDA FS 1988a, 1990, 1992), and research (Krag, 1991; Froelich, 1978; Davis, 1990, Alexander and Poff, 1985).

Indirect effects of soil surface and substratum erosion include effects to vegetation and hydrologic processes.

The Forest Service must address the hydrological by accounting for all soil damage in a watershed, to incorporate the best available science and disclose the full extent of soil restoration needs in the watershed. USDA Forest Service, 2009c states, in regards to project area sites where DSD soils were **not** to be restored by active management: "For the …severely disturbed sites,… "no action" …would **create indirect negative impacts by missing an opportunity to actively restore damaged soils**. These sites would naturally recover in time, approximately 60 to 80 years." (Emphasis added.)

More on this from the Forest Service's own experts. The Bitterroot National Forest admits that subwatersheds which have high levels of existing soil damage could indicate a potential for hydrologic and silviculture concerns. (USDA Forest Service, 2005b, p. 3.5-11, 12.) The Idaho Panhandle National Forests (USDA Forest Service, 2007c) acknowledge that soil conditions affect the overall hydrology of a watershed:

> Alteration of soil physical properties can result in loss of soil capacity to sustain native plant communities and reductions in storage and transmission of soil moisture that may **affect water yield and stream sediment regimes**. (P. 4-76, emphasis added.)

USDA Forest Service, 2009c states:

> Compaction can decrease water infiltration rates, leading to increased overland flow and associated erosion and sediment delivery to streams. Compaction decreases gas exchange, which in turn degrades sub-surface biological activity and above-ground forest vitality. Rutting and displacement cause the same indirect effects as compaction and also channel water in an inappropriate fashion, increasing erosion potential.

Kuennen et al., 2000 (a collection of Forest Service soil scientists) state:

> An emerging soils issue is the cumulative effects of past logging on soil quality. Pre-project monitoring of existing soil conditions in western Montana is revealing that, where ground-based skidding and/or dozer-piling have occurred on the logged units, soil compaction and displacement still are evident in the upper soil horizons several decades after logging. Transecting these units documents that the degree of compaction is high enough to be considered detrimental, i.e., the soils now have a greater than 15% increase in bulk density compared with undisturbed soils. Associated tests of infiltration of water into the soil confirm negative soil impacts; **the infiltration** rates on these compacted soils are several-fold slower than rates on undisturbed soil.
>
> …**The effects of extensive areas of compacted and/or displaced soil in watersheds along with impacts from roads, fire, and other activities are cumulative.** A rapid assessment technique to evaluate soil conditions related to past logging in a watershed is based on a step-wise process of aerial photo interpretation, field verification of subsamples, development of a predictive model of expected soil conditions by timber stand, application of this model to each timber stand through GIS, and finally a GIS **summarization of the predicted soil conditions in the watershed.** This information can then be combined with an assessment of road and bank erosion conditions in the watershed to give a holistic description of watershed conditions and to help understand cause/effect relationships. **The information can be related to Region 1 Soil Quality Standards to determine if, on a watershed basis, soil conditions depart from these standards.** Watersheds that do depart from Soil Quality Standards can be flagged for more accurate and intensive field study during landscape level and project level assessments. **This process is essentially the application of Soil Quality Standards at the watershed scale with the intent of maintaining healthy watershed conditions**. (Emphases added.)

Kootenai National Forest hydrologist Johnson, 1995 noted this effect from his reading of the scientific literature: "Studies by Dennis Harr have consistently pointed out the effects of the compacted surfaces (roads, skid trails, landings, and firelines) on peak flows." Elevated peak flows harm streams and rivers by increasing both bedload and suspended sediment, which is not considered in the DEIS's watershed analysis.

It is clear the Forest Service must consider the cumulative effects of past and proposed soil disturbances to assure that soil productivity will be maintained. This includes impacts from activities that include logging, motorized vehicle use, livestock grazing, etc. Such cumulative effects analysis found in the Soil and Water Conservation Practices Handbook (FSH 2509.22), which states:

> Practice 11.01 – Determination of Cumulative Watershed Effects
>
> OBJECTIVE: To determine the cumulative effects or impact on beneficial water uses by multiple land management activities. Past, present, or reasonably foreseeable future actions in a watershed are evaluated relative to natural or undisturbed conditions. Cumulative impacts are a change in beneficial water uses caused by the accumulation of individual impacts over time and space. Recovery does not occur before the next individual practice has begun.

EXPLANATION: The Northern and Intermountain Regions will manage watersheds to avoid irreversible effects on the soil resource and to produce water of quality and quantity sufficient to maintain beneficial uses in compliance with State Water Quality Standards. Examples of potential cumulative effects are: 2) excess sediment production that may reduce fish habitat and other beneficial uses; 3) water temperature and nutrient increases that may affect beneficial uses; 4) compacted or disturbed soils that may cause site productivity loss and increased soil erosion; an 5) increased water yields and peak flows that may destabilize stream channel equilibrium.

IMPLEMENTATION: As part of the NEPA process, the Forest Service will consider the potential cumulative effects of multiple land management activities in a watershed which may force the soil resource's capacity or the stream's physical or biological system beyond the ability to recover to near-natural conditions. A watershed cumulative effects feasibility analysis will be required of projects involving significant vegetation removal, prior to including them on implementation schedules, to ensure that the project, considered with other activities, will not increase sediment or water yields beyond or fishery habitat below acceptable limits. The Forest Plan will define these acceptable limits. The Forest Service will also coordinate and cooperate with States and private landowners in assessing cumulative effects in multiple ownership watersheds.

Booth, 1991 further explains the relationship between soil quality conditions and hydrology:

Drainage systems consist of all of the elements of the landscape through which or over which water travels. These elements include the soil and the vegetation that grows on it, the geologic materials underlying that soil, the stream channels that carry water on the surface, and the zones where water is held in the soil and moves beneath the surface. Also included are any constructed elements including pipes and culverts, cleared and compacted land surfaces, and pavement and other impervious surfaces that are not able to absorb water at all.

…The collection, movement, and storage of water through drainage basins characterize the hydrology of a region. Related systems, particularly the ever-changing shape of stream channels and the viability of plants and animals that live in those channels, can be very sensitive to the hydrologic processes occurring over these basins. Typically, these systems have evolved over hundreds of thousands of years under the prevailing hydrologic conditions; in turn, their stability often depends on the continued stability of those hydrologic conditions.

Alteration of a natural drainage basin, either by the impact of forestry, agriculture, or urbanization, can impose dramatic changes in the movement and storage of water. …Flooding, channel erosion, landsliding, and destruction of aquatic habitat are some of the unanticipated changes that …result from these alterations.

…Human activities accompanying development can have irreversible effects on drainage-basin hydrology, particularly where subsurface flow once predominated. Vegetation is cleared and the soil is stripped and compacted. Roads are installed, collecting surface and shallow subsurface water in continuous channels. …These changes produce measurable effects in the hydrologic response of a drainage basin.

Noxious weeds and soil productivity

The DFP and DEIS do not adequately account for the long-term losses in site or land productivity due to noxious weed infestations facilitated by management actions. The DEIS does not quantitatively estimate cumulative reductions of **soil productivity** from noxious weeds. The Soil Report prepared for the Custer-Gallatin National Forest draft forest plan and draft EIS admits:

> Another source of soil disturbance prevalent on certain areas of the Custer Gallatin is infestation of lands by noxious weed species. **Weed seed** when it becomes prevalent in surface soil horizons **becomes a biological factor of the soil** that has the potential to **reduce land productivity** and restrict management options. Strong correlations have been found on the Custer Gallatin, especially on certain soil-landscape types, between past soil disturbance and the occurrence of noxious weeds. These **infection sites then become source areas for the spread of noxious weeds** into adjacent, non-disturbed areas. Noxious weed spread can follow disturbance since weeds have opportunistic traits and can exploit disturbed soil conditions (Williamson and Harrisburg 2002; Norton et al. 2007; James et al. 2010) typical of many pioneer species. The expansion of weed infestations into new areas can **alter nutrient regimes and organic carbon levels in the soil** which shifts the competitive balance on a site away from desired native species (Wolf and Klironomos 2005; Steinlein 2013). Management options and **growth potential** are both **reduced** when weed infestations exceed thresholds where restoration becomes difficult, creating new novel plant assemblages (Seastedt et al. 2008). Once a noxious weed becomes a co-dominant species on a site, whether in a grassland area or as a forest understory plant, **changes to the soil and reduced site potential are consistent with the concept of "permanently degraded**" as used in the National Environmental Policy Act (1970) and the National Forest management Act (1976). (Emphases added.)

The Custer-Gallatin National Forest draft forest plan draft EIS explains the relationship between noxious weed infestation and losses of soil productivity—they correlate very highly:

> The relationship between noxious weeds and soils is tightly intertwined. Certain types of soil disturbance (especially disturbance that exposes low quality subsoil or substrate materials or otherwise creates unsuitable surface soil conditions for establishment of native, perennial plants) will almost invariably result in localized noxious weed infestations. These become the infestation sites from which the subsequent spread of noxious weeds to surrounding areas originate in a classic source-sink fashion. In return, the presence of dense noxious weeds populations such as spotted knapweed, Dalmatian toadflax, or Canada thistle at landings, along temporary roads, or on hillsides are often accompanied by evidence of accelerated erosion due to poor ground cover in these areas. The presence of noxious weed seed in the soil, especially at high concentrations, becomes a biological property of the soil. Although this alone would not be considered detrimental soil disturbance in accordance with the 1999 Northern Region supplement, it does reduce soil productivity and at high levels, limits land management options.

USDA Forest Service, 2005a states:

> Noxious weed presence may lead to physical and biological changes in soil. Organic matter distribution and nutrient flux may change dramatically with noxious weed invasion. Spotted knapweed (Centaurea biebersteinii D.C.) impacts phosphorus levels at

> sites (LeJeune and Seastedt, 2001) and can hinder growth of other species with allelopathic mechanism. Specific to spotted knapweed, these traits can ultimately limit native species' ability to compete and can have direct impacts on species diversity (Tyser and Key 1988, Ridenour and Callaway 2001).

USDA Forest Service, 2006d states:

> Noxious weeds have the potential to impact long term soil productivity since their presence can affect soil chemical properties. Invasive species such as spotted knapweed (Centaurea biebersteinii DC.) and cheatgrass (Bromus tectorum L.) …can affect their growing environment, shifting soil properties to their favor (D'Antonio and Vitousek 1992). Recent findings show cheatgrass may influence soil aggregation in the top horizon because of its pulse of leaf and root litter (Norton et al 2004) with antecedent changes to carbon stores (Verburg et al 2004). These changes can play out in long term shifts in plant composition as observed by Vinton and Burke (1995). Also, spotted knapweed was found to have allelopathic influences that may negatively impact native plant species growth (Bais et al 2003).

Despite the fact that noxious weed infestation is a significant degradation of soil productivity, the DFP proposes nothing but increased weed infestation and therefore lower soil productivity.

The DEIS fails to actually quantify this loss of soil productivity attributable to noxious weeds—both current levels and under proposed Alternatives. Cumulative effects are not disclosed.

Soil Conclusions

The implication is clear: over the vast acreage of the NPCNF where logging would be allowed under each DFP alternative, expect long term depletion or deficits in large soil wood. Expect inhibited and suppressed ecological processes because of these deficits. And thus, expect soil and land productivity to diminish significantly for centuries.

The Forest Service fails to explain how soil productivity can be maintained at any geographic scale—from the timber sale unit to the managed landscape level—when removing significant quantities of large live and dead wood from the ecosystem is the whole point of its management.

Once depleted or reduced in amount by logging or "fuel reduction", it will require centuries for the forest ecosystem to replace the necessary amounts of large pieces of dead and decaying wood so vital for soil processes to persist in their role of maintaining soil productivity—if the ecosystem is not repeatedly mined of its wood, that is.

The DFP contemplates no alternative that allows natural processes to assume their functions for maintaining soil productivity, in large enough geographic areas, to insure ecological sustainability including avoiding permanent impairment of the land and soil. The DFP fails to comply with NFMA.

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WATERSHED AND FISHERIES

If the impacts to fisheries in W, X, Y, and Z can be addressed with the same discussion, one discussion, how does this represent a reasonable range of alternatives? The impacts of W, X, Y, and Z are discussed as one, which cannot represent a reasonable range of alternatives., is this a reasonable range of alternatives? And, how is this possible with such wildly varying degrees of timber harvest? If you harvest more timber, wouldn’t you have to build more roads? As discussed below, roads—temporary and permanent—impair water quality and fish habitat.

Crosswalking to compare the new DFP standards, guidelines, objectives, and desired conditions to show that the Forest Service has carried forward the 1987 standards from both plans demonstrates that those measures were important. But, the new draft forest plan lessens the current standards by changing them to desired conditions, guidelines, and objectives, or changing the standards to qualitative ones that are not precise. Additionally, without rigorous monitoring, under the vague standards, the agency could make many decisions that would cumulatively add up to huge environmental degradation.

There are only three management areas, and standards do not change amongst them. No standard would stop logging and roadbuilding in a watershed that is at risk or impaired.

Please review all science in the references—while not all of it referenced by name below, it supports our points.

Assessment and no recent information on existing conditions

The existing information for the aquatic ecosystems that comprise the assessment is out of date. For the assessment, the agency cited earlier assessments that collected data from 1997-2009. Additionally, the existing information in the assessment refers to Clearwater and Nez Perce National Forests monitoring reports without dates. Nothing seems to have been updated since the 2014 report. The current plans require regular monitoring and evaluation reports, so minimally the assessment should have been updated with the newest information, which shouldn’t be more than five years old. Yet, the Forest Service stopped publishing monitoring reports on its website in 2009 for the Clearwater and 2004 for the Nez Perce National Forests. We checked with the lead forest planner, who confirmed that other than wildlife reports (which exist up to approximately 2012) what is posted is all that the Forest Service has. Is everything else listed in the assessment your most recent information? For example, in Chapter 1 of the 2014 assessment at p. 61, the agency lists about twelve subbasins in a table that summarize conclusions on aquatic and hydrologic integrity, but this source is from 1997. There have been many timber sales and projects in the basins since 1997. What is the current integrity for both measures now? In the same 2014 assessment, chapter 1, in Table 1-32, (p. 66) there are watershed road densities of the upper North Fork hydrologic units. What years is that information from and how has the last six years changed those numbers?

In our scoping comments, we had numerous concerns about statements in chapter 1 of the assessment (in blue below), which the Forest Service relied upon to produce the DFP and the DEIS:

Page 1-135, Using the WCC system notes:

In 2011, the Forests conducted a coarse-level Watershed Condition Classification (WCC) of all 6th field HUCs using the Watershed Condition Classification Technical Guide (Potyondy 2011). The WCC system is a means of classifying watersheds based on a core set of 24 national watershed condition indicators related to watershed processes (Figure 16). The 24 attributes are surrogate variables representing the underlying ecological functions and processes that affect soil and hydrologic function. Each attribute was given a rating of 1 (good), 2 (fair), or 3 (poor). These 24 ratings were put through an algorithm to identify a watershed condition class. The attribute ratings and the WCC are stored in the WCC Tracking Tool database**3F**4.

Information from the numerous EAWS, PUAs, SBAs, monitoring reports, and models were used to develop the rankings for each of the attribute ratings in the WCC system. Within this system, Class I watersheds are considered “functioning properly,” Class II watersheds are “functioning at risk,” and Class III watersheds are “impaired function.” Across the Forest, there are 220 6th field HUC watersheds designated as managed (at least in part) by the Forests. There are 140 Class I, 73 Class II, and 7 Class III watersheds (Figure 17) “

Combine this with Figure 1-39 and it is quite apparent that every watershed impacted by management treatment, as implemented or approved by the USFS, resulted in each of these watersheds being placed into the either the classification “functioning at risk” or having “impaired function.” The roadless and wilderness watersheds are the ones that are "functioning properly." This proves the management strategies—log and build roads, while doing some road decommissioning—is a failed strategy. It has not recovered any watershed.

Page 1-136 – Figure 1-38 Watershed Condition framework, 12-indicator model, under “Aquatic Physical” Item “3. Aquatic Habitat” should have another yet key item: sedimentation. Sedimentation is a key factor that determines the ability for any river system to function as viable habitat. The system employed here, without having sediment evaluation included is inadequate to depict a true reflection of the systems within our National Forests.

Page 1-138 states:

Class I watersheds are primarily in Wilderness or unroaded areas of the Forests. Class II watersheds are mostly in areas with active vegetation management and higher road density. Class III watersheds are also in areas with active vegetation management and high road density, but these watersheds also have legacy features that have degraded watershed conditions (e.g., dredge mining in Crooked River).

The statement that legacy features have degraded watershed to Class 3 is not entirely accurate. Areas on the Palouse Ranger District, other than the lower reaches of the North Fork of the Palouse River and a small portion of the Palouse River in that immediate area, have never been subject to dredge mining. The impairment is due to intensive logging practices. The statement about trend is purely speculative. The USFS has demonstrated an inability to predict both natural and management influenced changes to National Forest trends as evidenced in looking at the future predictions documented within the 1987 Forest Plans and EISs. It is imperative national forests be managed with the understanding that these are natural systems, dynamic and unique where many of the coming changes remain beyond the limited knowledge of USFS employees and society in general.

1.4.2.2 **Trends and Drivers notes:**

Trends in Class I watersheds are relatively static. The primary drivers of change in these areas are wildfires, landslides, and insect/disease infestations. It is possible that changing climate has either exacerbated or contributed to the magnitude and extent of effects from these drivers. Forest management direction over the past 10 years has been to allow natural processes to dictate variations in watershed conditions in these areas. Several Class I watersheds have the potential to degrade into Class II with only moderate changes, due to the influence of multiple stressors (Figure 1-40).

Page 1-140 also notes, “However, there are also several watersheds that have the potential to move to an improved class as restoration projects are implemented (Figure 1-41).”

What data do you have that proves the completion of a so-called restoration project correlates into the change of classification as to a stream function? If this were true, we would have seen significant and demonstrable improvement, given all of the so-called restoration (an agency euphemism for logging) that has been done. Page 1-140 merely speculates “most watersheds are showing slow, continual improvement” without providing hard data. Simply put, the continuing press disturbances—mainly logging, disingenuously labeled restoration as is done with virtually every timber sale over the past two decades—won't allow for recovery.

It is unclear how the Forest Service has responded to these critiques and how these critiques have shaped the DEIS. Please explain and support with science and data.

We also said the following in our scoping comments (in blue, below) on watersheds and fisheries:

AQUATIC/WATERSHEDS/FISHERIES

Elsewhere in this comment we have pointed out some problems with the PA in terms of watersheds and fish habitat. It is clear watersheds have not been protected with past management. In order to manage these national forests in a manner that results in healthy, resilient watersheds the revision needs to strengthen the standards for water quality. Again, we incorporate the comments of FOC member Al Espinosa into this comment as well. For the sake of brevity, our comment letter generally avoids repeating the points his letter makes.

Many Forest Service projects have potentially disastrous effects on aquatic ecosystems. Frissell and Bayles (1996, p.231) summed up the current state of affairs as follows: "For aquatic systems in the west, the management crisis arises from the cumulative and persistent effects of thousands of miles of roads, thousands of dams, and a century of logging, grazing, mining, cropland farming, channelization, and irrigation diversion."

Research on the CNF has shown that water quality and fish habitat in roadless areas, even though these areas have seen major fire, is far better than in roaded areas. Indeed, the assessment supports this view. Specifically, the map on Table 1-39 is a visually representation of the issue and page 1-138 states that the high functioning watersheds "are primarily in Wilderness or unroaded areas of the Forests."

Even more profound is the fact that after over 20 years of so-called restoration logging—building roads and logging, in part to pay for road decommissioning on some routes, a strategy of *robbing Peter to pay Paul* or *the check is in the mail*—none, or almost none of the watersheds which have been affected by "management" meet current forest fish habitat and water quality standards on either national forest. While the assessment claims that progress is being made, this is a failed management strategy. Progress toward functioning watersheds that may take decades or centuries is not acceptable.

Perhaps as a result of this recognition on the part of the agency, the desired conditions in the PA (including Table 15) resemble the existing water quality and fish habitat standards. These elements should be standards, rather some future goal that will never be met in any reasonable time frame. For example, current standards include cobble embeddedness, yet the PA includes those as desired conditions in Table 15. This is a backsliding from the commitment the agency made to American citizens in 1987.

Further, there is little link between the desired conditions, objectives and standards. While some of the objectives and standards are laudable, they perpetuate the same management paradigm that has failed to recover watersheds. In fact, the standards are generally weaker than those in the current plans, the lack of a cobble embeddedness standard being on example. In order to be accountable, if watersheds do not meet standards, then management actions which further cause watershed degradation such as roadbuilding and logging should not be allowed.

Even the proposed standards which are similar to existing standards have exemptions. For example, the PACFISH and INFISH standards in the timber and vegetation section should be removed.

Even the DEIS recognizes a lack of recent monitoring data for substrates. (DEIS 3.2.2 Aquatic Resources, fisheries pp. 20-22.) The DEIS states, "However, it should be noted the number of monitored sites is small, and summarized data is only available up to 2009, which was ten years ago. Additional years of monitoring data are needed at these sites, as conditions may have changed since 2009." DEIS 3.2.2 Aquatic Resources, fisheries p. 21. Without recent data, the agency cannot accurately summarize an existing condition by which it can measure anticipated impacts to the watershed or to fisheries, including sensitive species. The agency also cannot accurately summarize a baseline condition for threatened and endangered species that exist within these watersheds. This is one of the resources where the lack of forest plan monitoring (mentioned earlier) has created a deficit of needed information for a hard look at impacts.

Even if the information were current, the DEIS states that land-management practices implemented under the 1987 Forest plans were successful. This includes avoiding logging in watersheds not meeting fisheries habitat potential unless the Forest Service could show an upward trend. If this has worked, and there remain some watersheds not meeting their standards under the old forest plans, why eliminate the standards? The DEIS (DEIS 3.2.2 Aquatic Resources, fisheries pp. 20-22.) We are unclear on the need to drastically change the fisheries and aquatics standards from the 1987 plans as opposed to merely refining what did not work.

What, precisely, had worked about the 1987 plans? What hadn't? How has the agency retained the components that worked? How many streams identified as impaired have achieved an upward trend, and where are they now?

Revising current quantifiable standards and changing them into desired conditions and qualitative guidelines and standards

Generally, in this section, as other sections, the desired conditions are too vague to be useful and the standards are very unlikely to help achieving desired conditions. The draft forest plan revision generally has more information/ regulations provided in guidelines than in standards in the fisheries and aquatic resources section. Some of the guidelines should be standards. Standards ultimately need more details on how to maintain/ accomplish goals.

Both the Nez Perce and Clearwater National Forest have quantifiable standards on most streams, and this draft plan does not. How is anyone supposed to know if streams are sediment-limiting, whether sediment-limiting streams are improving, or if other streams have degraded over time? We don't understand how changing specific, quantifiable standards to desired conditions and guidelines is an improvement of this draft forest plan over the older ones—it will likely cause environmental degradation. Because all action alternatives are identical in terms of the revised plan desired conditions, standards, and guidelines, this means that the most environmentally responsible alternative is the no-action alternative. On DEIS Ch. 3.2.2.2 p. 39, there is a table comparing the no action alternatives (current forest plans) to the action alternatives. Appendix A of the Nez Perce Forest Plan and Appendix K of the Clearwater Forest Plan are standards. Standards are binding guidelines from which the Forest Service cannot deviate in a project unless amending the Forest Plan under the NEPA process. In the draft forest plan, the Forest Service has minimalized requirements by geographically reducing the streams protected as well as taking components that are standards and making them unmeasurable, unenforceable, or making them guidelines or desired conditions (which are not binding limitations).

Why eliminate prescription watersheds, each measured with quantifiable existing conditions? It eliminates a comprehensive forest-wide plan and sets no expectations or standards for areas of the forest where the agency can achieve its NFMA commitment to protect fish and wildlife by refraining from management activities.

The DEIS compares FW-STD-WTR-04 as the replacement "upward trend" from governing forest plans. FW-STD-WTR-04 states the following:

> Where aquatic and riparian desired conditions are being achieved, projects shall maintain those conditions. Where aquatic and riparian desired conditions are not yet achieved, and to the degree that project activities would contribute to those conditions, projects shall restore or not retard attainment of desired conditions. Short-term adverse effects from project activities may occur when they support the long-term recovery of aquatic and riparian desired conditions and federally listed species. Exceptions to this standard include situations where Forest Service authorities are limited (1872 Mining Law, state water right, etc.). In those cases, project effects shall be minimized and not retard attainment of desired conditions for watersheds, to the extent possible within Forest Service authorities.

This doesn't replace an upward-trend requirement because it specifically allows for short-term adverse effects upon a long-term promise. The 1987 Nez Perce Forest Plan identified specific streams with sediment problems: "Sediment is the primary limiting factor in these streams. Improvements will be scheduled between 1986 and 1995. Timber management can occur in these watersheds, concurrent with improvement efforts, as long as a positive, upward trend in habitat carrying capacity is indicated." Under the current standard, an upward trend would need to already be happening in impaired streams, or logging is not allowed. But under the new standards, logging would be allowed in impaired streams. The standard specifically allows projects with short-term adverse effects. How does this not slow the attainment of desired conditions?[19] Logging in an impaired stream would mean the stream would have to recover from the short-term impacts to the previous point before it continued to recover towards the desired condition. This standard is not a replacement for the upward trend.

Additionally, there is problematic vagueness with this standard. The standard clarifies that short-term negative effects can occur "when they support the long-term recovery of aquatic and riparian desired conditions and federally listed species." This is an unenforceable standard. How is the Forest Service defining "long-term"? By months? By years? By decades? What happens if the Forest Service approves a project under this standard and it turns out that the "long-term" recovery is never realized? Then, not only was the desired condition not met, but the standard detracted from attempts to meet the desired condition. The public could not hold you accountable after six years of the project's decision because the law limits lawsuits on federal agency action to six years after the decision is signed, so this "standard" is designed so the Forest Service can violate its own standards without accountability. Additionally, this standard runs afoul of the Endangered Species Act because take and jeopardy would be allowed with this standard with "short-term" adverse impacts on endangered species in trade for "long-term recovery."

There is simply no quantitative standard that would limit logging or roadbuilding by management area or by watershed, which degrades watersheds. All one has to do is compare a project that the 1987 plans would have prohibited and compare it to this plan. For example, the Clear Creek Integrated Restoration Plan. In that plan, the Nez Perce Forest Plan considered a couple of watersheds impaired and thus prohibited a logging project unless the Forest Service could demonstrate an upward trend. There were not enough data points to demonstrate that there could be an upward trend before the first round of litigation on Clear Creek. But, the same project that couldn't meet the 1987 Nez Perce Forest Plan would be allowed to proceed under this forest plan.

Despite our scoping comments, the Forest Service has developed a standard that allows logging as a "tool" to improve any habitat.

> FW-STD-RMZ-01. Timber harvest as a tool to assist in achieving or maintaining desired conditions of the plan, and in order to protect other multiple use values, shall occur with limited exceptions in riparian management zones only as necessary to enhance or restore conditions for aquatic and riparian resources. When riparian management zones desired conditions are met, projects shall maintain those conditions. When aquatic and riparian management zones desired conditions are not yet achieved, projects or permitted activities shall contribute to the attainment of aquatic and riparian desired conditions.

[19] While not retarding attainment is important, without rigorous monitoring it becomes unachievable. Past monitoring has not been adequately done as promised and there is no reason to believe the Forest Service will be any better at monitoring than it has been in the past.)

DFP p. 55. Please discuss the evidence that suggests that logging enhances or restores the conditions for aquatic and riparian resources. Waters 1995 discusses how timber-harvest activities impair watersheds, so we are not familiar with the science upon which the Forest Service is relying that logging in riparian habitat is a good thing. Even Forest Service citations cited in support of this standard discusses the necessity of buffers, which undermines an assumption that logging can "enhance or restore" aquatic and riparian resources. Also, the last sentence of this standard is vaguely worded. How does the Forest Service expect to show that projects or permitted activities should "contribute to the attainment of aquatic and riparian desired conditions"? This standard has the effect of removing current protections under PACFISH and INFISH. Those standards should be inviolate and, with the possible extremely rare exception or two, the Forest Service has treated them as inviolate on the Nez Perce and Clearwater National Forests. Even prior to the listing of Snake River salmon, steelhead, and bull trout, the Nez Perce Forest Plan was better in this respect because it identified stream reaches that had not achieved the measurable standards set out for them and prohibited timber harvest unless the Forest Service could show an upward trend of fisheries habitat.

Additionally, the reasons upon which the Forest Service concludes that FW-STD-RMZ-01 would not result in detrimental effects to riparian areas are problematic. The reasoning mainly relies on guidelines as restricting timber harvest. *See* DEIS p. 3.2.2.2 pp. 43-44. However, guidelines are not binding limitations like standards are, so it is possible for proposed projects to depart from these guidelines. And, cutting even small diameter trees will eliminate shade in riparian zones. When that happens, the standard may result in additional adverse environmental impacts, and these need to be discussed. We would also like a discussion on the impacts of thinning and agency-ignited fire in riparian areas that include the best available science--the science cited in this section appears to just discuss the need for buffers, not what happens when one cuts trees and lights fire to them.

The DEIS also compares FW-STD-CWN-01 as the replacement to the current plan's upward trend requirement. FW-STD-CWN-01 states the following:

FW-STD-CWN-01. In Conservation Network Watersheds not meeting aquatic and riparian Conservation Strategy desired conditions, activities shall be planned designed and implemented in a manner that supports, and/or contributes towards the recovery of federally listed species and the achievement of these desired conditions and does not retard them when evaluated at the HUC12 subwatershed scale. Short-term adverse effects from project activities may occur when they support the long-term recovery of aquatic and riparian desired conditions and federally listed species.

What actions support and contribute to the recovery of listed species? Why not list them? The problem is here that not all streams from the Nez Perce and Clearwater Forest Plans that need protecting will get it. There are a lot of watersheds not in this conservation network that should be listed. In fact, all of the watersheds that include or flow into streams that contain listed species under the ESA or sensitive species should be in the conservation network. That includes every watershed in the North Fork, Lochsa-Powell, Moose Creek, Red River, and Slate Creek Ranger Districts. Please disclose the streams identified in both forest plans as not attaining the standards set in Nez Perce Forest Plan Appendix A and Clearwater Forest Plan Appendix K and are currently excluded from this Conservation Network Watersheds. Also please explain the rationale for leaving them out. Also, evaluating at the HUC12 subwatershed scale will dilute true impacts to crucial stretches.

The Forest Service states the following standard will address sediment:

FW-STD-CWN-02. In the Conservation Watershed Network and HUC12 subwatersheds with Endangered Species Act critical habitat or listed aquatic species, when constructing or reconstructing roads, projects shall result in a net decrease in the hydrologic connectivity of the road system and stream channel network. Treatment priority shall be given to roads or road segments that pose the greatest relative ecological risk to riparian and aquatic ecosystems. The net decrease is measured from beginning to end of each project.

But, there is no information about how these will be measured, it does not account for sediment-limited or at-risk watersheds not in the Conservation Watershed Network, and using HUC12 levels (as discussed in this section) would dilute true impacts.

Riparian areas and fire

The DEIS, in the watershed and aquatics section, has mis-stated the role of natural fire. We are confused about your use of prescribed fire, which the Forest Service proposes to "correct" fire suppression (which we think is an assumption that is not based on the best science) while continuing with fire suppression. The exclusion of fire has had little impact in the Northern Rocky Mountains because the natural fire regimes are so long. Please see our fire ecology section on this discussion and fix the assumption in the fisheries accordingly. Please take note of the refugia discussion, as many riparian areas end up serving the ecosystem as fire refugia--human choices of where to burn and where to suppress might eliminate refugia. Why not just form a standard that allows natural fire to burn in these watersheds?

Section 3.2.2.2. pg 67 states effects from fire suppression would be the same as no action alternative because the agency wouldn't be doing fire suppression activities in riparian areas. What are fire suppression activities? Because if they include significant logging and roads (or fire lines), that will cause landslides into the stream, and without the trees, there is no rip-rap to make complex watershed structures (like logs in streams).

The DFP proposes this standard:

FW-STD-RMZ-06. Direct ignition of prescribed fire in riparian management zones shall not be used unless:

- the actions will not retard attaining water, aquatic and riparian desired conditions;
- existing stream conditions are maintained or enhanced, and adverse effects to threatened or endangered species and their designated critical habitat are avoided; and
- Ignition will occur no closer than 150 feet to category 1 RMZs, 100 feet to category 2 and 3 RMZs, and 50 feet to category 4 RMZs.

What's to stop igniting fire outside of the spatial limitations above and allowing fire to burn into these areas? How is that different?

Prescribed fire in riparian habitat also has great uncertainty because of our inability in identifying refugia (see our discussion on refugia in the Fire Ecology section). The Forest Service's discussion in its assessment on the frequency of fire in riparian areas from post-fire monitoring suggests that these areas may very well be refugia. (*See* Assessment, Ch. 1, p. 121) Even though some riparian areas might burn in high severity, because there is great uncertainty with where this might happen (and some of this seems to depend on less predictable fire behavior driven by weather), a standard like this risks overtreating all areas, and thus eliminating potential refugia. The DEIS needs to recognize this.

Also, how much riparian thinning and cutting does the Forest Service anticipate in each alternative over a 30-year life of the forest plan? Just because the standard puts some restrictions on it, there is no restriction on amount of riparian thinning and cutting that can be done, which can far outweigh the impacts from some high-severity fire and contribute to overtreating. We recommend no thinning and no prescribed burning in any riparian area, and riparian areas with PACFISH-recommended buffers at least.

Best Management Practices

The Forest Service uses Best Management Practices as a standard (FW-STD-WTR-02) and suggests this will protect streams. However, comprehensive monitoring of the effectiveness of logging road BMPs in achieving water quality standards does not demonstrate the BMPs are protecting water quality, nor does it undermine the abundant evidence that stormwater infrastructure along logging roads continues to deposit large quantities of sediment into rivers and streams (Endicott, 2008).

In analyses of case histories of resource degradation by typical land management (logging, grazing, mining, roads) several researchers have concluded that BMPs actually increase watershed and stream damage because they encourage heavy levels of resource extraction under the false premise that resources can be protected by BMPs (Stanford and Ward, 1993; Rhodes et al., 1994; Espinosa et al., 1997).

The extreme contrast between streams in roaded areas vs. unroaded areas found on the Lolo NF (Riggers, et al. 1998) and the Clearwater National Forest (Huntington 1988) is a testament to the failures of the agency's BMP approach. So is the fact that many watersheds in the Clearwater and Nez Perce National Forests are not meeting forest plan objectives after over 30 years.

Roads influence many processes that affect aquatic ecosystems and fish: human behavior (poaching, debris removal, efficiency of access for logging, mining, or grazing, illegal species introductions), sediment delivery, and flow alterations.

The DEIS fails to provide sufficient evidence or monitoring data demonstrating BMP effectiveness.

When considering how effective BMPs are at controlling non-point pollution on roads, both the rate of implementation of the practice, and the effectiveness of the practice should both be considered. The FS tracks the rate of implementation and the relative effectiveness of BMPs from in-house audits. This information is summarized in the *National BMP Monitoring Summary Report* with the most recent data being the fiscal years 2013-2014 (Carlson et al. 2015). The rating categories for implementation are "fully implemented," "mostly implemented," "marginally implemented," "not implemented," and "no BMPs." "No BMPs" represents a failure to consider BMPs in the planning process. More than a hundred evaluation on roads were conducted in FY2014. Of these evaluations, only about one third of the road BMPs were found to be "fully implemented" (*Id*., p. 12).

The monitoring audit also rated the relative effectiveness of the BMP. The rating categories for effectiveness are "effective," "mostly effective," "marginally effective," and "not effective." "Effective" indicates no adverse impacts to water from project or activities were evident. When treated roads were evaluated for effectiveness, almost half of the road BMPs were scored as either “marginally effective” or “not effective” (*Id*, p. 13).

A recent technical report by the FS (Edwards et al., 2016) summarizes research and monitoring on the effectiveness of different BMP treatments. Researchers found that while several studies have found some road BMPs are effective at reducing delivery of sediment to streams, the degree of each treatment has not been rigorously evaluated. Few road BMPs have been evaluated under a variety of conditions, and much more research is needed to determine the site-specific suitability of different BMPs (*Id.*; also see Anderson et al., 2011).

Edwards et al., 2016 cites several reasons for why BMPs may not be as effective as commonly represented. Most watershed-scale studies are short-term and do not account for variation over time, sediment measurements taken at the mouth of a watershed do not account for in-channel sediment storage and lag times, and it is impossible to measure the impact of individual BMPs when taken at the watershed scale. When individual BMPs are examined there is rarely broad-scale testing in different geologic, topographic, physiological, and climatic conditions. Finally, in some instances, a single study is used to justify the use of a BMP across multiple states without adequate testing.

Climate change will further put into question the effectiveness of many road BMPs (Edwards et al., 2016). While the impacts of climate will vary from region to region (Furniss et al. 2010), more extreme weather is expected across the country which will increase the frequency of flooding, soil erosion, stream channel erosion, and variability of streamflow (*Id*). BMPs designed to limit erosion and stream sediment for current weather conditions may not be effective in the future. Edwards et al., 2016 state, “More-intense events, more frequent events, and longer duration events that accompany climate change may demonstrate that BMPs perform even more poorly in these situations. Research is urgently needed to identify BMP weaknesses under extreme events so that refinements, modifications, and development of BMPs do not lag behind the need.”

Climate change is also expected to lead to more extreme weather events, resulting in increased flood severity, more frequent landslides, altered hydrographs, and changes in erosion and sedimentation rates and delivery processes. (Halofsky et al., 2011.) Many National Forest roads are poorly located and designed to be temporarily on the landscape, making them particularly vulnerable to these climate alterations. (*Id*.) Even those designed for storms and water flows typical of past decades may fail under future weather scenarios, further exacerbating adverse ecological impacts, public safety concerns, and maintenance needs. (Strauch et al., 2015.) At bottom, climate change predictions affect all aspects of road management, including planning and prioritization, operations and maintenance, and design. (Halofsky et al., 2011.)

HUC12 analysis area too large and an unnecessary increase because the Forest Service has a lot of foundational information on stream reaches

The revised plan is increasing the area of watersheds when they are analyzed, which will dilute more specific impacts and be less informative than the 1987 plans, and the agency needs to discuss the full impacts of this or maintain how the 1987 plans divide up the rivers and streams now. The Nez Perce and Clearwater Forest Plans divide up watersheds by streams and stream reaches. In the draft revised plan and DEIS, there is a lot of discussion couched in terms of framework that begins with HUC-12-level watersheds. This is a significant increase in area, as the previous plans had existing conditions and requirements for much smaller drainages as admitted on pages 3.2.2.2-36 and 37. Smaller drainages mean an ability to more accurately identify the streams that have sediment issues, the streams that are impaired, and the specific impacts proposed projects will have on a stream. Moving to a HUC-12-level analysis area will dilute any project impacts to fish in smaller drainages and stream reaches, and it will increase uncertainties in impacts when analyzing them under NEPA. What is gained by moving in this direction? We think the DEIS fails to discuss what is lost, and that is the dilution of adverse impacts in a specific stream. Please discuss this the significant impacts that will result. One of those impacts is reducing the level of certainty about existing conditions, both in terms of what the Forest Service has to ascertain and what the agency is obliged to disclose to the public for project proposals. This, in turn, could theoretically result in the Forest Service authorizing environmentally damaging projects, the true extent we could know with smaller analysis areas but turn a blind eye to by using larger ones.

Based on the standards and percentages of habitat associated with those standards, the no-action alternative is better than what appears in the draft revised forest plan.

Cobble embeddedness

DEIS notes a "problem" with cobble embeddedness as a method, then uses it to make an invalid conclusion. "The ability of embeddedness to detect changes due to land management activities is unclear and results have rarely been published in peer-reviewed literature" (Sylte & Fischenich, 2002). The Forest Service cites this paper in the DEIS Fisheries section yet fails to discuss the limitations of cobble embeddedness to assess the habitat health of streams. Sylte & Fischenich (2002) also discuss how cobble embeddedness needs to be a measured parameter, not just a visual assessment in order to provide adequate characterization of stream habitat. The FS uses cobble embeddedness to draw conclusions that reductions in cobble embeddedness are possible due to reductions in "human disturbances." According to Sylte & Fischenich (2002), which was cited in the DEIS, this is not a valid conclusion. The FS should provide more data in order to draw valid conclusions on the effects of human disturbances and land management activities on stream habitat. The FS should also discuss alternatives to cobble embeddedness for measuring substrate conditions.

For the areas where the Forest Service represents that substrate conditions are not improving, is there a correlation with logging and roads?

Watersheds and global warming

The global climate is undergoing rapid changes, which alter stream temperatures, and threaten salmonid fisheries, which rely on cold water. But, the standards proposed cannot help achieve these desired conditions. The desired conditions include having ecosystems that can handle climate change, respond to disturbances, and self-support native populations of species.

Logging influences stream temperature. US Fish and Wildlife Service, 1998 recognizes, upland forest canopy removal raises stream temperatures:

> Groundwater entering streams (especially small streams) may be an important determinant of stream temperatures (Spence et al. 1996) or may provide localized thermal refugia in larger stream systems. Where groundwater flows originate above the neutral zone (16-18 meters below the surface in general) groundwater temperatures will vary seasonally, as influenced by air temperature patterns (Spence et al. 1996). Timber harvest from upland areas exposes the soil surface to greater amounts of solar radiation than under forested conditions (Carlson and Groot 1997), elevating daytime temperatures of both air and soil (Fleming et al. 1998, Buckley et al. 1998, Morecroft et al. 1998) and increasing diurnal temperature fluctuations (Carlson and Groot 1997). Relationships between shallow source groundwater flows and air and soil temperatures indicate that harvest activities in upland areas may increase stream temperatures via increasing temperature of shallow groundwater inflows. Other pathways for harvest actions to influence stream temperature include changing the volume and timing of peak flows, elevating suspended sediment levels, and altering channel characteristics (Chamberlin et al. 1991, Spence et al. 1996, USDA and USDI 1998a).

Guenther et al. (2012) found increases in stream temperature in relation to selective logging. They found increases in bed temperatures and in stream daily maximum temperatures in relation to 50% removal of basal area in both upland and riparian areas. Increases in daily maximum temperatures varied within the logged area from 1.6 to 3 degrees Celsius.

Changes in stream temperatures are causing redistribution of fish populations to colder waters which often fragments these populations into smaller, colder habitats (Isaak et al. 2014, Rieman et al. 2007, Wenger et al. 2011). These changes will cause declines in salmonid populations due to drastic reduction of coldwater habitat within this century (Isaak et al. 2014). There is still time to save these populations and protect native fisheries if drastic conservation management efforts are taken to target the protection of cold water habitats. As stated by Isaak et al. 2014,

“There are thousands of stream kilometers that are cold enough to provide suitable habitats even with substantial future climate change and warming this century. Most of these coldwater habitats occur on federal land at higher elevations, particularly the **National Forests**.”

The FS can play a huge role in protecting coldwater fisheries by making changes to how federal lands are managed. Some examples of conservation of coldwater management practices include assessing habitat needed to maintain coldwater fish populations, using this data to implement climate refuges for these populations, and using geospatial data and conservation initiatives provided by agencies like the Western Native Trout Initiative (Isaak et al. 2014).

The FS should incorporate any coldwater conservation initiatives into the revised Forest Plan and create standards to achieve those initiatives. What actions can the FS take in monitoring land management activities to preserve coldwater habitats and reduce the effects of climate change on the native fisheries of the National Forests?

Protecting upstream habitat would keep headwaters cool so the Forest System lands could provide the coldest water possible for fish. King, 1994 explains that small headwaters areas are particularly sensitive to the increased water yields due to removal of tree canopy:

> Timber removal on 25-37% of the area of small headwater watersheds increased annual water yield by an average of 14.1 inches, prorated to the area in harvest units and roads. Increases in streamflow occurred during the spring snowmelt period, especially during the rising portion of the snowmelt hydrograph. These forest practices also resulted in large increases in short duration peakflows, greatly increasing the sediment transport capacity of

> these small streams. The cumulative effects of these activities on streamflow in the Main Fork, with only 6.3% of its area in roads and harvest units, were not detectable.

Ziemer, 1998 observed the same phenomenon in his study on flooding and stormflows. Also, King, 1989 observed that "Current procedures for estimating the hydrologic responses to timber removal of third to fifth order streams often ignore what may be hydrologically important modifications in the low-order streams."

Priority watersheds and Water Conservation Network

Can you please discuss the difference between priority watersheds and water conservation networks? Can one watershed be in both? Why not go stream stretch by stream stretch in the 1987 plans? You have all the streams, you just need to update. There are a lot of watersheds not in your conservation network. Why has the Forest Service decided to leave them out?

Please define the following terms and discuss the data used to place watersheds into these categories "functioning properly", "functioning at risk," and "impaired." How are these terms used to inform land management practices? And why are they qualitative and not quantitative? Please add quantitative limits to each category, and specific, predictable ways to achieve these quantitative measurements where the public can check the Forest Service's work, much like the fisheries standards in the governing 1987 Nez Perce and Clearwater Forest Plans. With three qualitative categories, if a watershed is functioning at risk, there is no way to determine if the watershed is improving upward towards "functioning properly" or declining into "impaired." This would allow projects that could degrade water quality without the public or the Forest Service understanding the impacts. In Appendix K of the DEIS, the Forest Service said, "In 2011, the Nez Perce-Clearwater completed the watershed condition classification for 220 HUC12 subwatersheds. In summary, 140 watersheds were rated as functioning properly, 73 were rated as functioning at risk, and 7 were rated as impaired. As shown in Figure 1, the majority of subwatersheds with Class 2 and 3 ratings are concentrated in the western, more road intensive portion of the Forest. The most significant driver of the ratings was roads and trails." DEIS Appx K-5.

We had trouble understanding why the Forest Service chose only three priority watersheds as well as a vague reference to current and planned projects for them. In the DEIS on page 3.2.2.1 p. 22, the Forest Service stated that there were three priority watersheds: Upper Elk Creek, Upper Clear Creek, and Upper Little Slate. Please give us the project names mentioned in relationship to Upper Elk Creek, Upper Clear Creek, and Upper Little Slate, which the agency asserts are to address and improve these watersheds. Also, the Forest Service stated that "Future priority watersheds will be determined throughout the life of this plan." Why not order them now so the public can know the Forest Service's priority on what to restore?

We hope none of these projects involved with restoring these watersheds are part of timber harvests (logging), since the Forest Service disclosed that the most significant driver of ratings were roads and trails, and roads are often the result of logging projects. Proposing restoration projects in conjunction with timber harvest doesn't improve watersheds, it simply mitigates the harm of the timber harvest and will nullify efforts to improve watersheds. Also, please provide the science and explain how "forest health-insects and disease" impair watersheds. (DEIS Appx K, p. 9) That is listed as some parameter for rating watersheds and we request a discussion of the science connecting natural ecosystem processes to watersheds. The DEIS mentioned that these watersheds have plans? Where are those? Have they undergone NEPA analyses? Will they be incorporated into this plan?

The draft RFP objective lists alternatives that have 10-20 priority watersheds. Why have no more than three been listed? What would those 10-20 watersheds be?

Your objectives, will they always be done in conjunction with logging? If so, the improvements will not be improvements because they will simply offset the habitat degrading activities from timber harvests and associated roads. Additionally, the objectives may very well be totally nullified by the increase in logging, the impacts of which are minimally discussed.

Riparian management zones

Similar to most of this forest plan, the impacts of W, X, Y, and Z are discussed as one. Does this represent a reasonable range of alternatives? And, the agency did not try to analyze what each alternative's logging and roadbuilding numbers might do to the watersheds. Why can't the agency add up the logging done over the course of this forest plan and the roads built (temporary and permanent) to achieve that logging and then attempt an analysis about how many new roads the Forest Service might expect to add over the life of this plan?

We don't support the reduction of areas currently protected by PACFISH buffers.

Studies have found even selective logging may be associated with increases of instream fine sediments (Kreutzweiser et al. 2005, Miserendino and Masi 2010), changes in macroinvertebrate community structure or metrics (Flaspohler et al. 2002, Kreutzweiser et al. 2005), alterations in nutrient cycling and leaf litter decomposition rates (Lecerf and Richardson 2010), and increases in stream temperatures (Guenther et al. 2012). Flaspohler et al. (2002) noted that changes to biota associated with selective logging were found decades after logging. These studies strongly suggest that alterations caused by logging within RHCAs may result in significant changes in water quality parameters and stream biota in many areas; these results are likely tied to dynamics that may be common to many forested streams to varying degrees.

In the draft Forest Plan Revision for the Blue Mountains, the FS discloses: "Research has shown that effective vegetated filter strips need to be at least 200 to 300 feet wide to effectively capture sediment mobilizing by overland flow from outside the riparian management area." It is logical that logging or thinning within 50 to 100 feet from streams (or closer) would cause fine sediment production and allow for sediment delivery into streams, and potentially contribute to stream temperature increases, increased variability in waters quality and aquatic habitat parameters, alterations to stream hydrology, and other negative impacts.

Furthermore, headwater streams and non-fish bearing streams need more, not less, protection (Rhodes et al., 1994; Moyle et al., 1996; Erman et al., 1996; Espinosa et al., 1997). Both Erman et al., 1996 and Rhodes et al., 1994 conclude, based on review of available information, that intermittent and non-fish-bearing streams should receive stream buffers significantly larger than those afforded by PACFISH/ INFISH. The revised forest plan should have fully protected buffers of at least 300 feet for all waterbodies.

Can "objectives" for riparian management zones double count as mitigation for logging projects? For example, if the Forest Service proposes logging and roads that are going to degrade streams, and proposes road decommissioning and culvert removal/replacement elsewhere to mitigate for impacts, would that mitigation count towards this objective?

Although we do not support the reduction of riparian buffers between the stream and logging/roads, if the Forest Service places riparian management zones into classes, this should be done in the Forest Plan itself so the Forest Service can have an integrated plan that considers the forest as a whole, the public can know what to expect, and the agency has some measure of accountability. The 1987 Clearwater and Nez Perce Forest Plans delineated stretches of watersheds, noted their current conditions, and set expectations for them. We couldn't find this level of information in the revised draft plan or the DEIS. Why is this absent from the revised plan?

How many miles of waterways will the 300 foot buffer be reduced, and where is the information for this? When the Forest Service states in the revised forest plan that "Riparian Management Zones shall be delineated on the ground based on site conditions," does this mean that you will decide what management zones apply on a project-by-project basis? How often does the Forest Service check to see whether fish are found in streams? How would management zones be decided? What rubric are you using and why is that not described? And why can't you designate these zones with the forest plan? Figuring out the RMZ on a project by project basis means the existing condition will dictate where it is placed. For example, if a stream historically had fish but is currently so degraded that it no longer bears fish, looking at the stream on a project level, the draft plan would allow the Forest Service to designate it as a Category 2 Riparian Management Zone, which means that project activities would occur closer than if it had been a fish-bearing stream? Also, what about stretches of stream that might go from year-round flow to seasonal because of global warming? By not assigning zones up front, no protection is guaranteed anywhere and this allows the Forest Service to act arbitrarily—a license for development and logging everywhere without considering the entire forest. This forest plan should be laying out a plan across the area, for the whole forest, and not punting the specifics of what will be designated or protected to project-level analysis never consider the whole forest.

This means that a Riparian Management Zone Category 1 in 2022 could be downgraded to a Riparian Management Zone Category 2 in 2032? How does leaving decisions on a project-by-project basis form one integrated plan forest-wide as opposed to a license for development and logging everywhere by considering each project in a vacuum without considering the entire forest?

Reducing riparian buffers for streams without fish will place headwaters at more risk of degradation, including increasing the temperature of headwaters. Reducing riparian buffers allow for logging closer to non-fish bearing or perennial streams, which includes upstream habitat for streams that are occupied with fish downstream. Logging closer to the stream will reduce vegetative cover and make streams warmer, which means the headwaters will start warmer and add to that temperature as the water moves downstream. In times of global warming when fish populations are shifting for colder water (Isaak et al. 2014, Comte et al. 2013; Eby et al. 2014), the headwaters, even perennial streams, need to be protected so they start at the coldest temperature possible. Protecting headwaters should mean a restriction on logging so that eliminating vegetative cover doesn't ensure an earlier runoff—to preserve cold water temperatures as late in the year as possible, the plan should ensure headwaters snow melts as slowly as possible, which means protecting the areas around these headwaters from activities that would speed up spring runoff. These riparian management categories wouldn't ensure that protection. The DEIS should consider and discuss this, and there should be some measurable, enforceable standards that should be developed to protect headwaters in the face of global warming.

Watersheds, fisheries, and roads

Fish are injured by sediment generated by various forestry practices. *See* Waters 1995 pp. 24-36. A majority of this sediment is generated from roads. Road building and road density is not restricted in this forest plan, and it should be—not just to preserve fish habitat but all wildlife species that are adversely impacted by roads.

Road density is unrestricted, which would permit the agency to authorize construction of an unlimited amount of roads. Even the science that the agency cites found an association between roads and degraded aquatic habitat. How many roads (temporary and permanent) would the agency anticipate building or reconditioning with each alternative, and what is the estimate on sedimentation introduced into the stream as a result? Is there a way to estimate this based on the temporary and permanent roads built so far? USDA Forest Service, 2016b states, "Increased heavy-truck traffic related to log hauling can increase rutting and displacement of road-bed material, creating conditions conducive to higher sediment delivery rates (Reid and Dunne, 1984)." The abstract from Reid and Dunne, 1984 states:

> Erosion on roads is an important source of fine-grained sediment in streams draining logged basins of the Pacific Northwest. Runoff rates and sediment concentrations from 10 road segments subject to a variety of traffic levels were monitored to produce sediment rating curves and unit hydrographs for different use levels and types of surfaces. These relationships are combined with a continuous rainfall record to calculate mean annual sediment yields from road segments of each use level. A heavily used road segment in the field area contributes 130 times as much sediment as an abandoned road. A paved road segment, along which cut slopes and ditches are the only sources of sediment, yields less than 1% as much sediment as a heavily used road with a gravel surface.

The DEIS stated that you can't know where you will build roads, but if that is the case, wouldn't it be better to evaluate existing conditions stream stretch by stream stretch and set a standard for road density not to be exceeded by existing roads, new road construction, road templates, and temporary roads? If you refuse to do this and refuse to try to estimate the number of roads that could be required for logging under each alternative, the agency completely avoids any analysis on significant impacts that will occur connected with each alternative's jumps in logging. In the 1987 forest plans, numerical standards for fisheries habitat, when analyzed with models of sedimentation those roads would contribute to streams, provided a check on roads constructed, especially in watersheds with a high road density already contributing sedimentation.

US Fish and Wildlife Service, 1998 indicates that bull trout are absent when road densities exceed 1.71 mi/mi2, depressed when the road density = 1.36 mi/mi2 and strong when road density equals or is less than .45 mi/mi2 (P. 67.)

US Fish and Wildlife Service, 2010 provides a discussion of biological effects of sediment on bull trout and other fish.

USDA Forest Service, 2017c explains that native westslope cutthroat trout have declined due to habitat degradation:

The distribution and abundance of westslope cutthroat trout has declined from historic levels (less than 59 percent of historically occupied stream habitat) across its range, which included western Montana, central and northern Idaho, a small portion of Wyoming, and portions of three Canadian provinces (Liknes and Graham 1988, Shepard et al. 2005). Westslope cutthroat trout persist in only 27 percent of their historic range in Montana. Due to hybridization, genetically pure populations are present in only 2.5 percent of that range (Rieman and Apperson 1989). Introduced species have hybridized or displaced westslope cutthroat trout populations across their range. Hybridization causes loss of genetic purity of the population through introgression. Within the planning area, genetically pure populations of westslope cutthroat trout are known to persist in Ruby Creek (MFISH 1992, 2012). Some of these remaining genetically pure populations of westslope cutthroat trout are found above fish passage barriers that protect them from hybridization, but isolate them from other populations.

Brook trout are believed to have displaced many westslope cutthroat trout populations (Behnke 1992). Where the two species co-exist, westslope cutthroat trout typically predominate in higher gradient reaches and brook trout generally prevail in lower gradient reaches (Griffith 1988). This isolates westslope cutthroat trout populations, further increasing the risk of local extinction from genetic and stochastic factors (McIntyre and Rieman 1995).

Habitat fragmentation and the subsequent isolation of conspecific populations is a concern for westslope cutthroat trout due to the increased risk of local and general extinctions. The probability that one population in any locality will persist depends, in part on, habitat quality and proximity to other connected populations (Rieman and McIntyre 1993). Therefore, the several small, isolated populations left in the project area are at a moderate risk of local extirpation in the event of an intense drainage-wide disturbance.

Habitat degradation also threatens the persistence of westslope cutthroat trout throughout their range. Sediment delivered to stream channels from roads is one of the primary causes of habitat degradation. Sediment can decrease quality and quantity of suitable spawning substrate and reduce overwintering habitat for juveniles which reduces spawning success and increases overwinter mortality. Roads can also alter the drainage network of a watershed and thereby increase peak flows. The end result of increased peak flows is decreased channel stability and accelerated rates of mass erosion. Across their range the strongest populations of westslope cutthroat trout exist most frequently in the wilderness, Glacier National Park, and areas of low road densities or roadless areas (Liknes and Graham 1988, Marnell 1988, Rieman and Apperson 1989, Lee et al. 1997).

The DEIS acknowledges that riparian managements zones on these forests have been affected by road construction. *See, e.g.*, DEIS 3.2.2.2-12. Yet, the desired condition only addresses how to lessen impacts of roads being built, not actually reducing the amount of roads built. Desired condition FW-DC-ARINF-01 doesn't address reducing road mileage, and road mileage is what impacts wildlife and fisheries. Because the desired condition begins from the basis of putting roads in, and not minimizing impacts on aquatics by restricting or reducing the mileage, construction, or location of roads, this framework can very well contribute to a cumulative significant impact due to the construction of unlimited roads. If there is no limit to roads, it doesn't matter that each road might have minimal impacts, because road construction can cumulatively have huge impacts. Desired conditions for trails and recreation have this same issue.

Building an unlimited amount of roads is going to compound the problem of maintenance on existing roads. The FS admits such problems in a non-NEPA context (USDA Forest Service, 2010t):

> Constructing and improving drainage structures on Forest roads is an ongoing effort to reduce road-related stream sediment delivery. Although BMPs are proven practices that reduce the effects of roads to the watershed, it is not a static condition. Maintaining BMP standards for roads requires ongoing maintenance. Ecological processes, traffic and other factors can degrade features such as ditches, culverts, and surface water deflectors. Continual monitoring and maintenance on open roads reduces risks of sediment delivery to important water resources.

Ziemer and Lisle (1993) note a lack of reliable data showing that BMPs are cumulatively effective in protecting aquatic resources from damage. Espinosa et al., 1997 noted that the mere reliance on BMPs in lieu of limiting or avoiding activities that cause aquatic damages serves to increase aquatic damage. Even activities implemented with somewhat effective BMPs still often contribute negative cumulative effects (Ziemer et al. 1991b, Rhodes et al. 1994, Espinosa et al. 1997, Beschta et al. 2004).

The idea that since proposed roads are not in RHCAs they would have no impact neglects that roads in the upper parts of watersheds can have a serious problem. Rain on snow events, like occurred in 2016, resulted in landslides usually associated with roads. Many of these roads were near the ridge tops. Lloyd 2017. While landslides are natural events, landslides from roads and logging cause increased problems to the fisheries resources because it doesn’t bring with it the natural debris like logs--road failures usually only bring sediment.

Eleven percent of landslides assessed in the McClelland et al. (1997) report were associated with harvest activities. The DFP does not seem to have any clear restrictions on logging or roadbuilding to reduce the potential of landslides. Are there any limitations where, logging or roadbuilding would not occur on a certain slope? And if so, has the Forest Service figured global warming into these restrictions?

Washington State University scientists have found that climate change will likely make slopes in the Pacific Northwest that have been logged more prone to landslides. This increase is a result of wetter weather and more precipitation falling as rain rather than snow, which will saturate drier forests and seep into soil. Wet soil is not as cohesive and becomes more unstable. Although this particular study was conducted in western Washington, the scientists state that this finding translates to the eastern Washington and northern Idaho forests. Barik et al. 2017.

The Forest Service should impose limits at which it would be unsuitable to log and build roads, and it should be a more conservative incline than the past.

ESA-listed fish

The draft FS plan revision mentions the ESA recovery plan for salmon and steelhead which is cited in appendix 6. Is the FS following this plan’s requirements?

https://archive.fisheries.noaa.gov/wcr/protected_species/salmon_steelhead/recovery_planning_and_implementation/snake_river/snake_river_sp-su_chinook_steelhead.html

The draft forest plan revision includes a lot of general information on watersheds but no survey information or survey data. What are the fish populations like now? Please provide information on current habitat assessments. This information is not in the DEIS either. Also explain, how this information helps determine whether a water body is functioning properly, at risk, or impaired?

Appendix 6, page 4, where is the data behind classifying Upper Elk Creek, Upper Clear Creek, and Upper Little Slate Creek as "priority watersheds" for restoration. What about action plans for restoration of other watersheds?

Look into this IDEQ 303(d)/305(b)- Draft forest plan using this to qualify watersheds as "impaired." But also states that 21% of streams in the nez-perce have yet to be assessed for water quality by these standards. What is the plan for assessing these streams?

The DEIS acknowledges that riparian management zones on these forests have been affected by road construction. *See, e.g.*, DEIS 3.2.2.2-12. Yet, the desired condition only addresses how to lessen impacts of roads being built, not actually reducing the amount of roads built. Desired condition FW-DC-ARINF-01 doesn't address reducing road mileage, and road mileage is what impacts wildlife and fisheries. Because the desired condition begins from the basis of putting roads in, and not minimizing impacts on aquatics by restricting or reducing the mileage, construction, or location of roads, this framework can very well contribute to a cumulative significant impact due to the construction of unlimited roads. If there is no limit to roads, it doesn't matter that each road might have minimal impacts, because road construction can cumulatively have huge impacts. Desired conditions for trails and recreation have this same issue.

Also, the DEIS talks about hydrological connectivity and reducing that. What measures can do that? Why not list those measures so the public has more information? Does this mean locating roads higher up, on ridge tops or halfway up hillsides? Does this increase the probability that reconstructed or temporary roads would remain on/be placed on high-risk land types? If so, the Forest Service should consider global warming and an increase of landslides on hillsides that might have once been stable. Please see our landslide section.

Other species

The DFP and DEIS have no issue-specific plan components for some species. For example, the Forest Service states that the harlequin duck is addressed in the aquatics section, but never was. Please check for all species that the Forest Service planned to account for in the aquatics section.

What are the other non-fish species that rely upon riparian areas? How will the riparian buffer scheme proposed by the forest impact non-fish species that rely on riparian areas? How will the amount of logging proposed impact non-fish species per alternative? *See* Hawkes and Gregory 2012.

PIBO Background Data and Monitoring

Some of the background data used in the DEIS/DFP are from the PIBO monitoring. There are two concerns we have about this methodology. It appears that when applied to the Nez Perce and Clearwater National Forests, some of the reference streams have lower streambank stability than do the other streams. While we don't know why this is the case, streambank stability is particularly important in watersheds where livestock grazing takes place. Most of the Nez Perce and Clearwater National Forests are not grazed by domestic livestock, though where it occurs there is considerable concern about the impacts and the Forest Service has been very slow in updating allotment management plans. Having reference streams with a lower rating that other streams will skew the results. This should be addressed.

The other concern is whether that monitoring takes place and how frequently it will be done. While we understand that the PIBO monitoring is supposed to be done by an outside team, there is no guarantee that they will be funded to do this in coming years. In any case, the Forest Service has not lived up to its promise to the American public to do the monitoring it promised to do in the 1987 forest plans. Will the Forest Service forgo activities in areas where monitoring is not up to date or adequate?

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DIVERSITY

Viability

The current NPNF Forest Plan includes Wildlife and Fish Standard #3, requiring the FS to "Monitor population levels of all Management Indicator Species on the Forest. …Population levels will be monitored and evaluated as described in the Forest Plan Monitoring Requirements (Chapter V of the Forest Plan)." And the Clearwater Forest Plan also requires population trend monitoring of MIS.

By including MIS population trend monitoring requirements in forest plans, the agency acknowledged, wisely, that it needed to verify its assumption that allowing old-growth habitat to be reduced to 10% forestwide (a level well below the NRV)——assures viability of such species. The Assessment and DEIS fail to report population trends of MIS because the Forest Service has failed to meet its MIS monitoring commitments. The Forest Service failed to verify its minimum habitat old-growth MIS assumption.

Now, the DFP includes no binding, nondiscretionary quantitative habitat standards for such species. Clearly, following its failings in monitoring the agency clearly cannot claim it has any scientific expertise on such matters. The DFP is not consistent with the diversity requirements of NFMA and the viability requirements of the 2012 Planning Rule.

USDA Forest Service, 1987d states:

> Defining viable populations and assessing diversity are difficult tasks in the time frame of the Forest Plan. The wildlife and fisheries section of the Forest Service Handbook on Planning (FSH 1902.12) defines a viable population as one that "consists of the number of individuals, adequately distributed throughout their range, sufficient to perpetuate their long-term existence in natural self-sustaining populations." Shaffer (1981) refines this definition by saying a minimum viable population is one that can withstand these environmental changes and have a 99 percent chance of surviving 1000 years.

The terms viable, minimum viable and threshold level are often used interchangeably in relation to population levels. I prefer to distinguish between viable and minimum viable populations and consider a minimum viable population as a population at the threshold level of viability. Above the threshold the population is viable, below it isn't.

Salwasser and Hanley (1980) also list five factors that largely determine population viability. These factors are:

1. population size and density;
2. reproductive potential;
3. dispersal capability
4. competitive capability; and
5. habitat characteristics.

(T)here are some wildlife species that are very sensitive to Forest activities and development such as timber sales, road construction, and oil, gas and mineral development. …Maintaining viable populations of these species will require special consideration. These species can be lumped into three categories:

1. endangered, threatened or sensitive species
2. old-growth dependent species; and
3. snag dependent species.

The Forest Service says a viable population is one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area. With the 2012 Planning Rule the USDA states its intent "to provide habitat to maintain viable populations." [21217 Federal Register Vol. 77, No. 68, April 9, 2012.] The 2012 Planning Rule defines viable population as one: "…that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments." [21272 Federal Register Vol. 77, No. 68, April 9, 2012.] [FN: This is the same definition stated in the DFP Glossary.] The Planning Rule defines stressors as "Factors that may directly or indirectly degrade or impair ecosystem composition, structure or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime." [*Id.*]

The Planning Rule does not define "resilient." The DFP defines resilience as: "The capacity of a (plant or animal) community or ecosystem to maintain or regain normal function and development following disturbance." However the DFP fails to explain what "normal function and development" means for each of the Species of Conservation Concern and Focal species. The DFP also fails to explain what "sufficient distribution" means in terms of each Species of Conservation Concern and Focal species. Nor does the DFP address what "adaptable to stressors and likely future environments" means for each Species of Conservation Concern and Focal species.

With its definition of viable population, the FS neglects to address issues consistent with best available scientific information, such as the "estimated numbers", minimum number of reproductive individuals of each species, and population dynamics.

Traill et al., 2010 and Reed et al., 2003 are published, peer-reviewed scientific articles discussing what constitutes a minimum viable population. The DEIS does not identify best available scientific information that provides scientifically sound, minimum viable populations for any species.

Schultz, 2010 criticizes Forest Service wildlife analyses based primarily upon habitat availability, because habitat alone is insufficient for understanding the status of populations. (See also Noon et al., 2003; Committee of Scientists, 1999.). Schultz, 2010 recommendations call for peer review of large-scale assessments and project level management guidelines, and for adoption of robust, scientifically sound monitoring and measurable objectives and thresholds for maintaining viable populations of native species.

Mills, 1994 also criticizes the FS's use of the term "viable" while only referring to habitat characteristics while ignoring population dynamics. Population dynamics refers to persistence of a population over time—which is key to making predictions about population viability. Mills, 1994 explains the range of parameters that must be used to make a scientifically sound assessment of wildlife species viability, including assessing population size, population growth rate, and linkages to other populations. Ruggiero, et al. (1994a) also point out that a sound population viability analysis must utilize measures of population dynamics. Finally, the USDA's 2000 NFMA planning regulations also recognized the importance of consideration of population dynamics for sustaining species. The DFP and DEIS fail to consider best available science on population dynamics.

The cumulative effects of carrying out multiple projects simultaneously across wide landscape and over such a long duration as a forest plan makes it imperative that population viability be assessed at least at forestwide scales (Marcot and Murphy, 1992, Lacy and Clark, 1993).

For viability the DFP only uses very abstract terminology and legalese, and provides no way for the agency to ever figure out if it's failing to insure viability for any species. It badly fails to define viability for any species in objective, measurable, scientifically supportable terminology.

Furthermore, the DFP fails to even mandate that viability be insured as the Planning Rule requires, further failing to insure viability. It hardly uses the word—only mentioning viability in terms of plan monitoring and in previously adopted Northern Rockies Lynx Management Direction. The DFP does, however, adopt much of the Planning Rule definition of viability in FW-DC-WL-02, which states: "Ecological conditions in the Nez Perce-Clearwater planning area provide for, or contribute, to the persistence of populations of species of conservation concern over the long term, with sufficient distribution to be resilient and adaptable to stressors and likely future environments." Yet in stating this as a desired condition, the DFP is implying that viability "may currently exist or may only be achievable over a long time period." Thus the DFP has no "completion date" or timetable specified for viability if it is in doubt, nor any requirement at all for insuring viability. This is clearly inconsistent with the Planning Rule.

The DEIS states, "The Nez Perce and Clearwater Forests manage habitat to provide for viable populations of species. The Forest's mandate is to manage habitat for species. State wildlife agencies, specifically the Idaho Department of Fish and Game has the responsibility to manage wildlife population numbers." Please cite the IDFG direction the FS believes insures wildlife population numbers on the NPCNF. Please cite IDFG information on population numbers, abundance, and distribution of all at-risk species, species of conservation concern, focal species, and management indicator species.

Old Growth

The Forest Service Chief's 10/11/89 Position Statement on National Forest Old Growth Values (Appendix C in Green et al., 1992) reads a lot like a forest plan Desired Condition:

> The Forest Service recognizes the many significant values associated with old growth forests, such as biological diversity, wildlife and fisheries habitat, recreation, aesthetics, soil productivity, water quality, and industrial raw material. Old growth on the National Forests will be managed to provide the foregoing values for present and future generations. …Where goals for providing old growth values are not compatible with timber harvesting, lands will be classified as unsuitable for timber production.

Yet throughout the implementation of the current forest plans, the Forest Service too frequently prioritized "industrial raw material" at the expense of those other values.

One of the origins of the Green et al., 1992 "Old-Growth Forest Types of the Northern Region" is found in the Chief's 1989 statement:

> Old growth forests encompass the late stages of stand development and are distinguished by old trees and related structural attributes. These attributes, such as tree size, canopy layers, snags, and down trees, generally define forests that are in an old growth condition. The specific attributes vary by forest type. Old growth definitions are to be developed by forest type or type groups for use in determining the extent and distribution of old growth forests.

Green et al., 1992 state:

- The old growth types for the Northern Region have been developed for three different geographic areas within the Region. …The Northern Idaho Zone is the western side of the northern Rocky Mountains in Idaho that is heavily influenced by pacific storms and weather patterns and generally received higher precipitation, especially in the winter, than areas to the east.
- Old growth dependent and associated species are provided for by supplying the full range of the diversity of late seral and climax forest community types that make up habitat for these species.
- Ecological definitions of all successional stages, stratification by habitat types, and other site conditions will help us do a better job of managing for a landscape with a full range of natural biological diversity.

USDA Forest Service, 1987a states, "With respect to wildlife (old growth) represents a distinct successional stage that is an important component of wildlife habitat." USDA Forest Service, 1987a states:

> Richness in habitat translates into richness in wildlife. Roughly 58 wildlife species on the Kootenai (about 20 percent of the total) find optimum breeding or feeding conditions in the "old" successional stage, while other species select old growth stands to meet specific needs (e.g., thermal cover). Of this total, **five species are believed to have a strong preference for old growth and may even be dependent upon it for their long-term survival.** (*See* USDA Forest Service, 1987b).

While individual members or old growth associated species may be able to feed or reproduce outside of old growth stands, **biologists are concerned that <u>viable populations</u> of these species may not be maintained without an adequate amount of old growth habitat.**

Wildlife richness is only a part of the story. Floral species richness is also high, particularly for arboreal lichens, saprophytes, and various forms of fungus and rots**. Old growth stands are genetic reservoirs for some of these species, the value of which has probably yet to be determined.** (Bold emphases added.)

USDA Forest Service 1987d states:

> Old growth is a key element in a diverse forest environment. Drastic reduction in quantity of old growth not only reduces diversity, but it also makes old-growth dependent wildlife vulnerable to significantly reduced populations, extirpation, or even extinction.

USDA Forest Service 1987d emphasizes that consideration of old growth goes beyond the state of a particular stand at any given time. A larger geographical perspective and longer temporal perspective are needed to understand an old-growth ecosystem:

> Over the long run, living biomass in an old-growth forest fluctuates around a mean. Episotic high and low mortality caused by fire, disease and insects are balanced by primary production. Borman and Likens (1979) describe this condition as a "shifting-mosaic steady state." Over a large area the average condition (steady state) of the vegetation is a forest dominated by old-growth trees. Within the gross boundaries of the old-growth forest are found patches representing every successional stage. The location of these patches of seral vegetation shift over time, for as one stand passes from pole to mature to old-growth trees, another stand may be eliminated by an insect attack. Thus, within the gross boundaries of an old-growth ecosystem a mosaic of varying age class stands constantly shift internal boundaries. Traditional ideas about climax vegetation are not really appropriate, for seral species and a heterogeneous age class are important elements in this "shifting mosaic steady state.

Next we present the DFP's plan components relevant to old growth, and our comments on each.

MA2 and MA3-DC-FOR-10. Amounts of ponderosa pine, western larch, western white pine, and whitebark pine old growth are maintained or increased from existing amounts. Amounts of western redcedar, Pacific yew, and western hemlock old growth are maintained through time.

This DC reflects Forest Service confusion given the Glossary's definition of old growth ["the definitions for old growth are those provided within the document titled "Old Growth Forest Types of the Northern Region (Green et al. 1992, and errata 12/11)."] Green et al, 1992 is "OLD-GROWTH FOREST TYPES" and lists the following North Idaho old growth types applicable to the NPCNF:

- Old Growth Type[20] Code 1: Ponderosa pine, Douglas-fir, Western Larch Forest Types on warm, dry environments
- Old Growth Type Code 2: Lodgepole pine forest type on cool and cold environments
- Old Growth Type Code 3: Pacific yew forest type of cool moderately moist environments

[20] Each Old Growth Type also has descriptions of Forest Types, Habitat Types, and Groups.

- Old Growth Type Code 4: Douglas-fir, grand fir, western larch, Engelmann spruce/subalpine fir/western hemlock, white pine forest types on cool, moist environments.
- Old Growth Type Code 5: Engelmann spruce/subalpine fir, mountain hemlock/subalpine fir forest types on cold, moist environments
- Old Growth Type Code 6: Whitebark pine forest type on cold environments
- Old Growth Type Code 7: Western red cedar forest type on moist environments
- Old Growth Type Code 8: Douglas-fir, western larch, Engelmann spruce/subalpine fir, mountain hemlock/subalpine fir, and white pine forest types on cold, moderately dry environments.
- Old Growth Type Code 9: Engelmann spruce/subalpine fir and mountain hemlock/subalpine fir forest types on very cold, harsh environments.

So, in saying "western larch old growth" this DC fails to distinguish between Old Growth Types 1, 4, and 8. Please eliminate the confusion inherent in MA2 and MA3-DC-FOR-10 by using Old Growth Types, not "(tree species) old growth."

The problem with a Desired Condition such as this ("increased from existing amounts") is that this can be accomplished in a single year, by doing no logging. It's absurd. It means nothing.

Also explain what is meant by the ambiguous phrase, "maintained through time."

MA3-STD-FOR-01. Within ponderosa pine, western larch, western white pine, Pacific yew, western redcedar, western hemlock, and whitebark pine old growth stands, vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the definition of old growth ten years post activity. See glossary for old growth definition.

Again, this reflects agency confusion because it pays no attention to the glossary definition which uses "Old Growth Types" rather than "(tree species) old growth."

Worse, the reference to "ten years post activity" is bizarre. If one must wait ten years after logging to verify forest plan compliance then this is not a useful standard.

And what does it mean to say an activity "would likely"? This is too vague for a Standard.

Also, whereas the DFP Glossary defines "old growth forests" ("ecosystems") and "old growth habitat" ("a community") it has no definition of "<u>old growth stand</u>." What is your definition of "old growth stand"?

MA2 and MA3-GDL-FOR-02. Vegetation management activities may be authorized in ponderosa pine, western larch, western white pine, Pacific yew, western redcedar, western hemlock, and whitebark pine old growth stands only if the activities are designed to increase the resistance and resiliency of the stand to disturbances or stressors and if the activities are not likely to immediately modify stand characteristics to the extent that the stand would no longer meet the definition of old growth over the long-term. See the glossary for the **definitions of resistance and resilience**.

Very same problems as stated above ("not likely", "over the long term", "old growth stands"); and confusion by omission of reference to Old Growth Types—your own definition.

And the concepts of resistance and resilience are not meant to be measured using numerical criteria, so they have no place in a Guideline.

The reason the Forest Service struggles so mightily with these Plan Elements which target old growth with logging is that mechanical management meddling is the antithesis of the natural processes that create old growth—they degrade old growth characteristics and values. Old growth is not habitat for chainsaws, skidders, roads, cables, fellerbunchers, loaders, etc. because of the collateral damage to old growth values they bring in. Yet there isn't a single Plan alternative that recognizes best available scientific information.

MA2 and MA3-GDL-FOR-03. To prevent fragmentation of existing ponderosa pine, western larch, western white pine, Pacific yew, western redcedar, western hemlock, and whitebark pine old growth patches, permanent road construction should be avoided in these old growth types unless a site specific analysis determines the route through old growth to be the optimum location and no other alternative location is feasible.

How in the world could a road punched through old growth be in an "optimum location"? What "values associated with old growth" are you prioritizing above ecological old growth values here?

And again, we see confusion concerning Old Growth Types. Here the DFP conflates old growth types with (species) old growth. Again, please note your own definition.

And what is an "old growth patch"?

MA2 and MA3-GDL-FOR-04. A stand categorized as an old growth type other than those types described in MA3-FOR-DC-10 (a non-desired old growth type) should not be managed using a regeneration harvest prescription if it can be converted to a desired old growth type to meet desired conditions in MA3-DC-FOR-10.

Massive confusion here. First, we take it you mean MA3-DC-FOR-10 in both instances, not "MA3-FOR-DC-10" in the second line, which isn't found anywhere in the DFP.

Further, MA3-DC-FOR-10 uses "Potential Vegetation Type Groups" not Old Growth Types and seems to once again conflate old growth types with (species) old growth.

And seriously, "a non-desired old growth type"? Are there any "Old Growth Associated Species" which use habitat in the "non-desired old growth types"? And does the Forest Service assign or recognize any "values associated with old growth" (Forest Service Chief's Position Statement) to these non-desirables, other than timber production?

By promoting the fiction that is "non-desired old growth type" you are ignoring

Green et al., 1992 (emphases added):

- Old growth dependent and associated species are provided for by supplying **the full range of the diversity of late seral and climax forest community types** that make up habitat for these species.
- Ecological definitions of all successional stages, **stratification by habitat types**, and other site conditions will help us do a better job of managing for a landscape with a **full range of natural biological diversity**.

And what is the scientific basis for you to claim you can convert one old growth type to another? It appears a Frankenstein forest is part of your vision for old growth ecosystems. It also appears your "desirable" old growth is unnaturally open, because that is what would happen under this Guideline.

Whereas the DFP doesn't identify the "undesirables", the DEIS does. It is "Douglas fir, grand fir, western larch, Engelmann spruce/subalpine fir, western hemlock, western white pine, and ponderosa pine forest types on cool, moist environments." Once again, this conflates or misleads by using the term "(species) forest types" instead of "Old Growth Types"—the latter being the real Green et al. classification criteria.

Next, we see how the DEIS demonizes these "undesirable … types" of old growth: "(T)hese forest types are over-represented compared with historic conditions and often do not long persist as old growth, these old growth types should not be specifically protected by forest plan components." In other words this old growth is taken to be a sign or symptom of a forest out of whack.

Under the Forest Service's skewed "thinking" there are too many of these, vaguely, "forest types" so the way to re-set the balance is clearcut the oldest sectors? When it's known that logging on the NPCNF has resulted in much less late-successional forest as a whole compared to the NRV, and thus fewer habitat opportunities for old-growth associated wildlife? When the agency has the opportunity to re-set this balance by focusing instead on younger, less rare habitats? This is very odd "thinking."

And this is being promoted in the absence of the DEIS citing any data that actually proves that either these undesirable "forest types" or the subset of them which has the audacity to persist longer on the landscape are in fact out of balance. Where are your numbers?

The DEIS continues, more explicitly identifying the Forest Service's "thinking" that it's best to log old growth:

> The current distribution of old growth types across the Nez Perce-Clearwater is considerably outside of natural range of variation for dominance types and should incorporate thinking about forested vegetation as a whole, rather than simply restricting activities within all old growth. To do this, plan components are designed to address our underrepresented dominance types while allowing harvest within overrepresented dominance types.

Again, the wording of this Guideline (MA2 and MA3-GDL-FOR-04) makes it clear **that the intent is to clearcut this old growth**: It "should not be managed using a regeneration harvest prescription if it can be converted to a desired old growth type."

How many acres of these "over-represented old-growth forest types" exist now on the NPCNF?

What is the NRV, in acres plus other relevant metrics, of these "over-represented old-growth forest types" on the NPCNF, and what is your scientific foundation for the NRV?

Even partial logging in old growth would result in the old growth being less resistant to fire—increased fire severity and more rapid fire spread. This common sense is recognized in a news media discussion of the 2017 Eagle Creek fire in Oregon:

> **Old growth not so easy to burn:**

> Officials said the fire spread so rapidly on the third and fourth days because it was traveling across lower elevations.
>
> The forests there aren't as thick and as dense as the older growth the fire's edge is encountering now - much of it in the Mark O. Hatfield Wilderness, Whittington said.
>
> Whittington said because there's more cover from the tree canopy, the ground is moister -- and that's caused the fire to slow. Also, bigger trees don't catch fire as easily, he said. (Emphasis added.)

In studying mixed-severity fire regime habitat of the northern spotted owl, Lesmeister, et al., 2019 found: "The odds that suitable nesting/roosting habitat would burn at lower severity was 2–3 times higher than the odds it would burn at moderate-to-high severity." This fire regime is what we're talking about here. The authors explain why this denser late-successional forest tended to burn less often with high severity:

> The microclimate and forest structure likely played a key role in lower fire severity in nesting/roosting habitat compared to other forest types. As succession progresses and canopy cover of shade-tolerant tree species increases, forests eventually gain old-growth characteristics and become less likely to burn because of **higher relative humidity in soil and air, less heating of the forest floor due to shade, lower temperatures, lower wind speeds, and more compact litter layers** (Countryman 1955, Chen et al. 1996, Kitzberger et al. 2012, Frey et al. 2016, Spies et al. 2018). In addition, as the herbaceous and shrub layer is reduced by shading from lower to mid-layer canopy trees, **the connection between surface fuels and the canopy declines**, despite possible increases in canopy layering (Halofsky et al. 2011, Odion et al. 2014). (Emphases added.)

Lesmeister, et al., 2019 also discuss landscape management approach which protects such old growth as a mechanism for adapting to climate change:

> An integral component of these approaches could include resistance strategies (i.e., no active management) to protect high-value older forest (Millar et al. 2007) and prescribed fire to promote and maintain a mix of forest conditions in this landscape characterized by mixed-ownership and mixed-severity fire regime. Ultimately, spatial heterogeneity that includes the buffering effects of northern spotted owl nesting/roosting habitat may serve as a stabilizing mechanism to climate change and reduce tendency toward large-scale catastrophic regime shifts.

DFP Glossary:

> Old Growth Forests**:** Are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function. In the context of the Nez Perce-Clearwater ecosystem the definitions for old growth are those provided within the document titled "Old Growth Forest Types of the Northern Region (Green et al. 1992, and errata 12/11).

We understand that specific structural characteristics help distinguish old growth from earlier stages. This also states or implies that old-growth ecosystem function and species composition are different from earlier stages ecosystem function and species composition. Please explain the differences in species composition between old growth and earlier stages. Also, what ecosystem function(s) are you referring to, which differ from old growth to earlier stages?

DFP Glossary:

> Old Growth Habitat: A **community** of forest vegetation characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure will typically have multistoried crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameters exhibiting a wide range of defect and breakage both live and dead, standing and down. The time it takes for a forest stand to develop into an old-growth habitat condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature such as weather, insect, disease, fire, and the actions of man also affects the rate of development of old-growth stand conditions. **Old-growth habitat may or may not meet the definition for old growth forest.** (Emphases added.)

So if old growth habitat may not meet the definition for old growth forest (Green et al., 1992), which includes measureable criteria) then what is your objective, measurable criteria for determining something is "old growth habitat"?

The DFP defines "Old Growth Associated Species: the group of wildlife species that is associated with old-growth forest plant communities on the Nez Perce-Clearwater." USDA Forest Service, 1987a states:

> Roughly 58 wildlife species on the Kootenai find optimum breeding or feeding conditions in the "old" successional stage, while other species select old growth stands to meet specific needs (e.g., thermal cover). Of this total, five species are believed to have a strong preference for old growth and may even be dependent upon it for their long-term survival.

Please disclose the NPCNF's list of "Old Growth Associated Species" corresponding to the Kootenai National Forest's (USDA Forest Service, 1987b).

Please disclose the total acreage that meets current forest plans' old-growth definitions. We are concerned that the agency is relying on outdated informaton.

Does the NPCNF have a forestwide old-growth inventory, which discloses:

- How each delineation of old growth was determined to be old growth (survey method)?
- The date of determination?
- The acreage of each old-growth (stand? patch?)?
- The numerical criteria and characteristics documented for each stand or patch?
- An identity label of each stand or patch that can be used for GIS mapping?

Does the NPCNF have a forestwide map created with the above data, available for public inspection?

Is there a lower limit on the size of old-growth areas as criteria? The Forest Service's Purvine (2007) concluded that old-growth as small as 80 acres "would be considered far too small to meet the needs of most old forest dependent species." What does the NPCNF consider to be best available science on the minimum size of old-growth areas, in order to be effective or suitable habitat for the Old Growth Associated Species?

USDA Forest Service 1987a addresses this issue:

> A unit of 1000 acres would probably meet the needs of all old growth related species (Munther, et al., 1978) but does not represent a realistic size unit in conjunction with most other forest management activities. On the other hand, units of 50-100 acres are the smallest acceptable size in view of the nesting needs of pileated woodpeckers, a primary cavity excavator and an old growth related species (McClelland, 1979). However, **managing for a minimum size of 50 acres will preclude the existence of species which have larger territory requirements**. In fact, Munther, et al. (1978), report that **units of 80 acres will meet the needs of only about 79 percent of the old growth dependent species** (see Figure 1). Therefore, while units of a minimum of 50 acres may be acceptable in some circumstances, <u>50 acres should be the exception rather than the rule</u>. Efforts should be made to provide old growth habitat in blocks of 100 acres or larger. …**Isolated blocks of old growth which are less than 50 acres and surrounded by young stands contribute very little to the long-term maintenance of most old growth dependent species**. (Bold emphasis added.)

The FS Region 1 report Bollenbacher, et al., 2009 (cited in the Kootenai NF's Black Ram EA) states concerning the FIA inventory: "All northern Idaho plots utilized a primary sample unit (PSU) composed of four fixed radius plots with trees 5 – 20.9 inches tallied on a 1/24th acre plot and trees 21.0 inches DBH and larger tallied on a ¼ acre plot." Also, Czaplewski, 2004 states, "Each FIA sample location is currently a cluster of field sub-plots that collectively cover an area that is nominally one acre in size, and FIA measures a probability sub-sample of trees at each sub-plot within this cluster." In addition, Bollenbacher and Hahn, 2008 under "Defining Old Growth" state: "There are no specific criteria for minimum patch size for OG in the Northern Region definitions" but recognize "There are, however, some Forest Land Management Plans that may include guidance for a minimum map unit for OG stands." Despite that, Bollenbacher and Hahn, 2008 try to make a case for smaller minimum stand sizes, saying "The regional vegetation minimum map unit of 5 acres for a stand polygon would be a reasonable lower limit for all vegetation classes of forest vegetation including OG stands." Clearly, whether the FS is using a ¼-acre, one-acre, or five-acre minimum map unit, none conform to scientifically supported old-growth minimum stand size criteria. Furthermore, it would be ludicrous to propose that any old-growth associated MIS, Sensitive, or ESA-listed species could survive on even a five-acre old-growth stand—there is no scientific evidence to support such a premise.

Roads allow for potential access by firewood cutters to remove standing snags. Bate and Wisdom, 2004 investigated management and other human influences on snag abundance. Some findings include:

> 1. Stands far from roads had almost three times the density of snags as stands adjacent to open or closed roads. No difference in snag density existed for stands adjacent to open versus closed roads. Rather, snag density declined with increasing proximity to nearest road. Consequently, the presence of any road near or adjacent to a stand is an important predictor of substantially reduced density of snags. Ease of access for firewood cutting and other forms of timber harvest is the most likely explanation for reduced snag density near roads.

> 2. Stands closer to the nearest town had a lower density of snags than those farther from nearest town. This finding implies that stands closer to town, and therefore more accessible to human activities, also are likely areas where firewood cutting is concentrated, resulting in reduced snag density.
>
> 3. Stands in the late-seral stage had three times the density of snags as stands in the mid-seral stage, and almost nine times that of stands in the early-seral stage. Stands in the late-seral stage provide essential snag habitat for wildlife that does not appear to be consistently present in younger stands.
>
> 4. Stands with no history of timber harvest had three times the density of snags as stands that were selectively harvested, and 19 times the density as that in stands that had undergone a complete harvest. These results suggest that past timber harvest practices have substantially reduced the density of snags, and that snag losses have not been effectively mitigated under past management.
>
> 5. Stands adjacent to private land had a lower density of snags within mid- and late-seral stages, in contrast to a higher density in stands surrounded by Forest Service land. These results are likely explained by safety and fire management policies, which call for removal of snags along property boundaries, where such snags often are deemed to pose safety or fire hazards. In addition, increased human access likely contributes to lower snag densities in stands adjacent to private land.

Considering the forestwide inventory of old growth, how many acres have seen reduced effectiveness of old-growth habitat via loss of snags to firewood cutters? How many miles of roads open to public access for a portion of the year either bisect or are adjacent to old growth stands?

Please respond to concerns as expressed by Yanishevsky, 1994 regarding the Green et al., 1992 definitions for old growth:

> As a result of Washington Office directives, Region 1 established an Old-Growth Committee. In April 1992, Region 1 issued a document entitled "Old-Growth Forest Types of the Northern Region," which presented Old-Growth Screening Criteria for specific zones on Western Montana, Eastern Montana, and North Idaho (U.S.D.A. Forest Service 1992). This was an attempt to standardize criteria for classifying the variety of old-growth types across the Region. …The committee, however, executed this task without the benefit of outside scientific peer review or public input, either during or after the process (Yanishevsky 1990, Shultz 1992b). Moreover, the methodology used by the committee was unscientific and did not even include gathering field data to verify the characteristics of old-growth stands as a basis for the definition (*id.*). A former member of the Region 1 Old-Growth Committee described a "definition process" that relied heavily upon the Committee members' pre-conceived notions of the quantifiable characteristics of old-growth forests (Schultz 1992b).
>
> The old-growth definition in its present state, without field verification of assumptions, and without addressing the issue of quality, is inadequate to scientifically describe, define, delineate, or inventory old-growth ecosystems.
>
> (*id.*) Not only did the Committee fail to obtain new field data on old-growth forest characteristics, it failed even to use existing field data on old-growth definition and

> classification previously collected for Region 1 (Pfister 1987). Quality of old growth was not addressed during the definition process. The Committee did not take into account the legacy of logging that has already destroyed much of the best old growth. This approach skewed the characteristics that describe old-growth forests toward poorer remaining examples. …It's premature for the Forest Service to base management decisions with long-term environmental effects on its Region 1 old-growth criteria, until these criteria are validated by the larger scientific community.

Yanishevsky, 1994 also points out the scientific inadequacy of maintaining merely "minimum" amounts of old-growth habitat and its components such as snags.

Lesica (1996) states that use of 10% as minimum old-growth Standard may result in extirpation of some species. This is based on his estimate that 20-50% of low and many mid-elevation forests were in old-growth condition prior to European settlement. Please cite what the NPCNF considers to be best available scientific information on the forestwide amount and distribution of old growth necessary to assure viable populations of old-growth associated species.

An analysis from the Kootenai National Forest (Gautreaux, 1999) indicates 22% old growth is near the bottom of "reference conditions" on that Forest, and the present situation is far below 22%. Also, Dueker and Sullivan, 2001 "recognize that historical conditions probably provided a higher level of old forest habitat through time than what is provided by the (KNF) Forest Plan direction (a mean of 27.7% as opposed to 10%)."

Gautreaux, 1999 states:

> …research in Idaho (Lesica 1995) of stands in Fire Group 4, estimated that over 37% of the dry Douglas-fir type was in an old growth structural stage (>200 years) prior to European settlement, approximately the mid 1800's.
>
> Based on research of Fire Group 6 in northwest Montana (Lesica 1995) it was estimated that 34% of the moist Douglas-fir type was in an old growth structural stage (>200 yrs.) prior to European settlement, approximately the mid 1800's.
>
> Based on fire history research in Fire Group 11 for northern Idaho and western Montana (Lesica, 1995) it was estimated that an average of 26% of the grand fir, cedar, and hemlock cover types were in an old growth structural stage prior to European settlement.
>
> …fire history research in Fire Group 9 for northern Idaho and western Montana (Lesica, 1995) estimated that 19-37% of the moist lower subalpine cover types were in an old growth structural stage (trees > 200 yrs.) prior to European settlement. While this estimate is lower than suggested by Losensky's research…

Lesica found an estimated 18% of the cool lodgepole pine sites was in an old growth structural stage (>200 years) prior to European settlement, approximately the mid 1800's. … This same research in Fire Group 8 in drier, lower subalpine types of Montana had over 25% of the stands in an old growth structural stage during the same historical period.

Please disclose the NRV for each of the North Idaho Old Growth Types, and also please provide an estimate of the current percentages of each.

Please provide an estimate of how much old growth in the NPCNF has been destroyed by logging. Please disclose the NRV for old growth forestwide.

Detrimental edge effects on isolated old-growth areas have been noted. Temperature and humidity fluctuations may lead to rapid drying of down logs. Avian nest predators are brood parasites from adjacent edge habitat may take a toll on birds dwelling in the forest interior. Such effects may extend many hundreds or even 2,000 feet into interior forest.

Please disclose the NRV for old-growth patch size. Please disclose the NRV for amount of interior forest old growth (not affected by highly contrasting edge effects) in the NPCNF.

There is no assurance the DFP old-growth active management scheme will accelerate forest conditions toward old growth at some unspecified time in the future. There is no science or monitoring cited to support such claims. As Pfister et al., 2000 state:

> (T)here is the question of the appropriateness of management manipulation of old-growth stands… Opinions of well-qualified experts vary in this regard. As long term results from active management lie in the future – likely quite far in the future – considering such manipulation as appropriate and relatively certain to yield anticipated results is an informed guess at best and, therefore, encompasses some unknown level of risk. **In other words, producing "old-growth" habitat through active management is an untested hypothesis**. (Emphasis added).

The NPCNF has conducted no research or monitoring comparing pre- and post-logging old growth occupancy by or abundance of the wildlife species with strong biological association with habitat components found in old growth, such as the current MIS. Biologically speaking, the MIS are the real experts whose population trends would confirm or invalidate your claim that logging and old-growth ecosystems are biologically compatible.

Hutto, et al., 2014 set out to understand the ecological effects of forest restoration treatments on several old-growth forest stands in the Flathead National Forest. They found:

> Relative abundances of only a few bird species changed significantly as a result of restoration treatments, and these changes were characterized largely by **declines in the abundances of a few species associated with more mesic, dense-forest conditions, and not by increases in the abundances of species associated with more xeric, old-growth reference stand conditions.** (Emphasis added.)

Based upon the wording of some of the Plan Elements, it appears the Forest Service wants to make the definition of old growth to be a simplistic numbers and database analysis game, devoid of biologically vital data gathered in the field which might document what is unique about old growth—not just a few large trees left over after logging, but decadence, rot, snags, down logs, patchy irregular canopy layers—things that can't be created by the agency's version of "restoration" and which would be depleted by such management actions.

From Bate and Wisdom, 2004:

> Stands in the late-seral stage had three times the density of snags as stands in the mid-seral stage, and almost nine times that of stands in the early-seral stage. Stands in the late-seral stage provide essential snag habitat for wildlife that does not appear to be consistently present in younger stands.

Next, we repeat text from our Objection to the Hungry Ridge project, to point out the failure of old growth inventory efforts on the NPCNF. This is written in blue text to clarify the context of the wording.

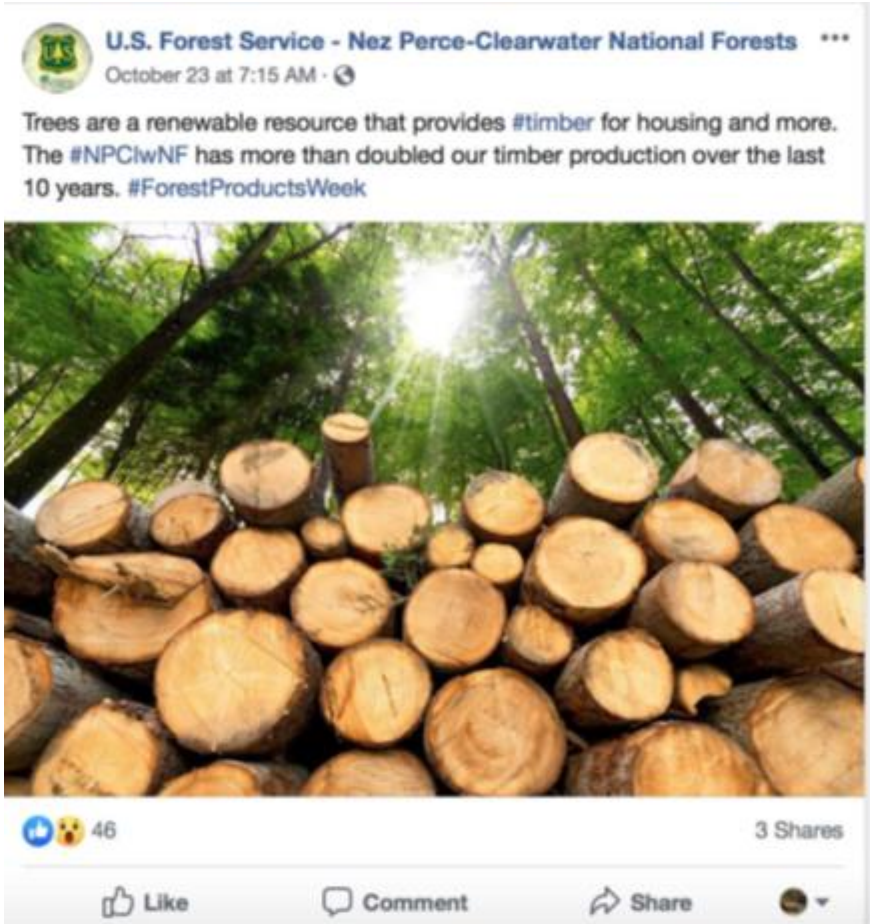
We raised the issues on page 30-33 of our DEIS comments. We note that the agency has proposed a forest plan amendment to log in an MA-20 area, which is an area set aside for old-growth management, but is not necessarily synonymous with old growth. We agree with this forest plan interpretation that logging to go forth in MA-20 area needs a forest plan amendment, as this is how the agency originally interpreted its duties regarding these designated areas. The entire point behind old-growth is to provide habitat for the species that rely on these types of landscapes. Old growth direction and analysis is not based on the best available science. The Forest Service cites Green et al. but doesn't follow those recommendations.

1) The Forest Service is using stale support or unreliable support for the assertion that it is meeting old growth percentage forest-wide, and has not considered the cumulative effects in tandem with the stale numbers. Cumulative effects have been insufficiently discussed.

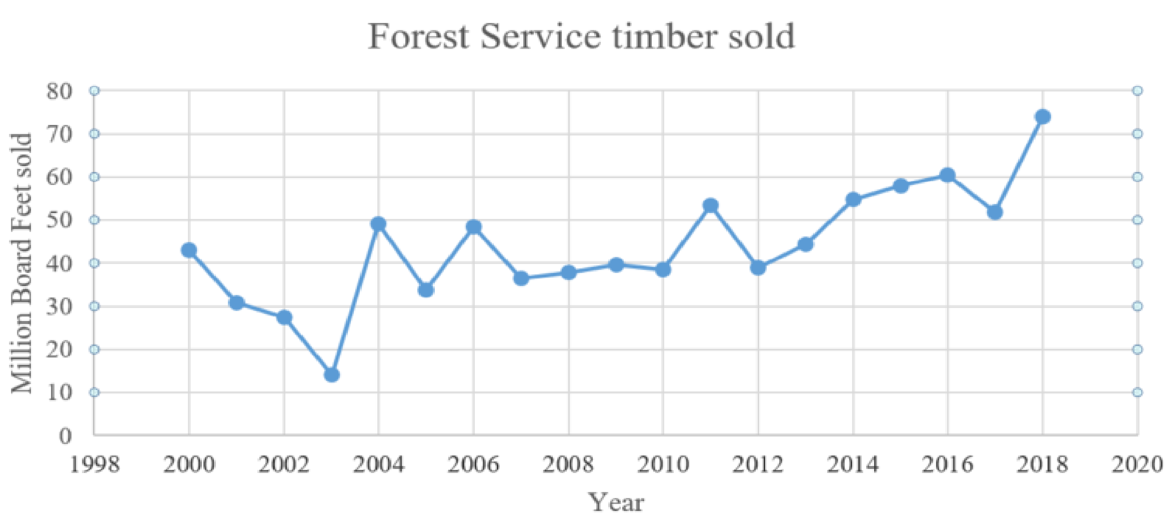
In our comments (*see* page 31-33), we raised concern with the old-growth analysis, including the amount the Forest Service disclosed. We noted in our comments on the DEIS included our concern that the analysis of the old growth in the project area was vague and misleading, that MA20 maps did little good because the Forest Service noted "Field reconnaissance has demonstrated inconsistencies with MA20 allocations and what is actually present within the stands."[21] We also asked how much of the old growth categories overlapped with MA20s. We don't think the FEIS is accurate.

The agency has undoubtedly increased timber sales. On October 23, 2019, on Facebook, it posted the following:

[21] In response to this comment, the Forest Service simply omitted its original statement between the draft and final EISs.



This chart is based off of R1 annual timber sale numbers for the Nez-Clear:[22]



[22] *See also* R1 Timber sold annual report folder, which contains the chart and the support for the numbers used in the chart.

Despite doubling timber production since 2010, the Forest Service is using Bush et al. 2010 Forest Inventory and Analysis for a starting point on old growth. Since 2010 and that analysis, however, some of this increased timber production has come from old growth forests on the Nez Perce National Forest, and the Forest Service has also found the 2010 figures to contain areas that don't meet forest-plan old growth standards. This renders the 2010 starting point stale data, as supported by the following projects that post-date Bush et al.:

Center Johnson: Approved logging in forest plan OG (final EA p. 46).

Dutch Oven Vegetation Management Project: Also used the Bush et al. 2010 analysis to identify old growth, but upon field visits to only some of what Bush et al. 2010 identified, the Forest Service found on-the-ground that the area did not in fact have old-growth characteristics, and even that one unit had been harvested. (Final EA May 2017 pdf p.168).

Windy Shingle: Used the Bush et al. 2010 analysis as a starting point and approved logging in areas the Forest Service identified as old growth. (Windy Shingle wildlife report, pdf pp. 7, 119).

Iron Mountain: Cited same 12.9% figure from 2010 (EA pdf p. 76), and likely approved logging in old growth (EA pdf p. 79 and DN-FONSI).

End of the World: Used the Bush et al. 2010 analysis and proposed logging in "mature or overmature trees."[23] (*See* USDA Forest Service 2019, Nez Perce-Clearwater National Forest End of the World Environmental Assessment and draft Finding of No Significant Impact and accompanying Wildlife Report); "754 acres …converted through regeneration harvest" (EA)

Hungry Ridge (this project): Proposed action to log in MA20 with a forest plan amendment, with up to 826 acres of forest-plan old growth (DEIS pdf p. 29).

We don't know if these are all the projects because the Forest Service has not reviewed its impact on old growth in the Nez Perce National Forest since 2010—it keeps using the Bush et al. 2010 number of 12.9% as a starting place,[24] even though field visits in at least one project (Dutch Oven Vegetation Management Project) demonstrated the inaccuracies with even this number. Bush et al. goes off of FIA data, and FIA data does not determine the size of any particular old-growth stand.

These projects represent cumulative effects on old growth that the agency has ignored and failed to consider or discuss under its duties in preparing an EIS under NEPA. As such, this failure does not disclose high quality information to the public and fails to take a hard look at the project. Failing to address this issue is also a failure to demonstrate that the Forest Service is complying with the forest-plan minimums for old growth, in violation of NFMA and a failure to take a hard look at the project's impacts as required by NEPA.

The agency's reliance on MA-20 designations to demonstrate it is meeting the old growth standard is similarly problematic. In the draft EIS, the Forest Service stated, "Field reconnaissance has determined inconsistencies with MA20 allocations and what is actually

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[23] Logging in "mature or overmature trees" may very well be old growth, as indicated by the wildlife report but not directly disclosed or discussed in the EA in a manner digestible by the public.

[24] *See* the Hungry Ridge EIS, Chapter 3 p. 260, starting using the Bush et al. 2010 old-growth estimation of "approximately 13 percent."

present within the stands."[25] We quoted this in our DEIS comments, and asked about an assessment of the acres of forest-plan-designated MA-20 meet forest plan criteria, and separately how many of these MA-20 acres actually meet Green et al. old growth criteria. To do that, the agency would have likely had to field survey these MA-20 areas. Instead, the Forest Service deleted that sentence in the final EIS.

Table 3-50, from the FEIS is an example of inaccuracies and misleading information. We reproduce it here:

Table 3-50. Acres of Management Area 20 (MA20), Forest Plan old growth (FPOG), and North Idaho old growth (NIOG) by old growth analysis area (OGAA)

Old Growth Analysis Area (OGAA)	03050102	03050110	03050112	03050115	03050116	03050118
OGAA total size (NFS lands only)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	127	145	325	338	165	40
NIOG	322	78	116	40	94	331
NIOG/FPOG[1]	53	492	0	220	0	0
MA20	5	905	1310	671	670	259
Acres of FPOG, NIOG, & FPOG/NIOG that overlap with MA20	0	31	198	158	7	107
Existing OG[2]	507	1589	1553	1111	922	523
% existing OG per OGAA	8%	17%	12%	16%	10%	8%
Replacement OG[3,4]	745	315	805	473	1002	1104
Acres of replacement OG that overlap with MA20	5	1	21	246	50	72
Total OG in OGAA	1247	1903	2337	1338	1874	1555
Total % OG per OGAA	**21%[4]**	**20%**	**19%**	**19%**	**19%**	**25%[4]**

[1]Stands that meet both NIOG and FPOG definitions.
[2]Sum of MA20, Forest plan old growth, North Idaho old growth, and stands that meet both NIOG and FPOG definitions, minus overlap with MA20.
[3]Sum of stands between 110-149 years old.
[4]There are additional immature forest habitats that do not have stand exams that could qualify as replacement old growth.

In the FEIS, the Forest Service noted that

[S]ome stands labeled as MA20 are not labeled as [Forest Plan Old Growth (FPOG)] or [North Idaho Old Growth (NIOG)]. Not all areas have stand exams and, as stated above, the validation process relies on additional information other than stand exams to allocate management areas within each capability area. This fact does not indicate stands labeled

[25] Hungry Ridge draft environmental impact statement, Chap 1, p. 9

as MA20 alone are not old growth. Those stands simply lack stand exam data and cannot appear in the query performed to locate NIOG and FPOG.

Hungry Ridge FEIS, Chap. 3, p. 260. If there is a lack of data for some MA-20 areas, there can be no conclusion that the area has forest-plan old-growth characteristics, especially when the Forest Service has acknowledged that some MA-20 designations do not reflect areas that meet the forest-plan old growth criteria. Table 3-50 from the FEIS (reproduced above) illustrates this.

For example, take OGAA[26] 03050110 from the above chart. The chart states that the MA20 area is 905 acres. The chart then states that 31 acres that meet forest plan old growth definitions or North Idaho old growth definitions. If 31 acres of 905 acres matches either or both old growth definitions, this conversely means that 874 acres of the MA20 either do not meet forest plan old growth definitions or the agency has no data on the area—the public cannot tell which. If 874 acres of MA20 do not match forest plan old growth or lack information, the agency cannot use those acres to demonstrate the agency is meeting old-growth requirements outlined in the forest plan. Yet this is exactly what the above table does—it calculates the unknown or the non-old growth acreage into the final old-growth numbers.

We recalculated the numbers in the table below, omitting the MA20 acres for which the Forest Service had no information or did not fit any old growth definition. The recalculated tally of *existing*[27] old growth is very different:

OGAA	03050102	03050110	03050112	03050115	03050116	03050118
OGAA total size (NFS lands)	6519	9981	13028	7282	10303	6779
OGAA forested acres	6008	9397	12535	6911	9661	6302
FPOG	127	145	325	338	165	40
NIOG	322	78	116	40	94	331
NIOG/FPOG	53	492	0	220	0	0
Existing OG	512	715	441	598	259	371
% existing over OGAA forested acres	8.5%	7.6%	3.5%	8.6%	2.7%	5.9%

As you can see from an appropriate calculation, the average existing old growth in this project area is 6.1%. If this is representative of the forest-wide average, the agency has some problems. When existing old growth is below the 5 percent minimum for the drainage (OGAA), then the forest plan requires the Forest Service to allocate acres from adjacent drainages that have excess old growth to meet this standard. This not only means the agency cannot log old growth in the deficient drainages, but allocating acres from drainages with excess old growth to compensate

[26] Old Growth Analysis Area, which the Forest Service treats as the watershed-areas in Appendix N of the Forest Plan.
[27] The forest plan does not permit the Forest Service to use old-growth replacement to count towards its old growth standards, which is described further below.

might mean there is few acres of excess old growth that could be available for logging in OGAAs that meet the minimum 5% standard in this project. Failing to address these analytical deficiencies means failing to take the hard look that NEPA requires and failing to comply with the forest plan.

Table 3-50 also violates the forest plan's direction on old growth because replacement old growth cannot count towards meeting existing old growth requirements. Appendix N is very clear that there must be five percent old growth within each prescription watershed (the old growth analysis area) and an *additional* five percent of forested acres should be designated as replacement old growth. When one corrects Table 3-50 to omit the MA-20 areas that don't clearly have old-growth and then calculates for only replacement old growth, there is at least one OGAA that doesn't meet the five percent replacement old growth. This also fails to take a hard look at impacts under NEPA and violates the forest plan requirement to set aside five percent old growth in several OGAAs.

This table violates NEPA in disclosing high quality information to the public because it counts MA-20 acres as old growth even when there is no evidence they qualify as old growth and because it counts replacement old growth as existing old growth even against clear forest-plan direction not to do so.

Finally, the FEIS fails to adequately analyze the impacts of logging on old growth. Even if large-diameter, oversized trees are retained, other old-growth characteristics are going away with logging, including downed woody debris. Old growth is an ecological community resulting from decades of natural processes, and the legacies from fire and insects remain in the form of dead and dying trees that create habitat for species.[28] The FEIS fails to address how it is changing ecological responses given the project removes dead or dying trees and prevents allowing trees to die.[29] Snags won't be created.

2) The Forest Service has not demonstrated that the project is in compliance with forest plan Appendix N. There is no evidence that the Forest Service has validated old growth on-the-ground, as required by the forest plan.

We demonstrated our concern with logging old growth, and the levels of old growth on the forest as demonstrated by the comments under the OLD GROWTH heading as well as the comments above. On pages 31-32 of our comments, we commented on and asked about the on-the-ground conditions in MA20 areas in addition to areas the Forest Service labeled as North Idaho old growth or forest plan old-growth. We noted that the Forest Service acknowledged that field reconnaissance demonstrated inconsistencies between MA20 designations and what is present. We also asked what the agency meant by "validation of MA 20." We asked about surveys in the project area and whether they have been thorough.

Appendix N of the Nez Perce Forest Plan requires the FS to identify old growth stands by using three strategies in tandem: stand exam information, aerial photos, *and* field reconnaissance.

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[28] Spies, T. 2003. *New Findings about Old-Growth Forests*, USDA, Forest Service Pacific Northwest Research Station; Lidenmayer and Franklin 2002. Conservation Biology, Ch. 4 *Using Information about Natural Forests, Landscapes, and Disturbance Regimes* pp. 55-60.

[29] Franklin et al. 1987. *Tree Death as an Ecological Processes: The causes, consequences, and variability of tree mortality*, BioScience Vol. 37(8) pp. 550-556.

If the MA20 qualities in Table 3-50 are unknown, and these areas had been originally set aside for old-growth management, then the agency has not validated potential old-growth. As stated above, in the FEIS, the Forest Service noted that

[S]ome stands labeled as MA20 are not labeled as [Forest Plan Old Growth (FPOG)] or [North Idaho Old Growth (NIOG)]. Not all areas have stand exams and, as stated above, the validation process relies on additional information other than stand exams to allocate management areas within each capability area. This fact does not indicate stands labeled as MA20 alone are not old growth. Those stands simply lack stand exam data and cannot appear in the query performed to locate NIOG and FPOG.

Hungry Ridge FEIS, Chap. 3, p. 260. There wouldn't be unknown areas if the agency verified existing old growth.

Even the wildlife report demonstrates that the only project-area old-growth identified were the areas the agency wants to log:

Forest Service vegetation data and computer mapping tools were used to identify *potentially affected habitats* in the project area. Existing habitat condition was determined by extracting information from Forest Service databases; aerial photo interpretation; field reconnaissance; GIS mapping, data tables, and analyses of satellite imagery; VMap 2014 dataset; stand exams (2014), and data presented in the South Fork Clearwater River Landscape Assessment (USDA 1998).

Hungry Ridge Wildlife Report, p. 8 (italics added). Of course the agency needs to identify old growth in the area it wants to log. However, just as importantly, the agency needs to identify old growth in the areas that aren't proposed for logging. Without verifying this old growth with on-the-ground surveys, there is no guarantee that the old growth the agency assumes is there is really there. The Forest Service supports this position by the following tables, one of which is Table 3-52 and demonstrates the *reduction* in old growth after treatments.

The footnote to 3-52 is also incorrect. The Forest Service states that,

Calculation of old growth acres remaining is conservative. Calculation does not include acres of old growth that are proposed for shelterwood harvest, which can still meet old growth definitions.[30]

We applaud that the Forest Service omitted counting shelterwood-cut acres in the remaining old-growth category, but the agency misleads the public when it states that shelterwood cuts do not eliminate old-growth criteria. Without correcting this and being honest about what shelterwood cuts do, the Forest Service is not disclosing to the public true effects of the project and not giving the public the high quality of information necessary to demonstrate that the agency has complied with NEPA.

Below are post-monitoring pictures of the Orogrande Community Protection Project in an area that used to have roadless characteristics. The units depicted in these pictures were all shelterwood cuts.

[30] Hungry Ridge FEIS Chap 3 p. 271, footnote 5 to Table 3-52.

These pictures do not match the plain-language description of old growth in Appendix N of the Forest Plan. The Forest Service needs to disclose and acknowledge that shelterwood "treatments" will eliminate old growth. Anything less violates the high quality of information that the agency owes to the public.

3) The Forest Service has not evaluated and ranked its old growth or has considered scientific information on the importance of patch size needed by the wildlife that depends upon old growth.

Pages 31-33 demonstrate our concern with whether the Forest Service is meeting its forest-plan old growth requirements. This means compliance with everything Appendix N requires. There is no evidence that this agency has evaluated and ranked *all* project area old growth as required by Appendix N of the Forest Plan. We've included a declaration provided by Gary Macfarlane that includes examples where the Forest Service has followed its own forest plan in the past. Without evaluating and ranking, the agency has no way of knowing whether it is saving the best quality habitat for the species dependent upon this habitat. There are size components to ranking, and there is no evidence from the project that the computer programs using to "identify" old growth are considering size. For example, a computer-generated and then field-verified block of 300 acres might fit into what the forest plan considers old growth, a five-acre area would not.

Without evaluating and ranking all old growth in the project area, the Forest Service cannot demonstrate it is complying with its own forest plan. Because the agency has not followed its own forest plan, it cannot conclude whether it is eliminating the highest quality old-growth habitat, which is a failure to take a hard look at a project.

The EIS does not consider scientific information on the patch size of the old-growth habitat to minimum sizes needed for utilization by old-growth associated wildlife.

To add to this, it is very much likely that treatment in old growth will eliminate it. On page 32 of our comments, we asked how many acres of treatment would eliminate the features that make up old growth criteria. The treatments described, if effective as the Forest Service plans, will eliminate the old growth characteristics outlined in Appendix N. And without monitoring to evaluate the impact of treatment in old growth, the impact of opening up understory for the wildlife that use old-growth habitat is unknown at best.

4) Forest plan and Hungry Ridge old-growth direction and analysis is not using the best available science for old growth.

We provided a list of the best available science for the Forest Service to consider for old growth habitat needs on page 32-33 of our comments. We also asked how many FIA plot surveys meet the old growth criteria (which includes a minimum size requirement). The Forest Service refused to consider some of this science, and is not using the best available science, claiming that the science we introduced was outside the scope of the project. The Forest Plan requires basement-level old-growth percentages, there is no requirement that prevents the agency from considering that these minimum numbers might severely underestimate habitat for population viability. It is especially problematic because the Forest Service has proposed to log in old growth for this project. So, to the extent the Forest Service refuses to consider this science and what it might mean within project boundaries, the Forest Service fails to take a hard look at impacts, and fails to consider and disclose high-quality information to the public.

Lesica (1996) believes that the Forest Plan's reliance upon a 10% old-growth Standard could result in extirpation (i.e., loss of viability) of some species. This is based on an estimate of 20-50% of low and many mid-elevation forests being in old-growth condition prior to European settlement.

Gautreaux, 1999 states:

…research in Idaho (Lesica 1995) of stands in Fire Group 4, estimated that over 37% of the dry Douglas-fir type was in an old growth structural stage (>200 years) prior to European settlement, approximately the mid 1800's.

Based on research of Fire Group 6 in northwest Montana (Lesica 1995) it was estimated that 34% of the moist Douglas-fir type was in an old growth structural stage (>200 yrs.) prior to European settlement, approximately the mid 1800's.

Based on fire history research in Fire Group 11 for northern Idaho and western Montana (Lesica, 1995) it was estimated that an average of 26% of the grand fir, cedar, and hemlock cover types were in an old growth structural stage prior to European settlement.

…fire history research in Fire Group 9 for northern Idaho and western Montana (Lesica, 1995) estimated that 19-37% of the moist lower subalpine cover types were in an old growth structural stage (trees > 200 yrs.) prior to European settlement. While this estimate is lower than suggested by Losensky's research…

Lesica found an estimated 18% of the cool lodgepole pine sites was in an old growth structural stage (>200 years) prior to European settlement, approximately the mid 1800's. … This same research in Fire Group 8 in drier, lower subalpine types of Montana had over 25% of the stands in an old growth structural stage during the same historical period.

For the Hungry Ridge analysis, the FS is relying upon Forest Inventory and Analysis (FIA) data to determine forestwide amounts of old growth—and therefore Forest Plan consistency and viability assurance. There are significant methodological flaws with this approach, one of those being that the FIA data do not determine the size of any particular old-growth stand.

FIA inventory that might meet the characteristics of old growth listed in the forest plan, but FIA inventory cannot inform the acres of old growth present, and the forest plan imposes a minimum acre size. So, the Forest Service cannot rely on FIA inventory to prove that it is meeting its old growth requirements. The FS Region 1 report Bollenbacher, et al., 2009 states concerning the FIA inventory: “All northern Idaho plots utilized a primary sample unit (PSU) composed of four fixed radius plots with trees 5 – 20.9 inches tallied on a 1/24th acre plot and trees 21.0 inches DBH and larger tallied on a ¼ acre plot.” Also, Czaplewski, 2004 states, “Each FIA sample location is currently a cluster of field sub-plots that collectively cover an area that is nominally one acre in size, and FIA measures a probability sub-sample of trees at each sub-plot within this cluster.” In addition, Bollenbacher and Hahn, 2008 under “Defining Old Growth” state: “There are no specific criteria for minimum patch size for OG in the Northern Region definitions” but recognize “There are, however, some Forest Land Management Plans that may include guidance for a minimum map unit for OG stands.” As Forest Plan Appendix N indicates, the Nez Perce NF has one of those Plans with minimum old-growth stand size requirements. Despite that, Bollenbacher and Hahn, 2008 try to make a case for smaller minimum stand sizes, saying “The regional vegetation minimum map unit of 5 acres for a stand polygon would be a reasonable lower limit for all vegetation classes of forest vegetation including OG stands.” Clearly, whether the FS is using a ¼-acre, one-acre, or five-acre minimum map unit, none conform to the Forest Plan old-growth minimum stand size criteria. Furthermore, it would be ludicrous to propose that any old-growth associated MIS, Sensitive, or ESA-listed species could survive on even a five-acre old-growth stand—there is no scientific evidence to support such a premise.

It also appears the FS may be using the Green et al. criteria for evaluating FIA plots—not the Forest Plan criteria. The Wildlife Specialist Report states:

The most recent Forest Inventory and Analysis (FIA) data (Bush et al. 2010) indicate that approximately 13 percent of the Nez Perce National Forest meets the definition of "north Idaho old growth" (90 percent confidence interval: 10.4 - 15.6 percent) based on the Green et al. 1992 definitions (minimum of 8 trees per acre greater than 21 inches dbh, minimum of 40 square feet basal area per acre, and at least 150 years old). Approximately 13.6 percent of the Nez Perce National Forest meets the Forest Plan definition of old growth (minimum of 15 trees per acre greater than 21 inches dbh) (90 percent confidence interval: 14.4 - 20.2 percent). Based on this information, the Nez Perce National Forest is above the Forest Plan minimum standard of 10 percent old growth forest-wide.

However, this is an over-simplification of the Forest Plan old-growth criteria. Appendix N actually states:

Old-growth stand refers to a stand of timber that, generally, meets the following criteria:

1. At least 15 trees per acre $\geq$ 21 inches diameter at breast height (DBH). Providing trees of this size in the lodgepole pine and sub-alpine fir stands may not be possible.

2. Two or more canopy layers.

3. At least .5 snags per acre $\geq$ 21 inches DBH and at least 40 feet tall.

4. Signs of rot and decadence present.

5. Overstory canopy closure of 10-40 percent; understory canopy closure of at least 40

percent; total canopy closure at least 70 percent.

6. Logs on the ground.

And again, this percentage claim also totally ignores the size of the plots vs. the stand size based more closely upon biological needs of old-growth associated wildlife, as Appendix N recognizes,

Where available, stands should be at least 300 acres. Next best would be a core block of 150 acres with the remaining blocks of no less than 50 acres and no more than 1/2 mile away. If existing old-growth blocks are less than 100 acres, the stands between the old-growth blocks should be designated old growth replacement. The entire unit consisting of old-growth blocks and replacement old growth should be managed as an old-growth complex. If the old-growth component is less than 50 percent of the complex, the complex should be considered replacement old growth. Within the old-growth complex, only the stands that meet old-growth criteria will be counted toward meeting the allocation for existing old growth. The replacement stands will be counted toward meeting the allocation for replacement old growth.

The EIS does not disclose the historical range of variability (HRV) for old-growth habitat on the Forest and in its failure to analyze cumulative effects it fails to disclose how much old growth has been destroyed or degraded in the Forest or Project Area. The Overview for Wildlife Specialist Report, states that

> 29% of the project area (Forest Service administered lands, approximately 29,383 acres) has been previously harvested in the past 56 years. Old regeneration harvests have reduced the availability of standing snags and down wood. The size of the early-seral

habitats (pole and younger) may create conditions that are not suitable for use by some wildlife species due to the decrease of canopy cover.

The FS has not analyzed the wildlife viability implications of managing the Forest well outside the HRV for old growth, based upon the best available scientific information.

The EIS doesn't disclose how the designated "replacement" old growth was determined to meet Forest Plan criteria. In any case, "replacement old growth" is pretty meaningless. The Forest Plan allows a very liberal interpretation that for such stands, they must be old growth within 100 years but includes no other species habitat component requirements.

(End of Hungry Ridge Objection text)

<u>We urge the DFP include a Standard requiring the Forest Service to immediately conduct a transparent, accurate inventory of old growth on the NPCNF, and finalize it within three years, using methodology that is peer-reviewed for scientific veracity.</u>

Species of Conservation Concern and Focal Species

The DEIS states, "The sensitive species category has been changed to Species of Conservation Concern, and management indicator species has been changed to focal species. These changes were made to incorporate best available science and information and increase the effectiveness of the revised plan."

The DEIS cites Forest Service policy from the Forest Service Manual (FSM) at 2670.5: **"**Under the new planning rule, species of concern will replace sensitive species, but sensitive species must be included in planning analysis as such until the new forest plan is enacted." Also, "FSM 2670.22 Directs management for sensitive species to ensure that species do not become threatened or endangered because of Forest Service actions and to maintain viable populations of all native species." Yet the DEIS fails to include a detailed analysis for each of the current Sensitive species.

The DFP cites the Planning Rule in defining Species of Conservation Concern as "A species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the regional forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of Federal Regulations 219.9(c))."

FOC comments on the Species of Conservation Concern (SCC) portion of the Assessment discuss several problems with the Forest Service's viability methodology, which are not cured by the DFP or DEIS. We fully incorporate FOC's August 19, 2014 letter within these comments by re-stating them in their entirety here, in blue text:

At 36 CFR § 219.6(a) under "Process for plan development or revision assessment" the Forest Service is required to (1) "Identify and consider relevant existing information contained in governmental or non-governmental assessments, plans, monitoring reports, studies, and other sources of relevant information."

The SCC Assessment includes a list of 13 terrestrial Species of Conservation Concern (SCC), six aquatic SCC, and several plant communities of conservation concern, These are said to be known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates a substantial concern about the species capability to persist over the long-term in the plan area. **These comments focus on the terrestrial SCC.**

Forest plan revision is being conducted under the National Forest Management Act (NFMA) 2012 planning rule (36 CFR § 219 *et seq*., hereinafter "NFMA Rule"). The NFMA Rule explains that the public has a role in formulating the Assessment:

> Requirements for public participation. (a) *Providing opportunities for participation.* The responsible official shall provide opportunities to the public for participating in the assessment process…

(36 CFR § 219.4.) Since there has been no formal public process on the Assessment until now, we are commenting under the assumption that the Assessment is still in draft form.

In response to comments on the NFMA Rule, the U.S. Department of Agriculture (USDA) stated:

The rule requires that species of conservation concern must be ''known to occur in the plan area'' and that the regional forester identify the species of conservation concern for which ''the best available scientific information indicates substantial concern about the species' capability to persist over the long term in the plan area.''

Friends of the Clearwater is exploring the process and results of the regional forester's identification of the SCC considered in the SCC Assessment, and we may provide further comments to you on that process once we know more. However, these comments focus on the content of the SCC Assessment, its use of the best scientific information available, its responsiveness to 2012 NFMA Rule requirements, and its use in the July 2014 Proposed Action for Forest Plan Revision Nez Perce-Clearwater National Forests (hereinafter "Proposed Action").

In multiple subsections, the NFMA Rule requires that the Forest Service **identify the best scientific information, use it in preparation of the Assessment, and explain how that science was used**:

§ 219.3 Role of science in planning. The responsible official shall use the best available scientific information to inform the planning process required by this subpart. In doing so, the responsible official shall determine what information is the most accurate, reliable, and relevant to the issues being considered. The responsible official shall document how the best available scientific information was used to inform the assessment, the plan decision, and the monitoring program as required in §§ 219.6(a)(3) and 219.14(a)(4). Such documentation must: Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered.

§ 219.6 Assessment. (b) *Content of the assessment for plan development or revision.* In the assessment for plan development or revision, the responsible official shall identify and evaluate existing information relevant to the plan area for the following: (5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area;

(3) Document the assessment in a report available to the public. The report should document information needs relevant to the topics of paragraph (b) of this section. Document in the report how the best available scientific information was used to inform the assessment (§ 219.3). Include the report in the planning record (§ 219.14).

Friends of the Clearwater is concerned that the SCC Assessment:

- Does not clearly state what is considered to be the best available scientific information,

- Does not always properly utilize the best available scientific information where it is identified,
- Documents in several places in a confusing manner how the best available scientific information was used to inform the SCC Assessment, and;
- Omits important scientific information that rightly should be included as best available science.

At p. 18-2, the SCC Assessment states:

Potential Plan components will be based on habitat needs identified in the ICBEMP (Wisdom et al. 2000), the Idaho CWCS (IDFG 2005), and other known best available science. In addition, the "Habitat-Type Group" guidance previously developed by the Nez Perce–Clearwater National Forests could offer potential Plan components, as identified by the interdisciplinary team involved in that development.

It is clear that SCC Assessment identifies Wisdom et al. 2000 and the Idaho CWCS (IDFG 2005) as best available science. But it does not clearly state what other ICEBEMP scientific information or the mentioned Habitat-Type Group guidance has also been identified as best available science.

An example that applies to multiple SCC in the SCC Assessment is the fisher. Best available science explicitly identified in the SCC Assessment for the fisher includes Olsen et al., 2013 (18-6), Raley et al. 2012 (18-31), per. comm. Sauder 2013, per. comm. and Schwartz 2013 (18-33). The SCC Assessment also states:

The following issues have been identified as a starting point for integrating potential resource objectives for this species and its source habitat with broader, ecosystem-based objectives for other resources (Aubry et al. 2013, Buck et al. 1994, Hollenbeck et al. 2013, IDFG 2005, Jones and Garton 1994, Lofroth et al. 2011 and 2012, Naney et al. 2012, Nez Perce Tribe 2011, NPCC 2003, NPCC 2004a and 2004b, Olsen et al. 2013, Powell and Zielinksi 1994, Sauder and Rachlow 2013, Schwartz et al. 2013, USDA Forest Service 2014; Wisdom et al. 2000):

(18-34.) The SCC Assessment doesn't clearly state whether **each of those sources** are considered best available science for the fisher. There are similar statements of scientific sources for other SCC, which need to be clarified.

Also at 18-34, the SCC Assessment states, "The application of Olsen et al. (2013) is the best available science that quantifies 'potential' fisher habitat for the Northern Region (Region 1) forests to date." This raises the question—is the Nez Perce–Clearwater National Forests saying that its own ***application of*** such and such is considered to be best available science?

Also, at 18-73: "Best available science has documented the management risks and strategies to manage for (Coeur d'Alene Salamander)." And at 18-90: "The Coeur d'Alene salamander …will be addressed using other best-available science and in the Idaho CWCS discussions." But the SCC Assessment doesn't explicitly state **what science** is being used as the best available for that species.

Another example of ambiguity in discussion of best available science is found at 18-15, in a discussion regarding the white-headed woodpecker:

Using the SIMPPLLE process (Chew et al. 2012), a mid-scale habitat model using vegetative parameters capable of being modeled across the entire forest and best fitting the characteristics of habitat described in the best available science has been developed for the Forest (SIMPPLLE SCC models 2013).

The above is very hard to decipher. Does it mean that both Chew et al. (2012) and SIMPPLLE SCC models (2013) are considered to be the best available science for the white-headed woodpecker? Or is it stating that the SIMPPLLE SCC models **uses** the best available science?

"Broad-scale family groups, as well as meso and fine-scale biophysical settings, habitat type groups, and a non-habitat type group are used for describing SCC habitat associations and conditions based on best available science." (SCC Assessment at 18-10.) What "best available science"? Once again, the SCC Assessment is throwing around the term "best available science" loosely.

At p. 18-4, the SCC Assessment states, "Mesofilter management for the SCC in this Assessment was identified by examining the best available science for SCC species…" This implies that for each of the potential SCC best available science has been identified, yet explicit reference to best science is omitted for several potential SCC.

The Proposed Action states, "There is a need to revise the plans to incorporate new and emerging information in plan direction." However it is not clear how or if **later planning stages** (programmatic or project) will use or consider new or other scientific information—submitted by the public, other agencies, etc.—as potentially additional "best scientific information."

In the overall planning process, we believe it's a no brainer that the Forest Service use *Committee of Scientists: Sustaining the People's Lands. Recommendations for Stewardship of the National Forests and Grasslands into the Next Century. March 15, 1999* (Committee of Scientists, 1999). The Committee of Scientists report was initiated as part of the original NFMA planning rule revision in the 1990s, as explained in its Synopsis:

In December 1997, Secretary of Agriculture Dan Glickman convened an interdisciplinary Committee of Scientists to review and evaluate the Forest Service's planning process for land and resource management and to identify changes that might be needed to the planning regulations.

Committee of Scientists, 1999 was even cited multiple times in the USDA's responses to comments on the NFMA Rule. These comments identify and cite some important portions of the Committee of Scientists, 1999 report that we believe would improve the Assessment as well as the entire forest plan revision process.

Again, the SCC Assessment is not clear on **how** the best scientific information was identified, making it seem altogether too arbitrary. And the agency needs to clearly state how it will address other scientific information that conflicts, contradicts, or disagrees with the science it considers "best available" when such information is submitted by the public or other agencies.

The SCC Assessment includes a list of 13 terrestrial SCC that are "known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates a substantial concern about the species capability to persist over the long-term in the plan area." However, the SCC Assessment omits ten terrestrial species on these two forests' current list of Sensitive species, for which by definition there is current belief by the Regional Forester of a substantial concern about long-term viability. These include the peregrine falcon, bald eagle, black-backed woodpecker, black swift, common loon, Harlequin duck, wolverine, bog lemming, western toad, and ringneck snake. Since the Regional Forester expresses substantial concern about those ten species' long-term viability, the SCC Assessment should include them as potential SCC or disclose the best scientific information available that unequivocally demonstrates there are no longer viability concerns for those 10 species.

The SCC Assessment also omits at least two other species native to the planning area, which have been extirpated or for which there are scant observances in recent years. These include the grizzly bear and woodland caribou. Are we to take it that the USDA believes there is no requirement to manage for habitat conditions that would assist in the restoration and recovery of populations of these native species? We also note that the grizzly bear and woodland caribou were omitted from the Assessment's "5.0 Threatened, Endangered, Proposed, and Candidate Species June 2014."

The SCC Assessment also seems to improperly utilize its best available scientific information as identified. As one example, this how the SCC Assessment cites Wisdom et al (2000) in regards to management issues facing wildlife species in Family 2:

- Declines in late-seral forests of subalpine, montane, and lower montane communities and associated attributes such as large trees, snag, and down logs
- Tradeoffs between source habitats for species in Family 2 and habitats for species in Family 1
- Balancing the fragmentation of late-seral habitats for fisher and boreal owl versus the juxtaposition of early- and late-seral habitats for other species
- Broad-scale departures from historical landscape patterns
- Reduction in the extent of frequent, light underburning and light surface fires

Contrast that with the issues identified in Wisdom et al. (2000):

1) Declines in late-seral forests of subalpine, montane, and lower montane communities and associated attributes such as large trees large snag (sic), and large down logs, lichen and fungi.
2) Tradeoffs between source habitats for species in family 2 and habitats for species in family
3) Balancing the fragmentation of late-seral habitats for marten, fisher, and boreal owl versus juxtaposition of early- and late-seral habitats for silver-haired bat, hoary bat, and great gray owl.
4) Broad-scale departures from historical landscape patterns.
5) Negative effects of road-related human activities.
6) Reduction in the extent of frequent, light underburning and light surface fires.

In its first bullet, the SCC Assessment omits the adjective, "large" in reference to snags and down logs—this is a significant difference, as the scientific literature clearly indicates (See, for example, the size of dead tree highly preferred by the keystone wildlife species pileated woodpecker[31], as discussed in McClellan and McClellan, 1999 and in the Northern Region's own USDA Forest Service, 1990.) Also, we note that lichens and fungi were omitted, without explanation.

From its fourth bullet, the SCC Assessment omits silver-haired bat, hoary bat, and great gray owl as mentioned in Wisdom et al. (2000), again without explanation.

[31] The pileated woodpecker is a Management Indicator Species under the current Forest Plan for both Forests.

The SCC Assessment entirely omits the Wisdom et al. (2000) bullet, “Negative effects of road-related human activities.” Huge bibliographies of scientific information indicate the highly significant nature of “departure from historic conditions” that are the impacts on forest ecosystems caused by motorized travel routes and infrastructure. That there are no road density standards in the forest plan revision Proposed Action suggests the biased and arbitrary manner of the Forest Service’s use of its own “best available science.” From the Wisdom et al. (2000) Abstract:

> Our assessment was designed to provide technical support for the ICBEMP and was done in five steps. … Third, we summarized the effects of roads and road-associated factors on populations and habitats for each of the 91 species and described the results in relation to **broad-scale patterns of road density.** Fourth, we mapped classes of the current abundance of source habitats for four species of terrestrial carnivores in relation to **classes of road density** across the 164 subbasins and used the maps to identify areas having high potential to support persistent populations. And fifth, we used our results, along with results from other studies, to describe broad-scale implications for managing habitats deemed to have undergone long-term decline and for managing species negatively affected by **roads or road-associated factors**.

(Emphasis added.) There are an infinite number of other ways the SCC Assessment could have skewed its interpretation of Wisdom et al. (2000) or other sources of best available science. Therefore the agency must explicitly state if the **scientific sources** are the best available science, or if **the agency’s interpretation** of its scientific sources is the best available science. If it is the latter, the Forest Service has a lot of “**explain(ing) the basis for (its) determination**” to do!

So the question again arises: How will the Forest Service address new scientific information in its programmatic and project planning, as well as alternative interpretations of the “best science” it cites, and finally, other scientific information that is specifically submitted for consideration as “best science” even though it conflicts, contradicts, or disagrees with its “best science”?

Not surprisingly, the SCC Assessment skews the fire issue, offering as a Conservation Strategy, “Continue a strategy of wildfire suppression in most managed forests while allowing stand-replacing wildfires to burn in wilderness areas.” Contrast that with the Wisdom et al. (2000) version, “Continue a strategy of wildfire suppression in most managed forests while allowing stand-replacing wildfires to burn in wilderness areas, **areas of critical environmental concern (ACECs), and other natural process areas**. **Stand-replacing wildfires in such natural process areas are of particular benefit to black-backed and three-toed woodpeckers**…” (Emphasis added on omitted text.)

To sum up our comments on the SCC Assessment so far, it fails to adequately **“Identify what information was determined to be the best available scientific information, explain the basis for that determination, and explain how the information was applied to the issues considered.”** (NFMA Rule at 36 CFR § 219.3.)

Before we discuss more specifics regarding wildlife or groupings of wildlife in the SCC Potential Species of Conservation Concern, we take this opportunity to comment on the topic of another category of species in the NFMA Rule—**Focal Species**. The Committee of Scientists (1999) states that focal species should be identified in the Assessments:

Bioregional assessments should develop an integrated and synthetic analysis of the best scientific and technical information about the historical and current diversity of native plant and animal communities, the productive capacity of ecological systems in the bioregion, the social and economic context, existing institutional arrangements, and current stewardship capacity. To achieve this goal, **assessments should at least:**

1) Define the focal species for use in the analysis of species diversity in planning and develop procedures for estimating the viability of focal species, threatened and endangered species, and sensitive species. Apply these procedures to estimate the viability of these species under likely management in the region while allowing, to some degree, for uncertainties that may develop (e.g., changing levels of funding, natural disturbances, and competition from exotic species). As a result of this analysis, highlight risks to species viability…

(Emphasis added.) However, neither **the SCC Assessment nor other document in the Assessment even identifies focal species.** The Forest Service seems to be at a loss on how to deal with focal species. The Proposed Action states:

The Forest will be developing the monitoring program based on public comment provided on this proposed action and the analysis of alternatives for the EIS. We are seeking your input on focal species and indicators selection, opportunities for multi-party monitoring, and sources of relevant scientific information.

That's all there is about focal species in the Proposed Action. Interested parties must look to the NFMA Rule, where focal species is defined as:

A small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems.

But the $64,000 question is: How **will** the eventually identified focal species "provide meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity …in the plan area"? Based on the guidance in the NFMA Rule and the USDA's responses to comments on the rule, almost nothing of any certainty can be said.

We look to the USDA's responses to comments on the NFMA Rule to provide further explanation of how the revised forest plan will use focal species, because the definition in the rule is so vague. The USDA says:

> Appropriate monitoring of focal species will provide information about the integrity of the ecosystem and the effectiveness of the plan components in maintaining diversity of plant and animal communities in the plan area. In other words, focal species monitoring is used as means of understanding whether a specific ecological condition or set of conditions is present and functioning in the plan area.
>
> …Focal species …are species whose presence, numbers, or status are useful indicators that are intended to provide insight into the integrity of the larger ecological system…
>
> …Focal species monitoring provides information regarding the effectiveness of the plan in providing the ecological conditions necessary to maintain the diversity of plant and animal communities and the persistence of native species in the plan area.

> Monitoring for …focal species will also provide information about the effectiveness of plan components for at risk species.[32]

Essentially, this means that focal species are basically to be used as monitoring tools, to check on the effectiveness of forest plan components for maintaining "at risk"[33] species and the diversity of plant and animal communities on the Forests, and whose presence, numbers, or status as monitored are intended to provide insight into the Forests' ecological integrity.

However, not only are focal species to provide insight into the effectiveness of forest plan elements, the USDA states that they are also to **provide insight into the NFMA Rule itself**:

Focal species …are species whose presence, numbers, or status are useful indicators that are intended to provide insight into …the effectiveness of the § 219.9 provisions.

Truly, whatever focal species are chosen, they must be broad shouldered!

This begs another question: How will the status of focal species be measured? The USDA admits the Rule is vague, and largely says what is **not** required:

> …The rule does not specify how to monitor the status of focal species. …The objective is not to choose the monitoring technique(s) that will provide the most information about the focal species, but to choose a monitoring technique(s) for the focal species that will provide useful information with regard to the purpose for which the species is being monitored.
>
> …Focal species monitoring is not intended to provide information about the persistence of any individual species. The rule does not require managing habitat conditions for focal species, nor does it confer a separate conservation requirement for these species simply based on them being selected as focal species.
>
> … (P)opulation trend monitoring is not required by the final rule.

The USDA does suggest how focal species **might** be monitored: "Monitoring methods may include measures of abundance, distribution, reproduction, presence/absence, area occupied, survival rates, or others." So, the $64,000 question remains largely unanswered.

The Committee of Scientists (1999) states:

Given the importance of monitoring for ecological sustainability, a critical step will be to broadly define ecological attributes to include any biotic or abiotic features of the environment that can be measured. The convention has been to refer to the measured attributes as "indicator variables" under the assumption that their values are indicative of the integrity of the larger ecosystem to which they belong. The Committee adopts this definition and extends it to include the concept of focal species. These are species that fulfill the indicator criterion and provide specific insights into the biological diversity of the ecological system at different scales.

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[32] How the revised forest plan will utilize focal species to conserve and recover "at risk" species is uncertain, because the USDA states that "Focal species are not intended to be a proxy for other species…" and "Focal species are not surrogates for the status of other species."

[33] Unfortunately, we cannot find the Agency definition of "at risk species." However, in some places it suggests those listed under the Endangered Species Act (ESA) or those Proposed or Candidate species for listing under the ESA, as well as Species of Conservation Concern.

The USDA does state that there must be more than mere measurement of vegetative conditions—that a set of ecological conditions must be monitored:

Respondents felt that monitoring habitat conditions only, specifically related to vegetation composition and structure, will not adequately address the reasons why species may or may not occupy those habitats; and that there may be other stressors unrelated to habitat that make suitable habitat conditions unsuitable for occupation by a particular species. The final rule requires monitoring the status of select ecological conditions. The concept of ecological conditions as defined in the proposed rule and the final rule includes more than vegetation composition and structure…

Those ecological conditions "encompass (vegetation composition and structure) as others, including stressors that are relevant to species and ecological integrity. Examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species.

USDA also stated:

> The concept of focal species is well supported in the scientific literature and community. … The inclusion of the focal species (§ 219.19) in the monitoring section is based on concepts from the March 15, 1999, Committee of Scientists report, which recommended focal species as an approach to monitor and assess species viability.

Here is an example of the NFMA Rule ignoring its own best available science. Whereas "population trend monitoring is not required by the final rule", the Committee of Scientists (1999) report disagrees. They state:

Habitat alone cannot be used to predict wildlife populations, however. The presence of suitable habitat does not ensure that any particular species will be present or will reproduce. Therefore, populations of species must also be assessed and continually monitored.

Yet monitoring ecological conditions for focal species—habitat—is precisely what the NMFA Rule says is all that's required. The Committee of Scientists (1999) states:

> An emphasis on focal species, including their functional importance or their role in the conservation of other species, combines aspects of single-species and ecosystem management. It also leads to considering species directly, in recognition that **focusing only on composition, structure, and processes may miss some components of biological diversity**.

(Emphasis added.) Regarding how to go about choosing focal species, USDA states:

> In some circumstances, a threatened, endangered, proposed, or candidate species, or a species of conservation concern may be the most appropriate focal species for assessing the ecological conditions required by § 219.9.

The Committee of Scientists report said focal species may be indicator species, keystone species, ecological engineers, umbrella species, link species, or species of concern. Agency directives will provide guidance for considering the selection of a focal species from these or other categories. Criteria for selection may include: the number and extent of relevant ecosystems in the plan area; the primary threats or stressors to those ecosystems, especially those related to predominant management activities on the plan area; the sensitivity of the species to changing conditions or their utility in confirming the existence of desired ecological conditions; the broad monitoring questions to be answered; factors that may limit viability of species; and others.

We note that as of this date, the Forest Service has not finalized the agency directives that are to "provide guidance for considering the selection of a focal species…"

The Committee of Scientists (1999) report suggests a pool of potential focal species:

> The key characteristic of a focal species is that its status and time trend provide insights to the integrity of the larger ecological system. The term "focal" includes several existing categories of species used to assess ecological integrity:
>
> 1) Indicator species: species selected because their status is believed to (1) be indicative of the status of a larger functional group of species, (2) be reflective of the status of a key habitat type; or (3) act as an early warning of an anticipated stressor to ecological integrity. The presence of fish in a river is an indicator of water quality.
>
> 2) Keystone species: species whose effects on one or more critical ecological processes or on biological diversity are much greater than would be predicted from their abundance or biomass (e.g., the red-cockaded woodpecker creates cavities in living trees that provide shelter for 23 other species).
>
> 3) Ecological engineers: species who, by altering the habitat to their own needs, modify the availability of energy (food, water, or sunlight) and affect the fates and opportunities of other species (e.g., the beaver).
>
> 4) Umbrella species: species who, because of their large area requirements or use of multiple habitats encompass the habitat requirements of many other species (e.g., deer).
>
> 5) Link species: species that play critical roles in the transfer of matter and energy across trophic levels or provide a critical link for energy transfer in complex food webs. For example, prairie dogs in grassland ecosystems efficiently convert primary plant productivity into animal biomass. Prairie dog biomass, in turn, supports a diverse predator community.
>
> 6) Species of concern: species that may not satisfy the requirement of providing information to the larger ecosystem but because of public interest will also be monitored and assessed for viability. Such species include some threatened and endangered species, game species, sensitive species, and those that are vulnerable because they are rare.

At some point the Forest Service must, by law, craft a set of **indicators to monitor for ecological integrity** on the Nez Perce-Clearwater National Forests, based upon the best scientific information available. How focal species fit into that requirement remains to be seen. We suggest that the Forest Service start with the lists of SCC and Threatened, Endangered, Proposed, and Candidate species. We also suggest the revised forest plan include others whose habitats are not represented by those. An example of such a species is the black-backed woodpecker, not included as a recommended species in the SCC Assessment. The Boise National Forest adopted this species as an indicator species in its revised forest plan in 2010:

> The black-backed woodpecker depends on fire landscapes and other large- scale forest disturbances (Caton 1996; Goggans et al. 1988; Hoffman 1997; Hutto 1995; Marshall 1992; Saab and Dudley 1998). It is an irruptive species, opportunistically foraging on outbreaks of wood-boring beetles following drastic changes in forest structure and composition resulting from fires or uncharacteristically high density forests (Baldwin 1968; Blackford 1955; Dixon and Saab 2000; Goggans et al.1988; Lester 1980). Dense, unburned, old forest with high levels of snags and logs are also important habitat for this species, particularly for managing habitat over time in

a well-distributed manner. These areas provide places for low levels of breeding birds but also provide opportunity for future disturbances, such as wildfire or insect and disease outbreaks (Dixon and Saab 2000; Hoyt and Hannon 2002; Hutto and Hanson 2009; Tremblay et al. 2009). Habitat that supports this species' persistence benefits other species dependent on forest systems that develop with fire and insect and disease disturbance processes. The black-backed woodpecker is a secondary consumer of terrestrial invertebrates and a primary cavity nester. Population levels of black-backed woodpeckers are often synchronous with insect outbreaks, and targeted feeding by this species can control or depress such outbreaks (O'Neil et al. 2001). The species physically fragments standing and logs by its foraging and nesting behavior (Marcot 1997; O'Neil et al. 2001). These KEFs influence habitat elements used by other species in the ecosystem. Important habitat elements (KECs) of this species are an association with medium size snags and live trees with heart rot. Fire can also benefit this species by stimulating outbreaks of bark beetle, an important food source. Black-backed woodpecker populations typically peak in the first 3–5 years after a fire. This species' restricted diet renders it vulnerable to the effects of fire suppression and to post-fire salvage logging in its habitat (Dixon and Saab 2000).

… Black-backed woodpeckers are proposed as an MIS because of their association with high numbers of snags in disturbed forests, use of late-seral old forest conditions, and relationship with beetle outbreaks in the years immediately following fire or insect or disease outbreaks. Management activities, such as salvage logging, timber harvest, and firewood collection, can affect KEFs this species performs or KECs associated with this species, and therefore **its role as an MIS would allow the Forest to monitor and evaluate the effects of management activities on identified forest communities and wildlife species.**

(Emphasis added.) Although somehow different in concept from focal species, management indicator species as the Boise National Forest utilizes it is functionally indistinguishable from focal species under the NFMA Rule.

We return now to commenting on content that **is** found in the SCC Assessment. We note that that so much of the SCC Assessment closely mimics Wisdom et al. (2000) in identifying issues and suggesting conservation strategies for the SCC, while also citing other scientific sources. We also note that one huge detail was, might we say, "lost in translation" from Wisdom et al. (2000) to the SCC Assessment. From the Abstract:

Our analysis also indicated **that >70 percent of the 91 species are affected negatively by one or more factors associated with roads.** Moreover, maps of the abundance of source habitats in relation to classes of road density suggested that road-associated factors hypothetically may reduce the potential to support persistent populations of terrestrial carnivores in many subbasins. Management implications of our summarized road effects include the potential to mitigate a diverse set of negative factors associated with roads. **Comprehensive mitigation of road-associated factors would require a substantial reduction in the density of existing roads as well as effective control of road access in relation to management of livestock, timber, recreation, hunting, trapping, mineral development, and other human activities.**

(Emphases added.) And from Major Findings and Implications:

Efforts to restore habitats without simultaneous efforts to reduce road density and control human disturbances will curtail the effectiveness of habitat restoration, or even contribute to its failure; this is because of the large number of species that are simultaneously affected by decline in habitat as well as by road-associated factors.

(Emphasis added.) The SCC Assessment's heavy bias toward identifying habitat manipulation options (i.e., logging and other active management activities) while lacking the Wisdom et al. (2000) implications for road management has led to a Proposed Action that is indeed a recipe for failure.

One other bias that is subtle but has profound implications for long-term ecological integrity involves wildland fire and fire suppression. We take the Lewis' woodpecker as one of what could be many examples. Wisdom et al., 2000 (and therefore the SCC Assessment) contains such statements as:

> Continue a strategy of wildfire suppression of stand-replacing fires except where such fires would benefit habitat for Lewis' woodpecker under the conditions specified in issue no. 4. Use prescribed fire, timber harvest, and thinning to change forest composition and structure to reduce risk of stand-replacing wildfires and shift to maintenance with prescribed underburn fires.

Some of the bias seems to be from Wisdom et al. (2000) itself,[34] but the bias is also taken further in the SCC Assessment. It states:

> Stand-replacing fires appear to create highly productive source habitats (Tobalske 1997). …The Lewis' woodpecker is closely associated with recent burns and responds favorably to stand-replacing fires (Tobalske 1997)…

(18-26.) A subtle but profound difference is by contrasting the SCC Assessment cite of Tobalske, 1997 with Anderson, 2003 (not cited) who states:

> **Fire suppression also is detrimental to these birds.** Evidence suggests that large-scale burned forests may play a critical role in creating ephemeral habitats for Lewis's woodpeckers because burns create favorable habitat aspects including: snags, open space for foraging maneuvers, ground cover and associated arthropod prey, and reduced numbers of nest predators (Saab and Vierling 2001).

(Emphasis added.) Wisdom et al. (2000) does recommend for the black-backed woodpecker: "Allow wildfires to burn in some forests with high fire risk to produce stand-replacing conditions, and avoid postfire salvage logging in portions of large burned forests for about 5 yr postfire."

Also, the SCC Assessment states: "However, research indicates that openings in **partially logged**, burned forests likely provide greater opportunities for aerial foraging (Saab and Dudley 1998)." (Emphasis added.) We could find no such statement endorsing partial logging in Saab and Dudley, 1998.

In identifying issues and suggesting conservation strategies for Group 2,[35] the SCC Assessment states:

> The following potential conservation strategies were suggested for the long-term persistence of Lewis' woodpecker (Blair and Servheen 1995, Wisdom et al. 2000):
>
> · Continue a strategy of wildfire suppression of stand-replacing fires except where such fires would benefit habitat for Lewis' woodpecker. Use prescribed fire, timber harvest, and thinning to change forest composition and structure to reduce risk of stand-replacing wildfires and shift to maintenance with prescribed underburn fires.

[34] We make this point **not** to suggest that Wisdom et al. (2000) be omitted from best available science.

[35] Group 2, which Wisdom et al., 2000 include Lewis' Woodpecker as a member.

However, Blair and Servheen, 1995 is a scientific paper about the white-headed woodpecker—**not the Lewis' woodpecker** and unsurprisingly, the paper makes no such recommendation for continuing fire suppression to conserve Lewis' woodpecker habitat.

Given the absolute necessity of large reductions in road densities across these two forests as indicated by Wisdom et al. (2000), the acceptance of wildland fire where suppression actions would be difficult or prohibitively expensive because of reduced access needs to be woven into both the Assessment and the revised forest plan.

In sum, Friends of the Clearwater's review of the SCC Assessment for terrestrial species reveals the following shortcomings:

- The SCC Assessment does not clearly state what is considered to be the best available scientific information,
- The SCC Assessment does not always properly utilize the best available scientific information where it is identified,
- The SCC Assessment is confusing as to how the best available scientific information was used to inform the SCC Assessment, and;
- The SCC Assessment omits important scientific information that rightly should be included as best available science.
- The SCC Assessment does not state how to address other scientific information that conflicts, contradicts, or disagrees with the science it considers "best available" when such information is submitted by the public or other agencies.
- The SCC Assessment fails to adequately incorporate the known ecological impacts of roads.
- The SCC Assessment shows bias against the restorative and necessary process of the full range of severities and extent of natural fire on the landscape.

We urge the Nez Perce-Clearwater National Forests to address these shortcomings in its next version of the Species of Conservation Concern component of the Forest Plan Assessment.

(This concludes the text from FOC's August 19, 2014 SCC letter.)

FOC also submitted comments on the Draft EIS prepared during the USDA's process of developing its 2012 Planning Rule. We discussed in much detail the problems with the proposed regulations' viability methodology, which are also not cured by the DFP or DEIS. We fully incorporate that May 16, 2011 letter within these comments.

The DEIS states, "Two fish Species of Conservation Concern have been identified on the Nez Perce-Clearwater, and one focal fish species has been identified." The SCC are Spring and summer Chinook salmon *Oncorhynchus tshawytscha* (Clearwater Basin) and Pacific lamprey *Entosphenus tridentatus* (Salmon and Clearwater Basins). Also, Pristine Pyrg (*Pristinicola hemphilli*), a "rare aquatic snail known to occupy a narrow range of habitats associated with springs and seeps …is currently proposed to be included as a Species of Conservation Concern."

The DEIS states, “Three bird species are identified as species of conservation concern – the white-headed woodpecker, mountain quail, and the Harlequin duck.” “Two mammal species are species of conservation concern – the fisher and bighorn sheep.”

Under At-Risk Plant Species the DEIS states, “Nez Perce-Clearwater service species of conservation concern are listed under direction of the planning rule or are on the present U.S. Forest Service Northern Region Forester’s sensitive species list.” It also states, “There are 42 species on the U.S. Forest Service Northern Region sensitive species list and thirty species of conservation concern.”

Also the DEIS states:

> The final plant species of conservation concern list will replace the sensitive plant species list for the Nez Perce-Clearwater under the action alternatives. The identification of species of conservation concern is dynamic and may change over time, as will the Regional Forester sensitive species list. The following section will discuss species of conservation concern as well as provide a tracking of Regional Forester sensitive species to account for which species are included in the species of conservation concern list and to provide a tracking of those that will not be retained.

One of the problems our SCC comments raised was the issue that the list of SCC (and its current equivalent—Sensitive Species) is subject to change without public involvement including disclosure and analysis of best available scientific information informing list changes. Now the Forest Service (DEIS) is saying:

> In order to facilitate plan development and analysis, Regional Office staff provided a preliminary Species of Conservation Concern list, with the intent to provide a fully documented evaluation of potential Species of Conservation Concern to be provided at the release of the draft environmental impact statement.

It is quite notable that the DEIS itself fails to provide the “fully documented evaluation of potential Species of Conservation Concern” instead only referring to documents on the Regional Forester’s SCC website. All indications are that the Forest Service intends keep this list development and—more importantly, changes to it—separate from this Planning process.

Further uncertainty and circumvention of public process is demonstrated where the DEIS states:

> There are unknowns about future species of conservation concern policy. The Regional Forester has defined sensitive species policy but Forest Service manual policy is not yet available for species of conservation concern. An interim management policy is expected to become available prior to the revised manual direction.

Neither the Regional Forester’s current SCC website postings nor the DFP and DEIS respond to scientific information we cite in our previous comments, on species currently on the Sensitive Species list or potential SCC list. And it would be consistent with Forest Service policy for the proposed SCC list to change between the time we write these comments and the time the Forest Service either releases its final revised forest plan and FEIS, or even much earlier. So the Forest Service policy is apparently to avoid formal NEPA review of the content of the NPCNF’s SCC list.

The DFP cites the Planning Rule in defining Focal Species as "a small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems (36 Code of Federal Regulations 219.19)."

The 2012 Planning Rule requires that "Each plan monitoring program must contain one or more monitoring questions and associated indicators addressing …The status of focal species to assess the ecological conditions required under § 219.9." [21267 Federal Register Vol. 77, No. 68, April 9, 2012.]

Yet the DFP and DEIS fail to identify focal species. And it would be consistent with Forest Service policy for the focal species list to only be announced at the time the Forest Service either releases its final revised forest plan and FEIS. So the Forest Service policy is apparently to avoid formal NEPA review of the content of the NPCNF's Focal Species list, in violation of the Planning Rule, NFMA and NEPA.

Inadequacy of DFP coarse filter approach to viability

The DEIS states, "(the) coarse filter approach to providing ecological conditions that provide for the diversity and abundance of wildlife and viable populations of Species of Conservation Concern is reflected in the **vegetation desired conditions** in plan components and alternatives for the revised Forest Plan. (Emphasis added.) As we discuss above under viability, the plan element known as "desired conditions" provides no mandate, no timeline, no assurance whatsoever.

The DEIS even admits that "The coarse filter concept has not been subject to rigorous scientific testing." And the DEIS further indicts its desired conditions (coarse filter):

> Those desired conditions are based on historic conditions and potential climate change, both of which consider natural disturbance. By allowing natural disturbance to function nearer to historic conditions, the approximate quantity, quality, and pattern of wildlife habitat across the Nez Perce-Clearwater would be nearer to what the native species evolved with in this part of their range. By moving towards the conditions, they evolved with, ecological conditions to provide species viability would be maintained. Active restoration through mechanical treatments can help in moving towards the desired conditions. However, given the predicted budgets, **this tool would have limited success in trending habitat towards the desired conditions. The tool that has the best chance of success is fire and natural disturbance, both active and passive restoration.** (Emphases added.)

The trouble is as the DEIS admits, "The vegetation desired conditions do not vary by alternative." Yet the DEIS contains, realistically, no alternative that genuinely emphasizes the best tool (natural disturbance). And this includes Alternative Z for which the DEIS claims "responds to requests to have an alternative in which natural processes dominate over anthropogenic influence."

The DEIS states, "Evaluation of how the coarse filter would provide for the diversity and abundance of wildlife is found in the Diversity and Abundance of Wildlife section." We don't find such a section in the DEIS, however.

Inadequacy of DFP fine filter approach to viability

So the Forest Service is forced to supplement its grossly inadequate coarse filter (desired conditions) viability approach. As the DEIS indicates:

> The Planning Rule recognizes that coarse-filter plan components may not be sufficient to ensure recovery or persistence of those species within the plan area for some at-risk species, such as threatened, endangered, proposed, or candidate species or those identified as species of conservation concern. Where that is the case, **species-specific plan components** that would contribute to the recovery of listed species or **maintain the viability of species of conservation concern** within the plan area **are included** in the plan. (Emphases added.)
>
> The 2012 Planning Rule states that "estimating the probabilities of maintaining a viable population of a particular species of conservation concern over a certain period time **will vary from species to species** and from unit to unit, depending on existing conditions and potential existing and future threats and stressors, especially those related to climate change, that may affect species differently on different NFS units." [21247 Federal Register Vol. 77, No. 68, April 9, 2012.] (Emphasis added.)

Based upon that statement, and the agency's own criticism found in the DEIS, there is no species for which the coarse-filter components insure recovery, persistence, or viability. And for no species does the DEIS evaluate data on distribution, population status and abundance, habitat and genetic connectivity, impacts of non-native species, roads, recreation, hunting, fishing, trapping, road kill, etc. nor cumulative impacts of past management, including current forest plan implementation.

The DEIS does not describe the quantity and quality of habitat that is needed to ensure viability of any species present or having historic range in the planning area. It doesn't explain its methodology for measuring important habitat components, or determining the integrity and functioning of natural processes that create these important habitat components for many of these species. It does not identify the best available scientific information the agency relies upon for complying with NFMA diversity requirements and planning processes. It doesn't disclose or analyze the best available science on their population trends and habitat trends. The DEIS does not estimate wildlife species' populations. It does not present the results of population or habitat monitoring as directed in the current forest plans.

The DFP's fine-filter plan elements are also grossly inadequate, and not up to the task of supplementing the coarse-filter desired conditions so that viability is insured. The first problem is—for most SCC, Threatened, Endangered, Candidate, Proposed, Sensitive, Focal, and Management Indicator species—there are no fine filter elements.

Secondly, even for those species the DFP does include fine filter elements, they fail to properly address significant stressors that exist on the habitat of those species. The Forest Service fine filter approach does not adequately address the cumulative effects of many stressors for which there are no pre-management analogue, which profoundly affect habitat and therefore species abundance and distribution. These include:

· motorized route density

· extent of exotic species occurrence

· the “press” disturbance on hydrology and aquatic habitats from roads and logging (elevated sediment and water flow)

· human-induced detrimental soil conditions

· noise from motorized devices

· disturbances from the ever increasing flow of recreationists

· chronic reductions of snags and other pieces of large wood from logging, firewood gathering, etc.

· legal and illegal mortality from hunting, trapping, fishing

And that is not a full list of such habitat stressors. The DFP simply fails to include mandatory, science-based standards to limit stressors to the degree that natural processes are capable of producing the conditions maintaining or even contributing to viability with reasonable assurance.

Monitoring

The DFP’s coarse-filter/fine-filter strategy simply cannot be used as a substitute or proxy for better, scientifically-based methodology to assess and maintain viable populations. The complex and subtle interplay between animals and vegetative components, structure, pattern, and processes is not understood well enough for these filters to insure viability.

It is of paramount importance to monitor populations during forest plan implementation in order to validate assumptions used about long-term species persistence i.e., population viability (Marcot and Murphy, 1992; Lacy and Clark, 1993, Committee of Scientists, 1999).

In the absence of meaningful thresholds of habitat loss and monitoring of wildlife populations at the forestwide level, management actions will continue to degrade wildlife habitat over time. (Schultz, 2010; Schultz 2012).

The Committee of Scientists (1999) states:

> Given the importance of monitoring for ecological sustainability, a critical step will be to broadly define ecological attributes to include any biotic or abiotic features of the environment that can be measured. The convention has been to refer to the measured attributes as “indicator variables” under the assumption that their values are indicative of the integrity of the larger ecosystem to which they belong**. The Committee adopts this definition and extends it to include the concept of focal species.** These are species that fulfill the indicator criterion and provide specific insights into the biological diversity of the ecological system at different scales. (Emphasis added.)

The Committee of Scientists (1999) emphasize the importance of monitoring as a necessary step for the FS’s overarching mission of sustainability: “Monitoring is the means to continue to update the baseline information and **to determine the degree of success in achieving ecological sustainability.**” (Emphasis added.) Also:

The proposal is that the Forest Service monitor those species whose status allows inference to the status of other species, are indicative of the soundness of key ecological processes, or provide insights to the integrity of the overall ecosystem. This procedure is a necessary shortcut because monitoring and managing for all aspects of biodiversity is impossible.

> No single species is adequate to assess compliance to biological sustainability at the scale of the national forests. Thus, several species will need to be monitored. The goal is to select a small number of focal species whose individual status and trends will collectively allow an assessment of ecological integrity. That is, the individual species are chosen to provide complementary information and to be responsive to specific conservation issues. Thus, the Committee proposed for consideration a broad list of species categories reflecting the diversity of ecosystems and management issues within the NFS. (*Id*.)

The Committee of Scientists, 1999 state:

> Habitat alone cannot be used to predict wildlife populations…The presence of suitable habitat does not ensure that any particular species will be present or will reproduce. Therefore, **populations of species must also be assessed and continually monitored.** (Emphasis added.)

The DFP has no direction to monitor *any* wildlife population trends, in contradiction to best available science.

Coastal disjunct habitat

The DFP recognizes the NPCNF is home to unique coastal disjunct plant communities:

> The Nez Perce-Clearwater possesses a tremendous range and unusual diversity of habitats, from boreal and coastal elements in the north to extensive grasslands and pine forests in the south. The maritime influence of the Pacific Ocean also contributes to a unique coastal disjunct ecosystem with associated species uncommon to the northern Rockies, such as the Coeur d'Alene and Idaho giant salamanders, deerfern, and Pacific dogwood. The local climatic transition caused by extreme terrain differences result in high floral diversity, including endemic species like the evergreen kittentail, Dasynotus, Idaho barren strawberry, spacious monkeyflower, the federally listed Spalding's catchfly, and four species of pine. (Emphasis added.)

The DEIS further discusses these coastal disjunct plant communities:

> The plan area lies at the heart of the Rocky Mountain Refugium, which is a term researchers use to explain the high endemism and biodiversity of land snails, salamanders, and plants. This area is essentially comprised of areas spared from glaciation nor paved by volcanic flows, which allowed some species to survive the last glacial maxima until today (Stagliano et al., 2007). Examples of species or groups that persist today include the land snail biodiversity, the Idaho Giant Salamander, and the Coeur d'Alene salamander and coastal disjunct plant communities. This assemblage of endemics represents a distinctive role and contribution to biodiversity.
>
> The Aquarius Research Natural Area encompasses a cross section of the canyon that contains many of these rare and unique elements and is widely considered by scientists as the most unique biological area in the Northern Rocky Mountains.
>
> Rare plant species occur throughout the Nez Perce-Clearwater, but sites of high representation and general floral diversity occur in areas of coastal disjunction in the low elevations of the larger Clearwater Basin tributaries, larger grassland complexes, and arid non-forest habitats that form islands in the general mesic forest types.

Although the higher elevations of the North Bitterroot and North Clearwater ranges were carved by mountain glaciers, the lower portions of the ranges were unaffected by glaciation. This preserved the steep v-shaped canyons at lower elevations and provided refugia for coastal species and an environment for the evolution of endemic plants. The maritime climate of this section continues to provide the mild temperatures and heavy precipitation necessary for nearly 40 species of disjunct populations of coastal plants identified in the lower canyons of the North Fork Clearwater, Selway, and Lochsa rivers.

This is consistent with Brunsfeld et al., 2001 who note:

One of the most compelling distributional patterns associated with the mesic, temperate forests of the region is the disjunction of conspecific populations between Pacific coastal and interior Rocky Mountain habitats (Figure 15.2). Ecosystem dominants, western hemlock and western redcedar are the most obvious disjuncts, but populations of at least 60 other plants and numerous animal and fungal species (Johnson 1987) are currently separated by 300 km of arid habitats of the Columbia Basin.

Figure 15.2

The DEIS mentions that existing Research Natural Areas (RNAs) provide protection for some of these coastal disjunct plant communities. For example, the Lochsa Research Natural Area:

There are two research natural areas in the designated Lochsa Wild and Scenic River corridor. The Lochsa Research Natural Area preserves examples of the disjunct Pacific coast vegetation that includes the Pacific dogwood and 14 other species that are rarely found inland. The Dutch Creek Research Natural Area is distinguished by stands of

> northwest paper birch, which was established after multiple catastrophic burns limited seed sources for conifers. These research natural areas have been used for research of aquatic and riparian plant communities, the refugium ecosystem, and Pacific dogwood (U.S. Department of Agriculture, Forest Service, 2002a). The O'Hara Research Natural Area, in the Selway corridor, represents unique habitats and species including coastal disjunct habitat and species. Aquatic features are a primary focus of this research natural area with a network of streams ranging from first to fifth order, anadromous fish, and a series of cascades and waterfalls through narrow canyons and wet streamside meadows used by elk and moose (U.S. Department of Agriculture, Forest Service, 2002c).

The Aquarius RNA, Bull Run Creek RNA, Isabella RNA and O'Hara Creek RNA also include coastal disjunct plant communities.

The DEIS discusses the risk of climate change to these coastal disjunct plant communities:

> Rare and uncommon species, disjunct populations, and species at the edge of their known range are expected to experience a number of barriers when adjusting to warming trends because of the combination of a small number of occurrences, narrow elevation ranges, and requirements of specific soils types. Some at-risk species with potential habitat within the project area are known to occur on restricted and/or limited areas on the Nez Perce-Clearwater. Plants confined to outcrops of special soils are generally expected to have a far lower chance of successful migration to new suitable sites and far greater risks of extinction in the face of climate change than plants that are soil generalists (Harrison, Damschen, & Going, 2009). Because of the uncertainty in scale, direction, and rate of climate change, management of at-risk plant species on the Nez Perce-Clearwater focuses on maintaining viable populations throughout the species known range on the Nez Perce-Clearwater to ensure persistence. (Emphases added.)

Does this mean the Forest Service recognizes a mandate to maintain viability of each disjunct population?

We believe NFMA and the 2012 Planning Rule are this mandate. And although the RNAs provide protections for some of these disjunct populations, the revised forest plan must include plan elements that protect coastal disjunct plant communities wherever they occur. And this also means those that have yet to be discovered or placed on an inventory.

In conducting research in the field of phylogeography, Brunsfeld and Sullivan, 2006 investigated genetic diversity on Constance's bittercress (Cardamine constancei), a "regional endemic" (DEIS) found in coastal disjunct habitat in the NPCNF. Brunsfeld and Sullivan, 2006 recognize a "Greater Clearwater Refugium" and state, "conservation of mesic coniferous forest ecosystems in the region warrant a conservation plan that accounts for the historically imposed spatial structure of genetic diversity." Brunsfeld and Sullivan, 2006 advocate for:

> Future conservation plans should embrace whole-ecosystem genetic resources, rather than the current single species approach. Comparative phylogeography will help define not only conservation-worthy genetic variation in endemic species, but also will circumscribe regions likely to possess abundant cryptic biodiversity in both common and non-charismatic species. This is particularly critical because genetic studies of other nRM mesic forest endemics (e.g., Plethodon idahoensis, Carstens et al. 2004) also support a compartmentalized Clearwater Refugium.

The revised forest plan must include mandates for conducting surveys before management disturbances are authorized; and when such communities are found they must be added to a map and inventory along with the other known sites. Although the Forest Service typically conducts surveys for sensitive plants, it relies too much on existing inventories of know occurrences which are not necessarily comprehensive, instead of conducting thorough on-the-ground surveys.

"Incorporation into GIS maps will allow managers to integrate genetic data into their management plans." (Brunsfeld and Sullivan, 2006.)

To insure viability, the revised forest plan must provide science-based prohibitions on management modifications of these coastal disjunct plant communities. That is, Standards. The DFP does not include such protections.

Large dead wood habitat structure

Dead trees and large down wood provide important habitat features for multitudes of animal species. In an examination of European forests (Dudley & Vallauri, 2004):

> Up to a third of European forest species depend on veteran trees and deadwood for their survival. Deadwood is providing habitat, shelter and food source for birds, bats and other mammals and is particularly important for the less visible majority of forest dwelling species: insects, especially beetles, fungi and lichens. Deadwood and its biodiversity also play a key role for sustaining forest productivity and environmental services such as stabilising forests and storing carbon.
>
> In international and European political processes, deadwood is increasingly being accepted as a key indicator of naturalness in forest ecosystems. Governments which have recognised the need to preserve the range of forest values and are committed to these processes can help reverse the current decline in forest biodiversity. This can be done by including deadwood in national biodiversity and forest strategies, monitoring deadwood, removing perverse subsidies that pay for its undifferentiated removal, introducing supportive legislation and raising awareness.

In this region, "Large snags provide essential habitat for many terrestrial vertebrates in the Interior Northwest (Thomas 1979), including many species at high risk of extirpation (Raphael et al. 2001)." (Bate and Wisdom, 2004)

When snags or trees fall to the forest floor, they provide still more important ecological functions. As noted in Brown et al 2003:

> Coarse woody debris contributes to biodiversity by being part of the life cycle of soil mites, insects, reptiles, amphibians, mammals, and birds (Brown 2000). Invertebrates such as bark beetles, wood borers, carpenter ants, and wasps utilize CWD for food and protection. Mammals, reptiles, and amphibians mostly utilize downed logs for purposes such as feeding, reproduction, and shelter (Harmon and others 1986). As more downed CWD accumulates in the forest, activity of small mammals such as voles increases (Ucitel 1999).

Bunnell, et al., 2002 state, "Dead wood on the ground influences vertebrate abundance and richness by providing:

• Necessary substrate, energy, and nutrients for many invertebrates and fungi upon which a wide range of amphibian, reptile, bird, and small mammal species depend for forage (e.g., Bull and others 1997, Maser and Trappe 1984; Rhoades 1986).

• Sheltered areas for reproduction in a range of vertebrates from salamanders to black bears, and cover from aerial predators (e.g., Corkran and Thoms 1996, Harestad 1991).

• A modified microclimate (cooler, moister, more stable temperature than surrounding habitat) that is essential to species that cannot tolerate extremes in temperature or humidity (several amphibians; Heatwole 1962).

• Runways for small mammals and display or lookout posts for birds (e.g., Bull and Henjum 1990, Lofroth 1998)

• Increased habitat diversity and aeration in water by forming riffles, small waterfalls, and pools, thereby creating habitat for amphibians and fish which are in turn fed on by other vertebrates.

• Structures exploited by near-aquatic vertebrates as cover, foraging sites, or basking (e.g., river otter [Lontra Canadensis], mink, painted turtles [Chrysemys picta]; Lofroth 1998).

• Access routes for predators, especially under snow cover (e.g., weasels, marten; Corn and Raphael 1992)."

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

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

The section on pileated woodpeckers in these comments amplify what Spiering and Knight are saying about the importance of very large snags. Also, the DEIS states:

> Old-growth ponderosa pine was also a dominant feature of white-headed woodpecker home ranges in central Oregon, and woodpeckers there preferred larger diameter trees with an average diameter at breast height of greater than 61 centimeters or greater than 24 inches and a preference for an increasing diameter (Rita D. Dixon, 1995; Rita Dianne Dixon, 1995). Woodpeckers typically excavate nest cavities in large, moderately decayed, ponderosa pine snags (Buchanan, Rogers, Pierce, & Jacobson, 2003; Rita D. Dixon, 1995; Mellen-McLean, Wales, & Bresson, 2013).

The DEIS also notes, "Casey et al (2007, 2011, and 2012) identified the following attributes to describe optimal ponderosa pine breeding habitat for white-headed woodpecker: … greater than 2.5 snags per hectare (1 snag per acre) with a greater than 71-centimeter (28 inches) diameter at breast height."

Bunnell, et al., 2002 also note that for wildlife, bigger is better:

> Some mammals select trees or snags > 50 centimeters in diameter (e.g., marten, black bear), and use down wood 50 to 150 centimeter in diameter (Davis 1996, Raphael and Jones 1997, USDA Forest Service 1996). Given how larger mammals use space, large pieces of down wood for such species can be well distributed across large areas. Large trees and snags provide nesting or denning sites longer than do small snags (Graham 1981, Morrison and Raphael 1993).

And forest carnivores need very large dead wood habitat. Ruggiero, 1994b note, "Coarse woody debris, especially in the form of large-diameter boles, is an important feature of marten habitat. And for fisher, "All natal and maternal dens in the West were found in large diameter logs or snags."

Forest management actions are implicated in the amount of dead wood habitat being below naturally occurring levels. Dudley & Vallauri, 2004 state:

> Despite its enormous importance, deadwood is now at a critically low level in many European countries, mainly due to inappropriate management practices in commercial forests and even in protected areas. Average forests in Europe have less than 5 per cent of the deadwood expected in natural conditions. The removal of decaying timber from the forest is one of the main threats to the survival of nearly a third of forest dwelling species and is directly connected to the long red list of endangered species. Increasing the amounts of deadwood in managed forests and allowing natural dynamics in forest protected areas would be major contributions in sustaining Europe's biodiversity.

> For generations, people have looked on deadwood as something to be removed from forests, either to use as fuel, or simply as a necessary part of "correct" forest management. Dead trees are supposed to harbour disease and even veteran trees are often regarded as a sign that a forest is being poorly managed. Breaking up these myths will be essential to preserve healthy forest ecosystems and the environmental services they provide.

Bate et al. (2007), found that snag numbers were lower adjacent to roads due to removal for safety considerations, removal as firewood, and other management activities. Other research has also indicated the potential for reduced snag abundance due to human influence. Wisdom et al., 2000 note the difference in snag quantities between young managed forests as compared to unmanaged young forests:

> Managed young-forests, which we defined quantitatively in table 4, are young-forest structural stages within areas that are roaded and with some history of timber harvest and fire exclusion (table 3.178, Hann and others 1997); these stands contain relatively few large snags and trees >53 cm (21 in) in diameter at breast height (d.b.h.) (table 3.178, Hann and others 1997). By contrast, unmanaged young forests, which we also defined quantitatively in table 4, are young forest structural stages within areas that are unroaded, with fire exclusion and no history of timber harvest (table 3.178, Hann and others 1997); these stands contain relatively higher densities of large snags and trees (table 3.178, Hann and others 1997).

And Bate and Wisdom, 2004 investigated management and other human influences on snag abundance. Some findings include:

> 1. Stands far from roads had almost three times the density of snags as stands adjacent to open or closed roads. No difference in snag density existed for stands adjacent to open versus closed roads. Rather, snag density declined with increasing proximity to nearest road. Consequently, the presence of any road near or adjacent to a stand is an important predictor of substantially reduced density of snags. Ease of access for firewood cutting and other forms of timber harvest is the most likely explanation for reduced snag density near roads.
>
> 2. Stands closer to the nearest town had a lower density of snags than those farther from nearest town. This finding implies that stands closer to town, and therefore more accessible to human activities, also are likely areas where firewood cutting is concentrated, resulting in reduced snag density.
>
> 3. Stands in the late-seral stage had three times the density of snags as stands in the mid-seral stage, and almost nine times that of stands in the early-seral stage. Stands in the late-seral stage provide essential snag habitat for wildlife that does not appear to be consistently present in younger stands.
>
> 4. Stands with no history of timber harvest had three times the density of snags as stands that were selectively harvested, and 19 times the density as that in stands that had undergone a complete harvest. These results suggest that past timber harvest practices have substantially reduced the density of snags, and that snag losses have not been effectively mitigated under past management.
>
> 5. Stands adjacent to private land had a lower density of snags within mid- and late-seral stages, in contrast to a higher density in stands surrounded by Forest Service land. These results are likely explained by safety and fire management policies, which call for removal of snags along property boundaries, where such snags often are deemed to pose safety or fire hazards. In addition, increased human access likely contributes to lower snag densities in stands adjacent to private land.

Wisdom et al., 2000 also observe significantly fewer snags, as well as large down logs near roads.

DFP Plan Elements

Each of the alternatives contemplated for the DFP would fail to reverse the trend toward insufficient dead wood habitat in managed areas. As with plan components for other resources, they are ridden with loopholes and provide weak if any mandate to maintain the quality and quantity of such habitat structures within the NRV at all geographic levels.

Desired Condition MA3-DC-FOR-11 expresses hope that **"**Snags are present across Nez Perce-Clearwater lands, contributing to diversity of structure and habitat. Snags are unevenly distributed and dynamic over time with highest densities occurring in burned areas and those infested by insects. The lowest densities of snags occur along roads and in developed sites or other areas where the concern for human safety is elevated. A range of decay classes is represented." The words sound good, however based on the wording of the below plan elements, the levels of these structural components for wildlife are at a priority much lower than industrial timber production.

With Guideline MA2 and MA3-GDL-FOR-05 "Snag guidelines vary by alternative." It states:

> When managing forested stands, to maintain snags (standing dead trees) over the long-term for wildlife habitat and ecosystem processes, **snags should be retained and distributed to achieve the amounts specified in the tables below** listed by alternative when assessed across an entire project area. If sufficient snags are not available to meet the numbers below, **retain additional live trees ≥15" diameter** at breast height. (Emphases added.)

The amounts and sizes of snag specified in the tables are not supported by best available scientific information. This is also true of the number and size of live trees to compensate for when snags are not available or for instances when their retention obstructs the logging operations ("exceptions for safety purposes, etc.") And the quantity meant by "additional" is too vague.

Guideline MA2 and MA3-GDL-FOR-05 continues:

> The distribution of snags does not need to be uniform – some areas may have more snags, others may have fewer or none. **Snags are retained as the number of snags per 100 acres within the project area.** Guideline FW-GDL-FIRE-04 identifies exceptions to snag retention requirements for safety purposes.

This doesn't explain how the 100-acres are delineated, to which the specified minimums are to apply. The loophole possibilities are endless with this wording.

Guideline MA3-GDL-FOR-06 states, "Where present, a minimum of three[36] live trees per acre ≥15" diameter at breast height should be retained within harvest units to act as future snags. …. The minimum is meant to be an average across an entire timber sale unit and does not mean that three live trees must be retained on every acre."

Again, the amount and sizes of live trees are not supported by best available scientific information. Whereas the wording "minimum is meant to be an average across an entire timber sale unit" seems to allow for the flexibility needed to retain the trees which would best serve non-timber resource best, there's no statement of such intent here.

Also, anyone familiar with the kind of logging systems being applied now knows that leave strips or islands within the timber sale unit are often where live tree (and snag) retention minimums are credited for the entire unit—and again, there is no intent expressed in these plan elements to retain the snags and/or trees which would best serve non-timber resources such as snag-dependent mammals and birds.

Interestingly, the DFP is its own worst critic in this regard: "These three trees per acre (averaged across a project area) may not provide sufficient recruitment material to achieve the target amounts presented in Table 10. Additional material may need to be retained to meet future target needs."

MA3-GDL-FOR-07 states, "Where snags do not pose a risk to human life and safety, non-merchantable snags should be retained to benefit wildlife." Translation: dead trees for profit are more important than dead trees for ecological sustainability.

[36] Three live trees per acre under Alternatives W, X, and Y. For Alt Z, <u>seven</u> live trees per acre.

MA2 and MA3-GDL-FOR-01 states:

> To ensure sufficient organic materials to maintain nutrient cycling and soil biology and to provide habitat structure for various terrestrial wildlife, the levels listed in **Table 11** of downed coarse woody material greater than 3 inches should be retained onsite following regeneration harvest and fuels management and site preparation activities. The following amounts are recommended by Graham et al (1994) and are intended to give general direction for retention of coarse woody debris within potential vegetation type groups. If sufficient downed coarse woody material is unavailable, standing retained trees and snags may be counted toward meeting the numbers in the table below[37]. Exceptions to vary from the ranges listed may occur in areas near administrative sites, developed recreation sites, sensitive natural resources, or historic properties. Coarse woody material should be well distributed across each treatment unit.

We explain in our **Soil Ecology** section of these comments why the Graham et al. (1994) specification for down wood as small as 3" diameter is insufficient for long-term sustaining of ecological processes in soil. The scientific information we cite concerning wildlife in general in this section, as well as the science cited in various species sections, indicates the inadequacy of Graham et al. (1994) minimums.

Also, the DFP states, "Silviculture prescriptions should include a coarse woody material recruitment strategy which accounts for post prescribed fire coarse woody material presence." The DFP plan elements are the place where such strategies are spelled out—not left to tree farmers maximizing wood extraction.

Scientific information explains the improbability of forest managers being able to apply minimum snag and green tree retention numbers and sizes in logging units. The factors relevant to which ones are needed to sustain wildlife are too complex for addressing in the context of implementing industrial tree farming, as described under every DFP alternative. Lorenz et al., 2015 for example, examined the role of wood hardness in multi-scale nest site selection and in limiting nesting opportunities for six species of North American primary cavity excavators (PCEs):

> We found that interior wood hardness at nests (n = 259) differed from that at random sites, and all six species of PCE had nests with significantly softer interior wood than random trees (F1, 517 = 106.15, P , 0.0001). Accordingly, interior wood hardness was the most influential factor in our models of nest site selection at both spatial scales that we examined: in the selection of trees within territories and in the selection of nest locations on trees. Moreover, regardless of hypothesized excavation abilities, all the species in our study appeared constrained by interior wood hardness, and only 4–14% of random sites were actually suitable for nesting. **Our findings suggest that past studies that did not measure wood hardness counted many sites as available to PCEs when they were actually unsuitable, potentially biasing results. Moreover, by not accounting for nest site limitations in PCEs, managers may overestimate the amount of suitable habitat.** We therefore urge ecologists to incorporate quantitative measures of wood hardness into PCE

[37] If management actions are able to leave enough of both standing and dead wood of sufficient size to meet the previous guidelines, it's hard to fathom why the Forest Service cannot also leave enough wood on the ground of a paltry 3" diameter to meet this guideline.

> nest site selection studies, and to consider the limitations faced by avian cavity excavators in forest management decisions. (Emphasis added.)

So, only the primary cavity excavators themselves are able to decide if a tree is right for excavating—and therefore, suitable for habitat. The Forest Service cites no scientific information on how many snags per acre are needed to sustain populations of cavity nesting species, in recognition of this factor. Lorenz et al., 2015 state:

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

The implication is clear: over the vast acreage of the NPCNF where logging would be allowed under the DFP, expect distribution of many wildlife species to be significantly reduced.

The Forest Service fails to explain how wildlife habitat needs will be served at any geographic scale—from the timber sale unit to the managed landscape level—when removing significant quantities of large live and dead wood from the ecosystem is the whole point of its management.

Once depleted or reduced in amount by logging or "fuel reduction", it takes from decades to over a century for the forest ecosystem to grow back the necessary amounts of large pieces of wood so vital for wildlife to persist—if the ecosystem is not repeatedly mined of its wood, that is.

The DFP contemplates no alternative that allows natural processes to create such habitat, in large enough geographic areas, to insure ecological sustainability. The DFP fails to comply with NFMA.

Connectivity

The 2012 Planning Rule includes requirements for **connectivity** such as:

> **§ 219.8 Sustainability.**
>
> (1) *Ecosystem Integrity.* The plan must include …standards or guidelines …to maintain or restore connectivity, taking into account: (i) Interdependence of terrestrial and aquatic ecosystems in the plan area. (ii) Contributions of the plan area to ecological conditions within the broader landscape influenced by the plan area. (iii) Conditions in the broader landscape that may influence the sustainability of resources and ecosystems within the plan area. (iv) System drivers, including dominant ecological processes, disturbance regimes, and stressors, such as natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change. (v) Wildland fire and opportunities to restore fire adapted ecosystems. (vi) Opportunities for landscape scale restoration.
>
> (3) *Riparian areas.* (i) The plan must include …standards or guidelines, to maintain or restore the ecological integrity of riparian areas in the plan area, including plan components to maintain or restore …connectivity, taking into account: …(E) Ecological connectivity;
>
> **§ 219.9 Diversity of plant and animal communities.**

(a) *Ecosystem plan components.* (1) *Ecosystem integrity.* (T)he plan must include …standards or guidelines to maintain or restore …connectivity.

The DFP defines Connectivity as:

> …the ecological conditions that exist at several spatial and temporal scales that provides landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change (36 Code of Federal Regulations 219.19). Connectivity needs vary by species.

The DFP includes plan components which mention connectivity, including FW-GL-TE-01, FW-DC-TE-06, FW-DC-WTR-02, FW-DC-WL-03, FW-GDL-WL-01, MA2-DC-RWILD-03, MA2-DC-IRA-03, GA-DC-SR-02

In addition, the DFP defines Ecological Condition, Ecological Integrity, Ecological Integrity, Ecosystem, Ecosystem Stressor, Forest Connectivity, Key Ecosystem Characteristic, Linkage, Natural Range of Variation, and Structure in terms of connectivity in one way or another.

The DEIS states, "Habitat connectivity is widely recognized as a crucial component for maintaining biodiversity and managing for sustainable populations of native species (Cushman & Landguth, 2012; Haber & Nelson, 2015; Hansen, 2009; McClure, Hansen, & Inman, 2016; McIntyre & Ellis, 2011; Parks, McKelvey, & Schwartz, 2012; Wade, McKelvey, & Schwartz, 2015) (Western Governors Association, 2008)."

> "Connectivity and pattern also influence the genetic flow of plant material, which has implications for the adaptability of vegetation. Seed dispersal strategies will depend on spatial heterogeneity and the suitability of future site conditions." (*Id.*)

The DFP recognizes, "The extensive acreage of undeveloped lands on the Nez Perce-Clearwater interconnected with neighboring public lands provide important habitat security and linkage for wide-ranging species, such as lynx, wolverine, and other carnivores."

Carroll et al., 2001b: incorporated focal species analysis of four carnivore species, fisher, lynx, wolverine, and grizzly bear, into a regional conservation plan for the Rocky Mountains of the United States and Canada. They believe "Coordinated planning across multiple ownerships is necessary to prevent further fragmentation of carnivore habitat…"

Also considering forest carnivores, Ruggiero, 1994bs state:

> "Fragmentation" occurs when a large expanse of habitat is transformed into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the original (Wilcove et al. 1986:237). The process of fragmentation includes loss of stand area, loss of stand interior area, changes in relative or absolute amounts of stand edge, and changes in insularity (Turner 1989). "Dispersal" is important because it connotes the successful establishment (usually by juvenile animals) of a breeding territory in an area distant from the natal area.

The DEIS identifies connectivity as "one of the most complex attributes of ecosystems to quantify." That's true for many reasons including because, as the DFP recognizes, "Connectivity needs vary by species." Also, the task of identifying a "landscape pattern consistent with the natural range of variation" (FW-DC-TE-06) would require so many variables that modeling connectivity becomes an exercise in arbitrarily choosing an overly narrow set of variables to consider.

The DEIS says, “Connectivity can be affected by natural factors such as topography, soils, variation in precipitation, and wildfire but also by human developments and activities” but in the context of NRV, that is nonsense. The wildlife species native to the NPCNF, for example, evolved with those natural factors so they cannot be conceived as fragmenting the landscape in any sensible analysis.

Connectivity and linkage have only become ecological issues requiring consideration by the planning rule and by the study of conservation biology because of the fragmentation caused by human activities in the past few hundred years.

If there was such a thing as an index of the Natural Range of Variability (NRV) of connectivity, it would be 100%. To put it another way, the NRV of fragmentation would be zero. None of the modeling for wildlife habitat considers this disparity in NRV.

“The goal of assessing connectivity and pattern is to better understand the mosaic of conditions that make up a resilient landscape.” (DEIS). If we take a resilient landscape to resemble the NRV, as does the DEIS, then the most resilient landscape is one that, at every scale, resembles pre-management, pre-EuroAmerican development. It really is that simple.

The problem is, the DFP and DEIS do not consider a single alternative that focuses on significantly increasing connectivity to approach the NRV. Each alternative considered and analyzed very busily cram Desired Conditions and management activities which run counter to the whole notion of connectivity. Let’s take roads as probably the best example.

The Forest Service desires a high density of roads on the NPCNF because, in its view, all these roads facilitate fire suppression, and “vegetation management” and “fuel reduction” to instill “resilience” as restoration. The agency even values road access into roadless areas because of their value for managing invasive weeds, oddly enough. Yet no management feature is more adverse to wildlife, watershed, invasive species spread, fish habitat, riparian zone functioning, and a host of other resource values than roads.

In rejecting the alternative FOC proposed for consideration years ago, the Forest Service fails to consider an alternative that would most improve ecological integrity and connectivity. This violates NEPA and the Planning Rule.

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WILDLIFE

General

The agency uses a lot of models in its wildlife analysis, but does not describe the "calibrations," the data entered, what science that data was based on, or the models limitations. The public cannot meaningfully comment without these explanations. For example, section 3.2.3.1-10 recognizes the possibility that "the climate changes enough so that forest conditions of the past could not be maintained, the effects of some management may never return to their historic range of variability." The agency states it used "a complication of climate change effects published for the U.S. Forest Service Northern Region Adaptation Partnership [] that summarizes climate change projections by subregions." DEIS 3.2.3.1-12. What exactly was included in this compilation of parameters you chose to enter into the model? What *are* the parameters that went into each model? What were the validation tests you did to find the limitations of each model? We didn't see this disclosed or explained anywhere, which makes it very difficult to offer comments on what you are missing but should consider or factors that should weigh less into this calculation.

When you discuss "timber harvest" and "fire suppression" in the Past, Present, and Future Activities used in the Analysis (section 3.2.3.1-12) can you explain the difference between the two? The Forest Service states that "Since the 1987 plans were signed, timber harvest has declined but fire suppression has continued…" (section 3.2.3.1-12) The Nez Perce-Clearwater National Forests have sold more timber in the past four of five years than it has in the previous twenty, which suggests that, whether labeled "timber harvest" or "fire suppression," you mean the same thing: cutting down trees. While the agency asserts that cutting down trees has "exasperated...encroachment," the agency doesn't recognize the existing fragmentation that removing the timber sold has created. Habitat fragmentation is a much bigger issue, especially since the only way the Forest Service would be expected to deal with "encroachment" is more logging, which would fragment more habitat.

The assessment as it pertains to threatened, endangered, proposed or candidate, and sensitive species (or species of conservation concern) remains flawed and cannot form a basis for a plan revision.

We stated in our scoping comments, below in blue:

The current forest plan for the Clearwater National Forest commits to monitoring of population trends of MIS (including pileated woodpecker, northern goshawk, and pine marten) for reporting every 5 years. The current forest plan for the Nez Perce National Forest commits to monitoring of population trends of old-growth MIS (pileated woodpecker, northern goshawk, pine marten, and fisher) for reporting every 3-5 years. The results of that population trend monitoring must inform forest plan revision, because the concept of focal species in the 2012 Planning Rule is highly similar to the concept of MIS. Unfortunately, the Assessment fails to disclose any data or evaluation from the current forest plans' required monitoring. What is the Forests' "best available science" on the effects of current forest plan implementation on populations and distribution of old-growth associated wildlife species, including MIS, Sensitive, and other Species of Conservation Concern?

The Forest Service completely omitted considering species of conservation concern in the assessment it is using as the basis for this revised forest plan. Under the 2012 planning rule, assessments for plan revisions must "identify and evaluate existing information relevant to the plan area for...(5) Threatened, endangered, proposed and candidate species, and potential species of conservation concern present in the plan area." 36 C.F.R. § 219.6. We would think any Region 1 sensitive species is a potential species of conservation concern because the Forest Service defines "sensitive species" as "species that need special management to maintain and improve their status on National Forests and Grasslands, and prevent a need for listing under the Endangered Species Act." *See* USDA Forest Region 1 Webpage- Plants & Animals_TES_3-27-20 (available at https://www.fs.usda.gov/detail/r1/plants-animals/?cid=stelprdb5130525) (FN: The most recent list we could find is from 2011, and we have included this in our accompanying documents.) While this generally violates 36 C.F.R. § 219.6, it also entirely ignores baseline data for species that require special management because of current threats to them and their habitat. For this reason, we need current data on these species.

Wolverine

The wolverine is proposed for listing as a threatened species under the ESA. The proposed rule was issued in 2013. [78 Fed. Reg. 7864 (February 4, 2013).] The U.S. FWS withdrew the rule on August 13, 2014, and the withdrawal of the rule was deemed unlawful and vacated in 2016. [*Defenders of Wildlife v. Jewell*, 176 F.Supp.3d 975 (D. Mont. 2016).] Thus, the wolverine is currently Proposed for listing under the ESA. [1 81 Fed. Reg. 71670 (October 18, 2016).]

In adopting the 2012 Planning Rule, the USDA discussed "circumstances that are not consistent with the inherent capability of the plan area that limit the Agency's ability to manage fish and wildlife habitat to insure the maintenance of a viable population of a species within the plan area." . [21169 Federal Register Vol. 77, No. 68, April 9, 2012.] "The wolverine of the northern Rocky Mountains" were said to exemplify one such circumstance, in this case "the number of breeding individuals that may occur on an individual national forest may be too small to be considered a viable population." (*Id.*)

Well that means one of two things: 1) The Forest Service has failed to sustain a viable population over the 30-plus years of implementing management in the NPCNF, in violation of NFMA and possibly the ESA, or 2) A population meeting viable numbers criteria covers more territory than the NPCNF because wolverines are naturally dispersed sparsely across their landscape.

For the purposes of these comments, we'll give the agency the benefit of the doubt that it's #2, which means the Forest Service doesn't believe the NPCNF is geographically large enough to have the minimum number of reproductive wolverines to meet viability criteria. Since the plan components are insufficient to provide the ecological conditions necessary to conserve this species—Proposed for listing under the Endangered Species Act—and maintain a viable within the plan area, the Forest Plan must provide additional, species-specific plan components, to provide such ecological conditions in the plan area. [21265 Federal Register Vol. 77, No. 68, April 9, 2012.] Since the DFP has no standards or guideline for the wolverine, it fails to comply with NFMA.

We request the FS identify the agency's science-based plan or strategy for insuring wolverine viability within a geographic area that *is* large enough to maintain at least the minimum number of reproductive individuals.

The DFP states, "The extensive acreage of undeveloped lands on the Nez Perce-Clearwater interconnected with neighboring public lands provide important habitat security and linkage for wide-ranging species, such as lynx, wolverine, and other carnivores." Yet the DFP fails to include sufficient plan elements to identify, protect, maintain, and restore the linkages across national forest boundaries so wolverines and other wide-ranging species found on the NPCNF can function as a part of a viable population.

The DFP states, "(Section 2.3) provides additional species-specific plan components for threatened and endangered, proposed, candidate, and species of conservation concern for risks or stressors that are not addressed by the ecosystem level plan components." For the Proposed wolverine, the DFP offers only the two following components:

FW-GL-WL-01. Through cooperation and collaboration with the U. S. Fish and Wildlife Service, other federal agencies, state agencies, and tribes on conservation strategies, recovery plans, and habitat management, ecological conditions on National Forest System lands contribute towards recovery of federally listed threatened or endangered species, candidate, and proposed species are conserved and future listings are prevented.

FW-DC-WL-01. The Nez Perce-Clearwater provides habitat conditions for federally listed threatened, endangered, and candidate plant and animal species that contribute to their recovery to the point at which listing is no longer appropriate. Habitat used by federally listed species provide conditions to meet their life history needs.

For a plan element to be effective, it must do far more than just speak hypothetically about conservation strategies, recovery plans and habitat management—it must constrain management actions and other human uses that adversely affect habitat by <u>being</u> the conservation strategy or conform to recovery plans (if there is one—which there isn't for wolverine). With this "species specific plan component" the DFP's Goal FW-GL-WL-01 fails.

And by now we all know how toothless and ineffective desired conditions (in this case FW-DC-WL-01) are for proactively accomplishing anything at all urgent, such as maintaining viability.

Next, we offer some references to best available scientific information concerning wolverines with the expectation that the Forest Service prepare legitimate, science-bases plan components. We note that since the Assessment is never really finalized, we expect the agency treat this scientific information in consistency with the 2012 Planning Rule, and respond accordingly.

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

Copeland et al. 2010 state, "Available evidence …indicates that connectivity among wolverine populations is essential for maintaining viability in fragmented portions of their range (Flagstad et al. 2004; Cegelski et al. 2003, 2006; Schwartz et al. 2007)."

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

Logging and road activities may affect wolverines; published, peer-reviewed research finds: "Roaded and recently logged areas were negatively associated with female wolverines in summer." Fisher et al., 2013. The "analysis suggests wolverines were negatively responding to human disturbance within occupied habitat. The population consequences of these functional habitat relationships will require additional focused research." *Id*.

Results from Scrafford et al., 2018 "show that roads, regardless of traffic volume, reduce the quality of wolverine habitats and that higher-traffic roads might be most deleterious. We suggest that wildlife behavior near roads should be viewed as a continuum and that accurate modeling of behavior when near roads requires quantification of both movement and habitat selection. Mitigating the effects of roads on wolverines would require clustering roads, road closures, or access management."

May et al. (2006) cite: "Increased human development (e.g. houses, cabins, settlements and roads) and activity (e.g. recreation and husbandry) in once remote areas may thus cause reduced ability of wolverines to perform their daily activities unimpeded, making the habitat less optimal or causing wolverines to avoid the disturbed area (Landa & Skogland 1995, Landa et al. 2000a)."

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

Roads result in direct mortality to wolverines by providing access for trappers (Krebs et al., 2007). Trapping was identified as the dominant factor affecting wolverine survival in a Montana study (Squires et al. 2007). Female wolverines avoid roads and recently logged areas, and respond negatively to human activities (Krebs et al., 2007)

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

Roads and human density are important factors influencing current wolverine distribution (Carroll et al. 2001b); and wolverine habitat selection is negatively correlated with human activity – including roads (Krebs et al. 2007). Wolverine occurrence has shown a negative relationship with road densities greater than 2.8 mi/mi^2 (1.7 km/km^2) (Carroll et al. 2001b).

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

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

Wisdom et al. (2000) state:

> Carnivorous mammals such as marten, fisher, lynx, and wolverine are vulnerable to over-trapping (Bailey and others 1986, Banci 1994, Coulter 1966, Fortin and Cantin 1994, Hodgman and others 1994, Hornocker and Hash 1981, Jones 1991, Parker and others 1983, Thompson 1994, Witmer and others 1998), and over-trapping can be facilitated by road access (Bailey and others 1986, Hodgman and others 1994, Terra-Berns and others 1997, Witmer and others 1998).
>
> …Snow-tracking and radio telemetry in Montana indicated that wolverines avoided recent clearcuts and burns (Hornocker and Hash 1981).

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

Carroll et al. (2001b) state:

The combination of large area requirements and low reproductive rate make the wolverine vulnerable to human-induced mortality and habitat alteration. Populations probably cannot sustain rates of human-induced mortality greater than 7–8%, lower than that documented in most studies of trapping mortality (Banci 1994, Weaver et al. 1996).

… (T)he present distribution of the wolverine, like that of the grizzly bear, may be more related to regions that escaped human settlement than to vegetation structure.

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

- Provide large areas with low road density and minimal human disturbance for wolverine and lynx, especially where populations are known to occur. Manage human activities and road access to minimize human disturbance in areas of known populations.
- Manage wolverine and lynx in a metapopulation context, and provide adequate links among existing populations.
- Reduce human disturbances, particularly in areas with known or high potential for wolverine natal den sites (subalpine talus cirques).

The Analysis of the Management Situation Technical Report for Revision of the Kootenai and Idaho Panhandle Forest Plans states:

Direct mortality (related to access) from trapping, legal hunting, and illegal shooting has impacted all wide-ranging carnivores (e.g. lynx, wolverine, grizzly and black bears, wolves)…

…Wolverine populations may have declined from historic levels, as a result of over-trapping, hunting, habitat changes, and intolerance to human developments. As the amount of winter backcountry recreation increases, wolverine den sites may become more susceptible to human disturbance.

Finally, we note that the DEIS fails to adequately analyze cumulative impacts of past management, including addressing management under the original forest plans.

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Grizzly Bear

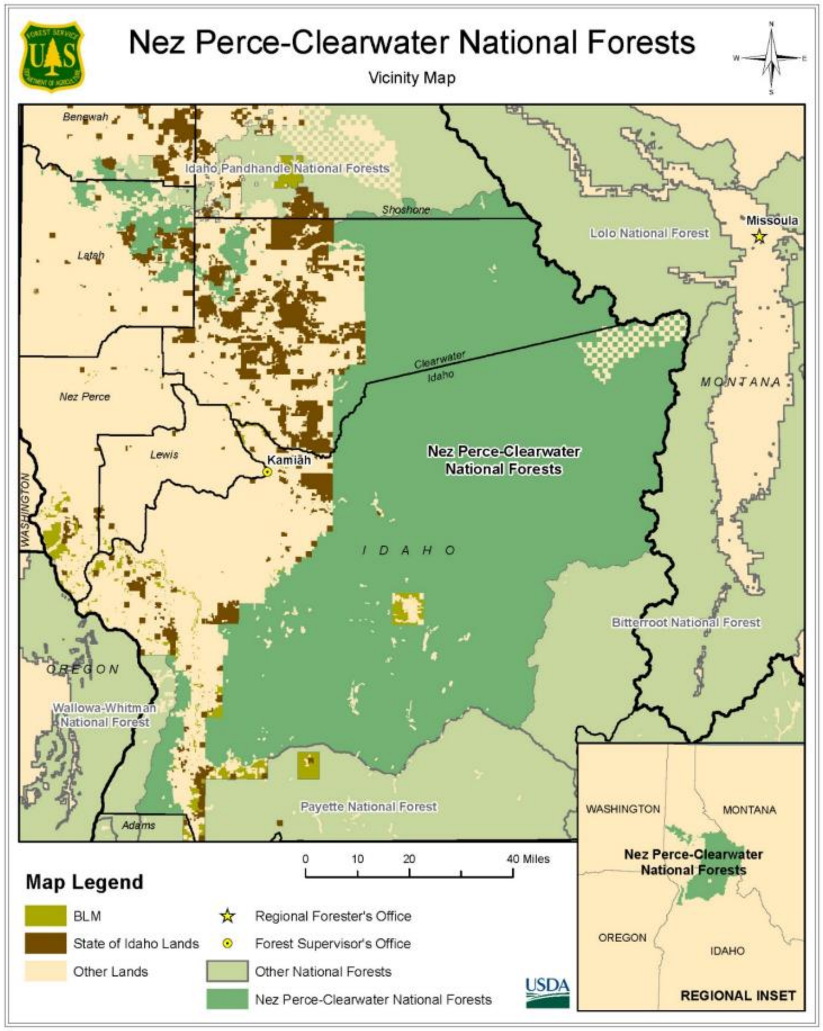
We incorporate the Flathead-Lolo-Bitterroot Citizen Task Force comments by reference into ours.

Grizzly bears are one of the slowest reproducing mammals in North America due to late age at first reproduction, small litter sizes, and the long interval between litters. Thus, female mortalities are especially serious for this threatened species. Grizzly bears have very large home ranges of hundreds of square miles and are capable of traveling over 60 miles at a time. Within the large home ranges, grizzly bears need protection from human depredation and impacts from other uses of grizzly bear habitat, including roads, logging, mining, human development, grazing, and recreation. The Forest Service should consider all reasonably foreseeable direct, indirect, and cumulative impacts to grizzly bears and grizzly bear habitat as a result of this DFP. This includes, but is not limited to, impacts from grazing, logging[38], prescribed burning, hunting, recreation, and use of roads related to these activities.

Grizzly bears are a part of America's rich wildlife heritage and once ranged throughout most of the western United States. However, distribution and population levels of this species have been diminished by excessive human-caused mortality and loss of habitat. In 1975 the U.S. Fish and Wildlife Service listed the grizzly bear as a threatened species in the lower 48 states under the Endangered Species Act (ESA). 40 Fed. Reg. 31734 (July 28, 1975). The 1993 Grizzly Bear Recovery Plan identifies six recovery areas: Greater Yellowstone Ecosystem (GYE), Northern Continental Divide Ecosystem (NCDE), Cabinet-Yaak Ecosysem (CYE), Selkirk Ecosystem (SE), North Cascades Ecosystem (NCE), and Bitterroot Ecosystem (BE). *See* 1993 U.S. Fish and Wildlife Service, Grizzly Bear Recovery Plan.

The Bitterroot Ecosystem is one of the largest contiguous blocks of Federal land remaining in the lower 48 United States. The core of the ecosystem contains two wilderness areas which comprise the largest block of wilderness habitat in the Rocky Mountains south of Canada. Of all remaining unoccupied grizzly bear habitat in the lower 48 States, this area in the Bitterroot Mountains has the best potential for grizzly bear recovery, primarily due to the large wilderness area and surrounding roadless lands. As such, the Bitterroot Ecosystem offers excellent potential to support a healthy population of grizzly bears and to boost long-term survival and recovery prospects for this species in the contiguous United States. (69644 Federal Register Vol. 65, No. 223, November 17, 2000.) From page 9 of the DFP:

[38] Logging is logging, despite the Forest Service's attempts to rename it as "restoration" or "salvage logging." Recent research indicates that so-called "salvage logging" has potentially significant negative impacts on forest resources. The Forest Service must develop clear and specific standards identifying when it is ecologically appropriate to use timber harvest to address "salvage logging" instead of allowing the impacts of natural events (insects, fire, and disease) to take their course on the landscape and develop more resilient future forests.



"The grizzly bear is native to and was once common in the Bitterroot Ecosystem of Montana and Idaho." (DEIS at 3.2.3.3 - 77.) And yet the Draft Forest Plan (DFP) barely mentions this iconic native species, and provides absolutely no firm direction to promote its recovery and protect its habitat consistent with best available science: "There currently are no species-specific plan components for grizzly bears within the proposed plan components and alternatives." (DEIS at 3.2.3.3 – 81.)

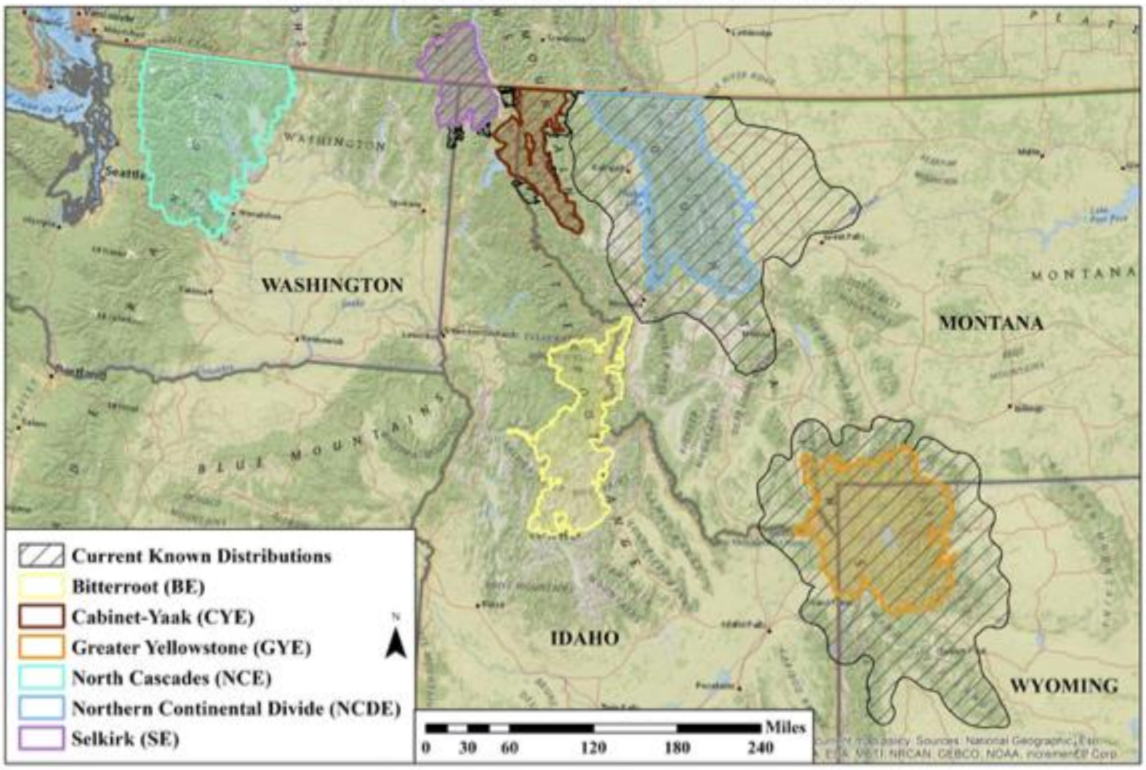
Mapping displayed in Carroll, 2001a shows the Clearwater Basin as having the best overall habitat suitability for grizzly bears in the Northern Rockies, compared to other recovery zones including the Greater Yellowstone, Northern Continental Divide, Selkirk, and Cabinet-Yaak Ecosystems Recovery Zones.

Analysis by Merrill et al., 1999 shows some of the most productive grizzly bear habitat in Idaho is on the NPCNF.

The DFP's lack of direction is essentially based upon two fal\ulty assumptions: 1) The grizzly bear doesn't occur in the Plan area, and; 2) The Bitterroot Recovery Zone is mostly designated Wilderness which is the highest standard of protection, so nothing else is needed if grizzly bears happen to show up. We explain the fallacy of those assumptions and why the FS is obligated to provide much more to comply with NFMA, NEPA, and ESA.

1. Grizzly bears occur, and may return, throughout the plan area.

Grizzly Bear Recovery Zones and Distributions



Estimated distributions are current as of 2018 for the GYE and the NCDE and are current as of 2017 for the CYE and the SE. The distribution for the NCE is currently unknown and a draft EIS was released in early 2017 to examine recovery options. The BE is currently unoccupied with a reintroduction proposal and a non-essential experimental population status.

"The grizzly bear was not included on the U.S. Fish and Wildlife Service list of species that are known to occur on the Nez Perce-Clearwater." (DEIS at 2-10). Also, "The Bitterroot Ecosystem is currently unoccupied by grizzly bears…" (DEIS at 3.2.3.2-5). As other information in the DEIS indicates, these statements are inaccurate, misleading and out-of-date:

> A two-year-old male augmentation bear was released in the West Cabinet Mountains near Spar Lake on July 21, 2018. … The animal emerged in late March (2019) and crossed the Clark Fork River, moving south in late April. This bear crossed I-90 on June 4, 2019, and headed south into the Nez Perce-Clearwater into the Mallard-Larkins Pioneer Area. Nearly as soon as he entered into the Nez Perce-Clearwater, he was photographed by game cameras operated by an outfitter and guide who has a permit to guide on the Nez Perce-Clearwater. The outfitter reported the observation to the Idaho Fish and Game and the Forest Service shortly after detecting the bear. This bear continued to move southeast through the plan area and crossed into the Bitterroot Ecosystem near Lolo Pass.

(DEIS at 3.2.3.3-78.)[39]

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[39] *See also* 2019 U.S. Fish and Wildlife Service Grizzly Bear Recovery Program Annual Report (attached hereto), pages 12-13.

Also, "In 2007, a male grizzly bear was accidentally[40] shot and killed on the North Fork Ranger District near Kelly Creek by a hunter who mistook the bear for a black bear." (DEIS at 3.2.3.3 – 77.) In the Spokesman-Review article of this incident, Steve Nadeau of Idaho Fish and Game was quoted, "We've put an awful lot of effort in over the years to verify grizzly bears are in the Selway ecosystem. That's one area where we expected grizzly bears to show up – Kelly Creek." (Emphasis added.) So if Idaho expects grizzly bears on the Forest it begs the question—why don't the federal managers of the grizzly bear and its habitat in this recovery zone expect the same? *See* 2019 Grizzly Bear Annual Report at 12 (noting that the Fish and Wildlife Service "expect[s] grizzly bears to recolonize the BE, albeit slowly"). In the very least, why are federal managers not planning to recover grizzly bear populations within this recovery zone via this natural recolonization?

The Forest Service's approach of claiming no grizzly bears exist on the forest sets up an inaccurate baseline, which in turn renders the agency's analysis under NEPA and the ESA faulty. It also creates a flawed basis for omitting any species-specific grizzly bear plan components in the DFP, despite requirements under NFMA and the 2012 Planning Rule to provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.

2. Designated wilderness is insufficient to ensure protection and recovery of grizzly bears on the forest.

"The Bitterroot Ecosystem is approximately 5,500 square miles in size and lies almost entirely within the Selway-Bitterroot Wilderness and the Frank Church-River of No Return Wilderness." (DEIS at 3.2.3.3 – 76.) The DEIS then makes two false statements: "…only grizzly bears that reside within the recovery zones are crucial to achieving recovery goals. Inside the recovery zone, it is a priority to manage or conserve grizzly bear habitat while outside the recovery zones that level of emphasis is not necessary."

First, grizzly bears moving between recovery zones—not just those bears that reside within a recovery zone—are crucial to achieving recovery goals. Second, although the U.S. Fish and Wildlife Service requires the Forest Service to prioritize conservation of grizzly bear habitat within a recovery zone, this does not mean that prioritizing conservation of grizzly habitat outside of a recovery zone is not necessary. *See* 65 Fed. Reg. at 69644 (noting "[t]he Recovery Area is the area of recovery emphasis," meaning "grizzly bear management decisions in the Recovery Area will favor bear recovery, allowing this area to serve as core habitat for survival, reproduction, and dispersal of the recovering population.").

Alarmingly, the Forest Service states, "[i]t is to be expected that any grizzly bears outside the recovery zones are likely to experience a higher level of adverse impacts and will occur at lower densities than within the recovery zones." (DEIS at 3.2.3.3 – 77, emphasis added.) In other words, based upon other discussion in the DEIS—it would result in a density of practically zero outside the recovery zone, which omits excellent habitat outside of Wilderness. It also omits the possibility of connecting corridors.

Yet the DEIS vacillates:

[40] Calling this incident an "accident" is euphemistic and misleading. The hunter intentionally killed the grizzly bear, which highlights a failure of DFP management as we discuss below.

> That being said …areas outside recovery zones can play a significant role in supporting movement of bears between recovery areas. Successful dispersal of bears is important to enable recolonization of vacant habitat; bolster small populations, such as in the Cabinet-Yaak Ecosystem; and provide genetic connectivity for the isolated population in the Greater Yellowstone Ecosystem. … t**he way the plan provides for connectivity for grizzly bears is a key consideration for how the revised plan will contribute to the recovery of the grizzly bear**…

(DEIS at 3.2.3.3 – 81, emphasis added.)

The Forest Service has a duty to protect grizzlies that come to the forest, regardless of whether these bears are located within or outside of recovery zones. Under the ESA, the Forest Service is required to provide necessary habitat protections to aid grizzly bear recovery.

The trouble is, the DFP fails to provide any direction for accommodating grizzly bears outside the Bitterroot Recovery Zone (wilderness). There is vaguely stated awareness that much more is needed, where the only mention of the grizzly bear in DFP (in the Glossary) is: "Secure Habitat: … This general definition covers most uses of the term security habitat, except for elk and grizzly bear, which have specific definitions." Yet nowhere in the DFP or DEIS is the issue of grizzly bear security discussed—let alone quantitatively defined.

3. Demonstrate compliance with the National Forest Management Act by including plan components that will ensure protection and recovery of grizzly bears.

The Selway-Bitterroot recovery area was originally centered in the Selway-Bitterroot Wilderness, and included the breaks of the Salmon River north of the main Salmon River in the NPCNF, the upper Lochsa River watershed, the upper North Fork Clearwater watershed, headwaters of the St. Joe River watershed, and areas of western Montana east of the Bitterroot crest on the Lolo National Forest. Lacking consideration of best available science, the government shrunk the Bitterroot Recovery Area to a much smaller area, comprising of only land in the Selway-Bitterroot and Frank Church River of No Return Wildernesses.

The Forest Service states that despite the absence of any species-specific plan components for grizzly bears within the DFP or its alternatives, "nothing in the plan precludes the Nez Perce-Clearwater from contributing to the recovery of grizzly bears." DEIS at 3.2.3.3 – 81. This defies logic, as the forest plan sets the vision and blueprint for managing the forest over the next 15-plus years. By not even mentioning grizzly bears in the DFP, the Forest Service de-prioritizes the species at a time when agency resources are extremely limited and likely to be further limited moving forward. There is no reason to think that without plan components, the agency will miraculously find the courage, much less the time and money, to contribute to the recovery of grizzly bears on the Nez Perce-Clearwater.

The DFP and the DEIS fail to mention the Citizen Management Committee (CMC), which is supposed to recommend changes in land-use standards and guidelines for grizzly bear management, and disclose those recommendations to review. 65 Fed. Reg. at 69645. While the Forest Service is ultimately responsible for making a final decision, recommendations from the CMC "must lead toward recovery of the grizzly bear," *id.*, and should be disclosed in this DEIS.

<u>Manage for connectivity</u>

True recovery of the Threatened grizzly bear population can only be achieved by enhancing the connectivity between the Selway-Bitterroot Ecosystem Recovery Zone and other recovery zones.

This recovery would be impeded by the DFP. *See, e.g.*, next section regarding the need to consider impacts to habitat connectivity under NEPA. The plan components in the DFP would impede this recovery. The Forest Service should add plan components that provide wildlife linkage corridors to allow animals, including grizzlies, to move unimpeded across the landscape. This includes connecting old-growth forest habitat.

Carroll et al., 2001b:

…incorporated focal species analysis of four carnivore species, fisher, lynx, wolverine, and grizzly bear, into a regional conservation plan for the Rocky Mountains of the United States and Canada. … Our results suggest that a comprehensive conservation strategy for carnivores in the region must consider the needs of several species, rather than a single, presumed umbrella species. Coordinated planning across multiple ownerships is necessary to prevent further fragmentation of carnivore habitat, especially in the U.S.–Canada border region.

Carroll et al., 2000 state:

Planning efforts have lacked an integrated regional approach, treating each recovery zone as isolated from other zones and the intervening landscape matrix. … The continuous bear distribution of the pre-settlement era has been fragmented into a "non-equilibrium" metapopulation (Craighead and Vyse 1996, Harrison and Taylor 1997). This makes the problems that conservation biologists associate with small, isolated populations (such as genetic isolation and demographic stochasticity) more relevant to grizzly bears than to most carnivores.

Manage for grizzly bear and human conflicts

Conflicts involving attractants are recognized in the DEIS as a major threat:

> Bear specialists provide information and assistance to landowners on appropriate ways to secure food and bear attractants and respond to reports of conflicts with black bears and grizzly bears. These programs have a proven track record of success in informing the public, reducing the availability of attractants to bears on private and public lands, and reducing human-caused mortalities of grizzly bears.

(3.2.3.3 – 89.)

Still, "The plan does not have components for the management of food or attractants within the recovery zone." (Id.) Instead the FS punts the issue until some unspecified later date: "Food storage orders can be implemented by the Forest Supervisor outside of the Forest Plan in the special order if grizzly bears become established within the Bitterroot Ecosystem." (3.2.3.3 – 81.)

Yet it is precisely this lack of strong management direction that is inhibiting recovery. The hunter who shot and killed the grizzly bear on the North Fork Ranger District near Kelly Creek in 2007 was using baiting to hunt black bears. Similarly, the 2019 sighting was by a hunter baiting for black bears, in the Kelly Creek watershed, according to a Lewiston Tribune news account. Although that incident didn't lead to the death of the grizzly bear as did the 2007 incident, black bear baiting still constitutes harassment, which is prohibited as "take" under the ESA.

The Forest Service must assert its authority, prohibiting in the Forest Plan the practice of bear baiting on the NPCNF.

Also, see FOC's Campground Attractant Survey 2018-2019, which documents the widespread problem of dumpsters on national forest lands in this ecosystem not being of bear-proof design or in degraded condition and in need of maintenance. This report also reveals that the Forest Service fails to take the opportunity to disseminate adequate and accurate information at kiosks at campgrounds and trailheads, to keep both people and bears safe.

The Forest Plan must establish safety measures for front country campgrounds and trailheads and for backcountry travelers. Dumpsters must be made bear-proof and maintained regularly. Every developed campground and major backcountry trailhead should provide accurate bear safety information.

The revision of the forest plan is the time to institute protections and other measures to facilitate rather than obstruct grizzly bear recovery onto the Forest.

Storage of food by recreationists and control of other attractants is needed—both inside and outside the Bitterroot Recovery Zone (wilderness). And in recognition of the research on grizzly bears indicates (much of it cited in the DEIS), the FS must proactively institute plan components to manage bear human conflictsinto its Forest Plan, as other national forests have done.

In adopting the 2012 Planning Rule, the USDA discussed "circumstances that are not consistent with the inherent capability of the plan area that limit the Agency's ability to manage fish and wildlife habitat to insure the maintenance of a viable population of a species within the plan area." [21169 Federal Register Vol. 77, No. 68, April 9, 2012.]

In its most recent opinion on delisting of the subpopulation of the grizzly in the Yellowstone Recovery Zone, the Federal Court clearly indicated that recovery of any one recovery zone is tied to the recovery of the lower 48 states population as a whole. The Court recognizes, in essence, that the NPCNF is not geographically large enough to have the minimum number of reproductive grizzly bears to meet viability criteria. Since the plan components are insufficient to provide the ecological conditions necessary to conserve this species—listed as Threatened under the Endangered Species Act—and maintain a viable within the plan area, the Forest Plan must provide additional, species-specific plan components, to provide such ecological conditions in the plan area. [21265 Federal Register Vol. 77, No. 68, April 9, 2012.] Since the DFP has no standards or guidelines for the grizzly bear, it fails to comply with NFMA.

Some scientific references we incorporate (see below) explain how the federal government has failed to create a Recovery Plan and meet other requirements under the ESA to insure a viable, recovered population.

The DFP states, "The extensive acreage of undeveloped lands on the Nez Perce-Clearwater interconnected with neighboring public lands provide important habitat security and linkage for wide-ranging species, such as lynx, wolverine, and other carnivores." This statement no doubt applies to the Threatened grizzly bear. Yet the DFP fails to include sufficient plan elements to identify, protect, maintain, and restore the linkages across national forest boundaries so grizzly bears and other wide-ranging species found on the NPCNF can function as a part of a viable population. Not only is the NPCNF excellent grizzly habitat, it can link populations in the Greater Yellowstone, Northern Continental Divide, Selkirk, and Cabinet-Yaak Ecosystems Recovery Zones to provide genetic diversity and therefore help recover population viability.

The DFP states, "(Section 2.3) provides additional species-specific plan components for threatened and endangered, proposed, candidate, and species of conservation concern for risks or stressors that are not addressed by the ecosystem level plan components." For the Threatened grizzly bear, the DFP offers only the two following components:

FW-GL-WL-01. Through cooperation and collaboration with the U. S. Fish and Wildlife Service, other federal agencies, state agencies, and tribes on conservation strategies, recovery plans, and habitat management, ecological conditions on National Forest System lands contribute towards recovery of federally listed threatened or endangered species, candidate, and proposed species are conserved and future listings are prevented.

FW-DC-WL-01. The Nez Perce-Clearwater provides habitat conditions for federally listed threatened, endangered, and candidate plant and animal species that contribute to their recovery to the point at which listing is no longer appropriate. Habitat used by federally listed species provide conditions to meet their life history needs.

Again, existing regulatory mechanisms for the grizzly bear population in the lower 48 states is inadequate. With this "species specific plan component" the DFP's Goal FW-GL-WL-01 fails grizzly bears, and as we've already discussed for wolverine the desired conditions (FW-DC-WL-01) accomplishes nothing of value.

A reminder of DFP definitions:

> Goals (GO): Broad statements of intent, other than desired conditions, usually related to process or interaction with the public.
>
> Desired Condition (DC): a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Also see chapter 1. (Where the DFP states, "Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined but not include completion dates."
>
> Broad statements of intent are not strategies, nor is there is a meaningful timeline for recovery if there are no completion dates. Thus the DFP has no insurance for viability, in violation of the Planning Rule.

<u>Manage transportation access to protect grizzly bears</u>

The Forest Service must also include plan components that address access management (roads, trails, and areas open to motorized vehicles, as well as designations for mechanized use) to ensure protection of grizzly bear and bear habitat. The U.S. Fish and Wildlife Service considers the management of roads to be one of the most important variables in managing grizzly bear habitat. Schwartz et al., 2010 (cited in the DEIS) noted that management for grizzly bears requires not only the provision of security area, but control of open road densities between security areas. Otherwise, grizzly bear mortality risks will be high as bears attempt to move across highly roaded landscapes to another security area. The Forest Service should include plan components that limit motorized route densities in light of the best scientific information available.

The FS is aware of the best plan direction it has adopted to date, established in Flathead Forest Plan Amendment 19 of the 1986 plan. (fn: Although the Forest Service revised the Flathead Forest Plan in 2018 and eliminated or weakened much of Amendment 19 as part of that revision, WildEarth Guardians and its partners, Swan View Coalition and Friends of the Wild Swan are currently challenging those changes in litigation. Alliance for the Wild Rockies also objected to the Flathead National Forest's revised forest plan and filed notice of intent to sue on this issue. Although that Forest Plan has been revised and the Amendment 19 direction dropped and/or weakened, AWR has objected to the Flathead NF's revised forest plan and filed notice of intent to sue on this issue.) Although not a perfect conservation strategy for the grizzly bear, it established Open Motorized Route Density, Total Motorized Route Density, and Security Core indices based upon the scientific information concerning security from roads and road density requirements for grizzly bears as found in Mace and Manley, 1993 and Mace et al., 1996. (Also see McLellan, et al., 1988.) The logic behind Amendment 19 applies equally here. The Forest Service should develop plan components in this DFP that address access management to protect grizzly bears, in light of the success from Amendment 19. The DFP should include standards and guidelines to (1) reduce road densities, and (2) limit public access to roads. Lamb et al. (2017).

The DFP should also include plan components that direct the agency to decommission roads (including removing all bridges and culverts) across the forest. Intermittent stored-service routes are not decommissioned, and should be counted in tallies of road miles remaining on the forest. Wildlife like grizzly bears depend on large, unroaded landscapes, and need roads to be truly decommissioned—not just figuratively so.

Reducing roads (mileage) and their impacts would benefit not only grizzly bears, but most other aspects of the ecosystem:

- Alternative D Modified would convert the most roads and consequently would provide the highest degree of habitat security and a lower mortality risk to the Canada lynx. (P. 70.)
- Alternative D Modified would provide a higher degree of habitat security (for gray wolves) than Alternative E Updated… (P. 74.)
- Alternative D Modified … could contribute to a cumulative increase in habitat security for black-backed woodpeckers (and pileated woodpeckers) because timber sales or other ground disturbing or vegetation management activities would be less likely to occur in Core Areas. Newly dead trees that support wood boring beetle populations would be less likely to be removed during vegetation management activities or by woodcutters. Alternative D Modified could provide slightly more secure habitat than Alternative E Updated. (P. 84, 112.)
- Alternative D Modified … could contribute to a cumulative increase in habitat security because timber sales or other ground disturbing or vegetation management activities would be less likely to occur in Core Areas. Snags would be less likely to be removed during vegetation management activities or by woodcutters. Alternative D Modified could provide slightly more secure habitat (for Townsend's big-eared bats, flammulated owls, fringed myotis bats) than Alternative E Updated. (Pp. 85, 86, 95.)
- Alternative D Modified and Alternative E Updated provide different levels of habitat security (for peregrine falcon, fisher, wolverine) based on the relative amount of wheeled motorized vehicle access. (Pp. 87, 89, 91.)
- Alternative D Modified, which closes the most miles of road in suitable habitat, would be the preferred alternative for the western toad. (P. 101.)

- Alternative D Modified closes the most miles of road in suitable habitat and would provide the greatest benefits for the goshawk. (P. 103.)
- Alternative D Modified, which closes the most miles of road in suitable habitat, would be the best Alternative for elk. (P. 104.)
- Alternative E Updated would provide some security and reduced vulnerability (for moose), but not as much as Alternative D Modified. (P. 104.)
- Although Alternative D Modified and Alternative E Updated would benefit mountain goats, Alternative D Modified would improve security and reduce the risk of displacement more than Alternative E Updated. (P. 109.)
- Alternative D Modified would improve security (for pine marten) more than Alternative E Updated. (P. 110.)

(Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones[41] Draft SEIS, emphases added.) This demonstrates how forest plan elements for the grizzly bear (habitat protections via road restrictions) act to also conserve habitat for many other species.

The Forest Plan or analysis in the EIS should identify key habitat components for grizzly bears for prioritizing road density reductions (Proctor, et al., 2020) so populations can recover. This also means considering seasonal habitat components, which may not be well represented in the Bitterroot Recovery Zone (wilderness).

The Forest Service should include standards and guidelines and ROS that keep all roadless areas free of mechanized and motorized use to ensure protection of grizzly bear and its recovery habitat, as well as other wildlife. The Forest Service need not authorize all uses across all areas of the forest. Indeed, it has a duty not to, in light of the agency's duty to provide for the protection and recovery of grizzly bears under the ESA and in light of best available science showing how mechanized and motorized use harm grizzlies. The Forest Service should also reduce the miles of roads to improve wildlife security and watershed integrity. The agency should limit mechanized access to ensure secure areas for grizzly bear and other wildlife, while reducing erosion to streams, potential conflicts between mountain bikers and bears, compaction of fragile soils, and spread of invasive weeds.

Inadequate Monitoring Plan

The Forest Service's proposed monitoring plan as it relates to threatened grizzly bears is grossly inadequate. The only detailed monitoring components to ESA listed species are specific to Canada lynx. *See* MON-WL-01. The Forest Service must include monitoring components that track grizzly bear and secure grizzly bear habitat to demonstrate the agency is contributing to the recovery of federally listed threatened species. 36 C.F.R. § 219.12(a)(5).

1. Consider and disclose impacts to grizzly bears, and consider reasonable alternatives that will protect grizzly bears, as required by the National Environmental Policy Act.

[41] Not selected, but Alternative D would have restricted road densities the most and protected the most Core of all alternatives analyzed.

Best available scientific information

The Forest Service must consider and follow the best available science in developing its DFP. 36 C.F.R. § 219.3. We have cited some of that science throughout this comment letter, but this is not an exclusive documentation. We also incorporate, as contributing to best available scientific information, the March 13, 2020 comments on the USFWS Initiation of 5-Year Status Review of Grizzly Bear (Ursus arctos horribilis) in the conterminous United States (85 FR 2143) we submitted along with others, as Attachment Grizzly 5-Yr.

Impacts from roads

Best available science makes clear that the presence of roads can have negative effects on natural systems and wildlife populations, including grizzly bear. *See* Proctor, et al. (2020). Harmful impacts to grizzly bears from roads include (1) increased human-caused mortality, (2) habitat displacement, (3) habitat fragmentation, and (4) direct habitat loss. *Id.* Grizzly bears are adversely impacted by roads through direct mortality from vehicle strikes and illegal harvest, and indirect mortality resulting from habituation to humans. Grizzly bears are also adversely impacted by roads through avoidance of key habitat as they attempt to move away from roads and road activity; through displacement from key habitat as they attempt to move away from roads and road activity; and through modification and fragmentation of their core habitat due to roads and road construction. The presence of roads to human population centers and the presence of dispersed motorized recreation in habitat around roads poses risks to grizzly bears. Access management is essential to reducing mortality risk to grizzly bears. Roads may cause some grizzly bears to habituate to humans. Grizzly bears that are habituated to humans suffer increased mortality risk.

Many grizzly bears will under-use or avoid otherwise preferred habitats that are frequented by humans due to road proximity and related opportunities for human access. This represents a modification of normal grizzly bear behavior that can result in detrimental effects. Grizzly bears will avoid roads and corridors adjacent to roads. Grizzly bears will also avoid roads and adjacent corridors even when the area contains preferred habitat for breeding, feeding, shelter, and reproduction.

Mace and Manley (1993) reported use of habitat by all sex and age classes of grizzly bears was less than expected where total road densities exceeded two miles per square mile. Mace and Manley (1993) also found that adult grizzly bears used habitats less than expected when open motorized route density exceeded one mile per square mile. Female grizzly bears in the Mace and Manley (1993) study area tended to use habitat more than 0.5 mile from roads or trails greater than expected.

Large blocks of grizzly bear habitat free from human influence are vital to grizzly bears. These landscapes allow the species to exist under natural, free-ranging conditions. Roads are the primary threat to these large blocks of grizzly bear habitat. Roads are a primary threat because they facilitate human presence and because they fragment large swaths of habitat into smaller blocks.

We incorporate AWR's Amended Complaint for case CV-18-67-DWM for the purposes of explaining how roads affect wildlife and how pervasive are ineffective closures on national forest land.

Climate change

Grizzly bears are also threatened by the impacts of climate change. The changing climate impacts the availability of grizzly bear food resources, and the number, size, and location of large wildfires. Wildfires can disrupt grizzly bear habitat.

Forest roads and climate change

The Forest Service should consider cumulative impacts from roads and climate change. In particular, consider increased precipitation as rain instead of snow, changing dates for snow melt, greater flooding, etc. Forest roads were not designed with climate change in mind. National Best Management Practices meant to protect water quality from sedimentation from forest roads also were not developed with climate change impacts in mind. The Forest Service must consider the cumulative impacts of forest roads and climate change, including greater potential for road failure, to grizzly bears and grizzly bear habitat. Please see also our Landslides section on the decreased stability of these roads because of the change in type of precipitation

Habitat connectivity and migration

Providing for grizzly bear connectivity is key towards eventually recovering the species across the contiguous United States. Grizzly bears "are most vulnerable when confined to small portions of their historical range and limited to a few, small populations." 65 Fed. Reg. at 69644. The NCDE grizzly bear population is a potential important genetic corridor connecting Canadian grizzly bear populations and the GYE, BE and CYE, and is a potential source population for the BE. *See* 2019 Grizzly Bear Annual Report at 5. The Nez Perce Clearwater National Forest must consider how neighboring federal lands, especially those that support the NCDE population, manage for grizzly bears. It must consider how this DFP interrelates with the management approaches of neighboring forest plans, and whether this DFP allows for recovery of the BE population in light of the NCDE as a likely source and the need for connectivity. The Forest Service must consider the need not just for connectivity and grizzly bear migration generally, but the importance of supporting connectivity and migration for female grizzly bears in light of the need to establish a viable grizzly bear population within the BE.

Consideration of how this DFP impacts potential grizzly bear habitat connectivity is also important given the location of the BE Recovery Zone, which spans the Nez Perce Clearwater, Bitterroot, and Salmon-Challis National Forests. *See* 2019 Grizzly Bear Annual Report at 12. The Forest Service must consider the need for plan components that would establish conservation corridors or linkages between grizzly bear habitats (existing and identified future habitat, per ESA listing information) to support necessary movements and greater species viability.

Given the known negative impacts of road density and public access on grizzly bears and grizzly bear habitat, and the existing over-sized road system on national forests, the Forest Service should consider adopting substantially similar species-specific grizzly bear plan components for managing roads on the Nez Perce Clearwater National Forest as are used in neighboring forest plans. Grizzly bear recovery efforts would benefit immensely from a coordinated and unified recovery strategy. This DFP is the Nez Perce Clearwater's opportunity to work towards a unified approach.

Impacts to grizzly population as a whole

As the recent federal court decision on the ill-advised USFWS decision to delist the Yellowstone Recovery Zone subpopulation of the grizzly bear recognizes, recovery of one subpopulation in one Recovery Zone is inextricably linked to recovery success within the entire range of the grizzly bear in the lower 48 states. Accomplishing recovery to the degree that delisting can be contemplated is still not close, as discussed by Allendorf et al.[42]

Increasing human populations, development, and recreation

The Forest Service must consider the impacts to grizzly bears, grizzly bear habitat, and increased risk for human and bear conflicts in light of increasing human populations and developing surrounding the Nez Perce Clearwater Forest, as well as growing demand for recreation. *See* 2019 Grizzly Bear Annual Report at 16 (noting grizzly bear "[a]ttacks have increased over time, likely because of increased numbers of both bears and humans on the landscape."). This is especially concerning in light of increased recreation, given the Forest Service's reliance on the existence of wilderness designations as sufficient to protect grizzly bears. If backcountry recreation visits increase, and the BE grizzly bear population numbers begin to increase, both of which are very likely given current trends, then the Forest Service must do more to manage human and bear conflicts within wilderness. The Forest Service must also consider increased risk of human and bear conflicts, and other impacts to grizzly bears, in light of greater development and an increasing human presence in the Wildland-Urban Interface. The DFP as written is wholly inadequate for these foreseeable impacts.

The agency should consider the impacts of high-intensity, non-motorized trails on grizzly bears and grizzly bear habitat. It must consider the impact for increased grizzly bear mortality, primarily due to conflict or management removals, as a result of shared use of important grizzly bear habitat. Multiple studies document displacement of individual grizzly bears from non-motorized trails to varying degrees. *See, e.g.*, Jope 1985; McLellan and Shackelton 1989; Kasworm and Manley 1990; White et al. 1999.

Consider species-specific grizzly bear plan components as a reasonable alternative

The Forest Service must consider species-specific grizzly bear plan components as a reasonable alternative to the draft plan. Omitting even consideration of any grizzly bear plan components is unreasonable, and contrary to best available science as well as the purpose of the BE to recover a grizzly bear population within the plan area. This alternative could easily be developed, based on existing forest plan components from Amendment 19 to the Flathead's 1986 Forest Plan. What's more, it could easily be integrated with other reasonable alternatives—especially an alternative that emphasizes resource and wildlife protection; it need not be a stand-alone alternative to the DFP.

1. Demonstrate how the draft plan complies with the Endangered Species Act for grizzly bears.

The Forest Service must demonstrate how the DFP complies with the Endangered Species Act (ESA) for grizzly bear. Section 7 of the ESA imposes a substantive obligation on federal

[42] The Status of the Grizzly Bear and Conservation of Biological Diversity in the Northern Rocky Mountains. A Compendium of Expert Statements. http://www.montanaforestplan.org/images/in-the-news/FLB-Grizzly-Expert-Statements.pdf

agencies to "insure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of" habitat that has been designated as critical for the species. 16 U.S.C. § 1536(a)(2). The Forest Service must explain how the DFP components comply with the ESA, especially as related to access management, climate change, logging, and resulting habitat fragmentation.

The Forest Service states that it will consult with the U.S. Fish and Wildlife Service on this revised forest plan in the near future, and given that it will likely be the only consultation on this Plan for 15 years or more, *see* 16 U.S.C. § 1604(d)(2), it is incumbent on the Forest Service to fully comply with the ESA, including consideration of best available science to create a plan to recover the grizzly bear. Even though the Fish and Wildlife Service designated the Bitterroot Grizzly Bear Experimental Area as a nonessential experimental (10(j)) population, reintroduction never occurred and there are currently no plans to do so. *See* 2019 U.S. Fish and Wildlife Service Annual Report (attached), page 13. Therefore, any grizzly bears present in the Bitterroot Experimental Area are considered threatened under the ESA. *Id.*

We strongly urge the Forest Service to affirmatively post all consultation documents, including any Forest Service Biological Evaluations or Assessments, any letters seeking concurrence, and any responses or Biological Opinions from FWS. Transparency of the consultation process is important, especially to the extent the Forest Service relies on the consultation process for its analysis of impacts to grizzly bears. Without these records, we are unable to assess the agency's analysis of impacts to grizzly bear in light of FWS's expert opinion. Providing this information will allow the public to view these critical documents, and other documents in the project record, without the need to submit a formal Freedom of Information Act request. Without this information being publicly available during the notice and comment period, we are unable to meaningfully comment on the agencies' determinations or analysis.

Consider Relevant Factors

The Forest Service and Fish and Wildlife Service must consider all relevant factors for how the DFP may impact grizzly bears. Habitat quantity, quality, and sufficiency are determining factors of recovery for grizzly bears, and thus relevant factors that the Forest Service and FWS must address. *Fund for the Animals v. Babbitt*, 903 F. Supp. 96, 113, 118 (D.D.C. 1995). The ESA's first listing criteria is "the present or threatened destruction, modification, or curtailment of [a species'] habitat or range." 16 U.S.C. § 1533(a)(1)(A). The agencies therefore must consider how the DFP impacts grizzly bear habitat, including any habitat-based recovery criteria for grizzly bears. This also includes assessing how the DFP contributes—or fails to contribute—to habitat connectivity with other grizzly populations, and how that might impede the species' recovery. *See, e.g.*, 65 Fed. Reg. at 69644 ("Expansion of the range of the species will increase the number of bears within the lower 48 United States, increase habitat size and extent, and further conservation of the species.").

Population Estimates

The agencies must consider and disclose accurate grizzly bear population estimates, in light of best available science. Independent grizzly researchers estimate that grizzly bear recovery will require a lower-48 grizzly bear population of 2,500-3,000 grizzlies in a linked meta-population, with some estimates as high as 5,000. *See* Allendorf and Ryman 2002 at 51, Bader 2000. The agencies must also consider population trends in light of best available science.

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Canada Lynx

The Draft Forest Plan (DFP)

The DFP is disjointed and confusing on the conservation of Canada lynx, a species listed as Threatened under the Endangered Species Act (ESA). On one hand it recognizes, “The extensive acreage of undeveloped lands on the Nez Perce-Clearwater interconnected with neighboring public lands provide **important habitat security and linkage for** wide-ranging species, such as **lynx**, wolverine, and other carnivores.” (Emphases added.)

And the DFP includes a standard, FW-STD-WL-01, which states, “Canada lynx habitat shall be managed in accordance with the Northern Rockies Lynx Management Direction…” (NRLMD).

On the other hand, page 18 of the DFP lists “Northern Rockies Lynx Management Direction Record of Decision Appendix, Appendix 8” under “Optional Plan Content.”

The DFP states, “This appendix[43] applies to lynx habitat on National Forest System lands presently occupied by Canada lynx, as defined by the Amended Lynx Conservation Agreement between the Forest Service (FS) and the U.S. Fish and Wildlife Service (FWS) (USDA FS and USDI FWS, **2006**a). **The Nez Perce-Clearwater is listed as unoccupied lynx habitat**.” (Emphases added.)

[43] DFP Appendix 8, the Northern Rockies Lynx Management Direction.

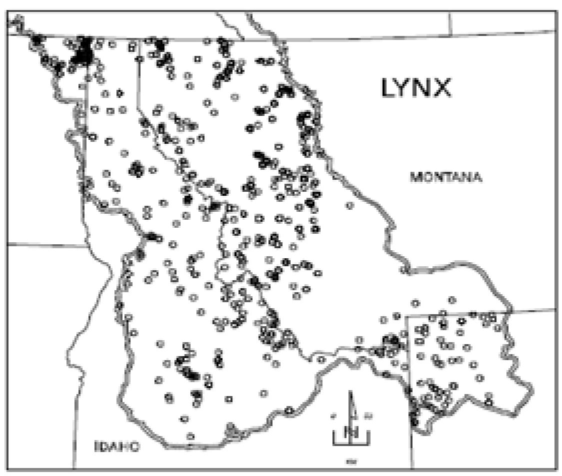
So this means, until the lynx is somehow determined to "occupy" the NPCNF, the NRLMD simply does not apply. And furthermore, based on that logic the NRLMD does not apply now.

Unoccupied, really? As concluded in 2006? In the NRLMD itself (2007) it states, "At the time of this decision the following National Forests in the Northern Rockies lynx planning area are **known to be occupied: …Clearwater**…"

Furthermore the NPCNF's Woodrat EA (December 2016) states, "The Clearwater National Forest has one threatened species, Canada lynx, which has been **verified by observations from experts**. The USFWS recognizes the Forest as secondary habitat for the predator, as well as **occupied habitat** for threatened Canada lynx."

Clearly, the NRLMD is current forest plan direction—at least for the Clearwater National Forest. Furthermore, the NRLMD contains provisions for what is said to be "unoccupied" habitat which includes the Nez Perce National Forest. Ultimately, if the Forest Service decides to declare that the NRLMD does not apply to any portion of the NPCNF, then the Forest Plan still must provide plan elements in consideration of areas for connectivity or linkages.

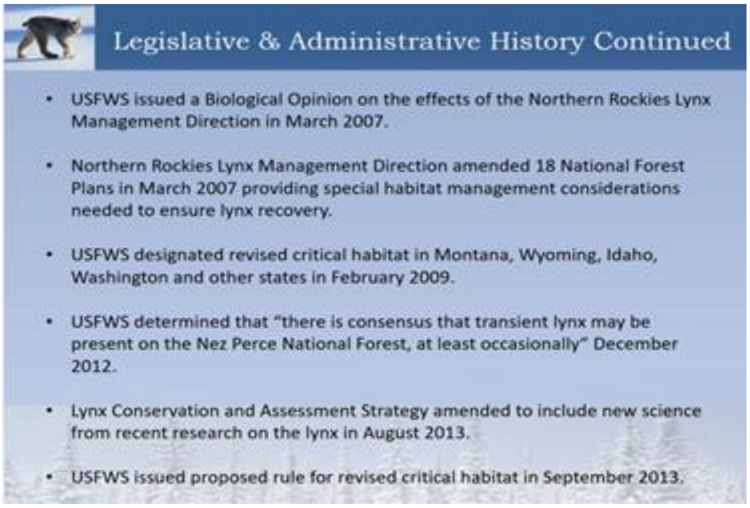
Best available scientific information indicates historic occupancy across the entire NPCNF. Carroll, et al., 2001a and Carroll, et al., 2001b include Figure 2, "Occurrence data used in developing habitat models for fisher, lynx, and wolverine. …Numbers of occurrence locations, including historical (pre-1983) records, are 368 for fisher, 529 for lynx, and 584 for wolverine." The portion of their Figure 2 is reproduced here:

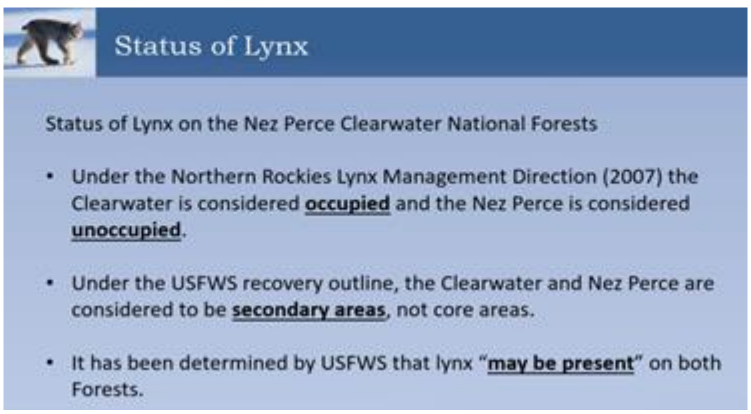


Those researchers also find suitable habitat for lynx distributed across the entire NPCNF (see below). So it would be more logical to consider the entire NPCNF as occupied habitat, with limited occurrence based on the likelihood that lynx were almost extirpated by trapping, and the population on these Forests hasn't been able to recover because of poor protections for connectivity.

The revised forest plan must include plan elements that prohibit trapping in LAUs and in key connectivity areas. Without such provisions, the viability of the lynx on the NPCNF remains precarious.

In response to a July 21, 2016 FOIA from FOC, the Forest Service supplied documents including a powerpoint, "FPassessMeeting0405_TE-Wildlife". Here are two frames:





The NRLMD ROD in the DFP states, "The management direction incorporates the terms and conditions FWS issued in their biological opinion (USDI FWS 2007)." That direction may have been incorporated by the NRLMD ROD, but for the purpose of a forest plan the Forest Service is obligated to make the direction explicit by stating it in the forest plan. For your convenience, we present here the four terms and conditions from the 2007 Biological Opinion (BO), which belong in the Forest Plan:

The following terms and conditions implement reasonable and prudent measure #1:

> The Forest Service shall ensure that fuels management projects conducted under the exemptions from standards VEG S1, S2, S5 and S6 in occupied habitat:
>
> 1. Do not occur in greater than six percent of lynx habitat on any Forest.
> 2. Do not result in more than 3 adjacent LAUs not meeting the VEG S1 standard of no more than 30 percent of an LAU be in stand initiation structural stage.

The following term and conditions implement reasonable and prudent measure #2:

> 3. In occupied lynx habitat, precommercial thinning and vegetation management projects allowed per the exceptions listed under VEG S5 and S6, shall not occur in any LAU exceeding VEG S1, except for protection of structures.

The following term and condition implements reasonable and prudent measure #3:

> 4. The Forest Service shall work with the Service to develop and complete an acceptable protocol to survey currently unoccupied lynx habitat in secondary area within 18 months of the date of Forest Service's Record of Decision for the amendments. An acceptable protocol may include any or none of the following, and is not limited to the following: surveying each Forest with unoccupied lynx habitat at some regular interval; ground-truthing and refining lynx habitat maps to more accurately identify lynx habitat in secondary area; relying on survey data generated by other cooperating agencies; removing some portions of secondary area from survey requirements (based on for instance, the best mapping information, most recent information, habitat quality and quantity, advice and recommendations from lynx experts, and juxtaposition between core areas). The Forest Service shall provide a written rationale for the protocol.

The 2007 BO also included a "Monitoring and Reporting Requirement." It begins:

> The Forest Service Northern Region (Region 1) Office in Missoula, shall provide a written annual report to the Service each year this biological opinion is in effect. The report will include a summary of the reporting requirements listed below. The report shall be submitted to the Service by April 1 of each year, or other date through mutual agreement.

The BO then states, "The report shall document the following information related to fuel treatment and vegetation management projects occurring in occupied lynx habitat." It then lists five items of information to be provided in annual reports. Please provide a link to every annual report prepared by the Regional Office to date.

Returning to FW-STD-WL-01, which states in full:

> Canada lynx habitat shall be managed in accordance with the Northern Rockies Lynx Management Direction (U.S. Department of Agriculture, 2007b) and Record of Decision (U.S. Department of Agriculture, 2007a) and any **amendments, updates, or new direction forthcoming**. (Emphasis added.)

If there have been "amendments" please specify them now. Same with "updates." The Forest Service is also leaving open the door here to allowing subsequent illegitimate forest plan amendments, updates, and "new direction forthcoming" without following NEPA or the 2012 Planning Rule.

And returning to the "occupied" issue, the DFP includes the following definition:

> Occupied lynx Habitat: mapped lynx habitat is considered occupied by lynx when [2006 Amendment to the Canada Lynx Conservation Assessment]:

1. There are at least 2 verified lynx observations or records since 1999 on the national forest unless they are verified to be transient individuals; or

2. There is evidence of lynx reproduction on the national forest

In reality, the Forest Service only wants to consider the Forest occupied if the second item is proven, because lacking evidence of lynx reproduction the Forest Service attitude as expressed in the DFP is that lynx don't belong on the NPCNF—they are merely temporary guests—lost, wandering, vagrant "transients." This violates the ESA, which grants protections wherever an individual of a listed species occurs.

Northern Rockies Lynx Management Direction

Alliance for the Wild Rockies participated during the public process as the Northern Rockies Lynx Management Direction (NRLMD) was developed. Our groups believe that the NRLMD does not consider the best available science. A big problem is that it allows, with few limitations, the same levels of industrial forest management activities that occurred prior to Canada lynx ESA listing.

We incorporate the documentation of AWR's participation in the NRLMD public process within these comment. (See folder entitled "NRLMD Participation")

Recent scientific findings undermine NRLMD direction for management of lynx habitat. This creates a scientific controversy the DEIS fails to resolve.

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

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

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

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

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

Kosterman, 2014, Vanbianchi et al., 2017 and Holbrook, et al., 2018 demonstrate NRLMD direction is not consistent with BASI and is inadequate for lynx viability and recovery.

The allowance of "exemptions" from Forest Plan direction is also an issue of scientific controversy. The NRLMD allows for reduction of lynx foraging habitat within the wildland-urban interface. The problem with this approach is, the boundary of the wildland-urban interface is a changing geographical feature independent of Forest Service or USFWS influence. As stated in the DEIS, "With additional development in the wildland urban interface, boundaries identified in Community Wildfire Protection Plans will also change over the life of the plan." In other words, the area exempt from Forest Plan standards is ever-growing along with human population and development, and is constantly in flux without any forest plan amendment or NEPA analysis.

During project analyses, the Forest Service mostly accepts stand data to be valid for lynx analysis purposes, but as we've noticed, not if the NRLMD restricts logging. Many times in the Region since the NRLMD was adopted, the Forest Service stated that, upon field review stands initially mapped (using its databases) as lynx multistory habitat were now determined to be not in a condition that provides snowshoe hare foraging habitat (i.e., stem exclusion), and logging—usually clearcutting—was proposed in those stands. Since it turns out there's less lynx suitable habitat than the NRLMD previously assumed, please compare original estimates of range-wide Canada lynx suitable habitat (acres) with updated acreages, based upon project-level changes and monitoring.

<u>Best Available Scientific Information</u>

Please disclose your rationale if Kosterman, 2014, Vanbianchi et al., 2017, Holbrook, et al., 2018 or any scientific sources cited below do not meet your criteria as BASI for lynx.

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

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

Carroll, et al., 2000 state:

> The vulnerable status of lynx populations in the southern part of their range (southern Canada and the northern U.S.) is due to their obligate association with their major prey, the snowshoe hare. Although they take other small prey such as grouse and squirrels, hares make up the bulk of the diet. For example, hares constituted 91% of prey biomass in Alberta (Brand et al. 1976). Hare populations undergo cyclical fluctuations in the northern part of their range, the extensive boreal forest of northern Canada and Alaska. Populations in the south do not show such dramatic cycles, instead remaining stable at densities typical of the low point of the northern cycle (Koehler and Aubry 1994). This may be due to the fragmented distribution of boreal forest types in the south, and the greater diversity of lagomorph species and hare predators (Wolff 1980). Facultative predators on hares such as coyotes, red fox, bobcat, and raptors may indirectly keep populations of the lynx, an obligate hare predator, at low levels (Wolff 1980).
>
> A gradient of decreasing habitat suitability with decreasing latitude is established as areas of high-elevation forest become smaller and more fragmented and prey density declines. Although the species ranges into Colorado, the U.S. lynx populations with the greatest prospects for viability are in Montana, Idaho, and Washington (Koehler and Aubry 1994). These populations show densities of 2.3 adults/100km2, equivalent to those at the low point of the northern cycle (Koehler 1990, Koehler and Aubry 1994). The naturally low density of southern lynx populations makes them more vulnerable to the effects of trapping and forest management (Koehler and Aubry 1994).
>
> High quality denning habitat is limited to mature forest, which provides the coarse woody debris (CWD) needed for thermal cover and protection for the young (Koehler and Aubry 1994). Lynx show high variability in home range size and may concentrate winter use in activity centers (Nellis et al. 1972, Koehler 1990). These “keystone habitats” may be a limiting resource, and habitat models focusing on their distribution may be useful.

In the aforementioned powerpoint (“FPassessMeeting0405_TE-Wildlife) it cites Squires et al., 2008 in stating lynx “Prefer to den in large down logs or pile of small diameter logs”. Here is a display of a portion of that frame, showing photos of denning habitat:

Since DFP plan elements do not require down logs to be any larger than 3” diameter, one can easily see that lynx denning habitat is not provided for by the DFP.

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

Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity.

Squires et al. (2013) noted that long-term population recovery of lynx, as well as other species as the grizzly bear, require maintenance of short and long-distance connectivity. The importance of maintaining lynx linkage zones is also recognized by the FS's Lynx Conservation Assessment and Strategy (LCAS), as revised in 2013, which stresses that landscape connectivity should be maintained to allow for movement and dispersal of lynx. The DFP—with or without the NRLMD—does not include adequate scientifically based direction that would protect connectivity between Lynx Analysis Units.

Habitat modeling by Carroll, et al., 2001a and Carroll, et al., 2001b determined that high-quality habitats for fisher and lynx, unlike those for wolverine and grizzly bear, are not strongly associated with low levels of human population and roads, and that they are naturally fragmented by topography and vegetation gradients and are poorly represented in existing protected areas. This strongly suggests viability is highly dependent upon quality habitat connectivity across the NRLMD national forests.

In response to the July 21, 2016 FOIA from FOC, the Forest Service supplied a map, “habitat_summary_21_feb_02” which also shows suitable habitat across the NPCNF.

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

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

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

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

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

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

The DEIS fails to analyze and disclose cumulative impacts of recreational activities on lynx, such as snowmobiles. As the Kootenai NF’s Galton FEIS states, “The temporal occurrence of forest uses such … winter (skiing and snowmobiling) … may result in a temporary displacement of lynx use of that area…”

The DEIS also fails to adequately consider the cumulative impacts on lynx due to trapping or from use of the road and trail networks in the NPCNF. Wisdom et al. (2000) state:

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

Mapping displayed in Carroll, 2001a shows the Clearwater Basin as having the good habitat suitability for Canada lynx in the Northern Rockies, comparable to other areas in Idaho and Montana where lynx are presently found.

Carroll et al., 2001b:

> …incorporated focal species analysis of four carnivore species, fisher, lynx, wolverine, and grizzly bear, into a regional conservation plan for the Rocky Mountains of the United States and Canada. … Our results suggest that a comprehensive conservation strategy for carnivores in the region must consider the needs of several species, rather than a single, presumed umbrella species. Coordinated planning across multiple ownerships is necessary to prevent further fragmentation of carnivore habitat, especially in the U.S.–Canada border region.

Canada lynx works cited

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Elk

<u>Elk history in the Clearwater Basin</u>

It may be instructive to look at a quick history of elk in the upper Clearwater.[44] When Lewis and Clark ventured here, game was scarce until they reached Weippe. In the late 1800s, the Carlin Party did find elk at Colgate licks, though it is not known whether they were very abundant as the natural licks drew elk from the area.

Elk habitat in the upper Clearwater is a function of the large burns in the early 1900s. Plant succession is taking place and probably needs to take place for soil and watershed health. In other words, most elk habitat on the Clearwater is ephemeral. The preferred brush forage, redstem ceanothus, declines in quality after 10 or so years. At the time of the big fires, and shortly thereafter, elk were few. The state of Idaho established at least one game preserve (the old Selway preserve), hunting was eliminated for elk though it likely continued for predators. At the same time, the war on predators was reaching its culmination with poisons, even in this remote area. Elk increased rapidly. The number of elk in the 1900s was not normal, it was incredibly high, but since our perspective is short, it seemed normal. That skewed perception is at the heart of the issue.

The Upper Clearwater is rather unique for the Rockies. For the most part, there isn't winter range typical of most of the interior West, dry shrub steppes, where elk go to treeless foothills[45]. Winter elk forage consists of hardwood brush, the result of large fires in the early 1900s on formerly forested slopes. Elevations in the Clearwater are also different than elsewhere in the Rockies. They are lower along the rivers. For example, the mouth Selway River is some 1400 feet in elevation. The North Fork, as it exits the Clearwater National Forest is about 1500 feet (the approximate elevation of high pool on Dworshak Reservoir).

The first die-offs were in the late 1940s where Lowell record nearly 8 feet of snow. About every 25 years or so, another die-off occurs that is weather-related.

In the 60s, 70s and 80s, the Forest Service and Idaho Department of Fish and Game burned a lot of the brush fields in the North Fork and Lochsa, some on an annual basis to keep them in that condition. That caused a decline in soil quality as fires naturally in this area were nowhere near that frequent. Dworshak reservoir inundated some of the better elk winter range in the North Fork Clearwater. Everything between about 900 and 1500 feet in elevation on the North Fork is gone.

One of the real problems in the DEIS is that there is hardly any range data.

> Specific information regarding the condition of the non-forest vegetation within the

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[44] http://www.lewis-clark.org/article/2070 is an interesting article, with references, on the history of elk in the Lochsa.

[45] The Clearwater and points north are like wetter areas of the Pacific Northwest.

> planning area is limited. Sampling and evaluation of grassland vegetation is generally conducted as a component of "range analysis" but range analysis information is relatively sparse on the Nez Perce-Clearwater.

DEIS at 3.5.3-9. One of the problems with elk habitat is that nobody has been doing condition or trend studies in the upper Clearwater. Admittedly, this would be more difficult than elsewhere because elk forage is a function of recent fire or other disturbance and does not last long, at least in its prime state. Friends of the Clearwater asked Idaho Fish and Game Department for this information and they had none. When the same request was made to the Forest Service, the reply was they have none that is long-term or updated.[46]

Some points to consider:

1- The fires of the early 1900s, which though natural were huge, created prime elk habitat along with the war against predators and hunting regulations increased elk numbers dramatically. It is possible if not probable that numbers in the 1900s were at all-time unprecedented highs. As such, elk numbers needed to come down. The winter die-offs were the main mechanism to do so.

2- Elk foraging habitat in the Clearwater is mostly ephemeral, though over many years. Thus, elk populations should and will go up and down. These downturns are important, if not essential in maintaining herd and landscape health.

3- Hunting regulations in the 1900s probably had a serious negative impact on elk in the upper Clearwater in terms of demographics, leading to young bulls and old cows.

4- The upper Clearwater is a great place to study predator prey relations.

Wildlife Desired Conditions and Guidelines

Both 1987 plans relied on a model with which the public could access and check the Forest Service's calculations on a project-level basis. That model, Elk Habitat Effectiveness, was a worksheet that had various components (other sub worksheets) that created values that the Forest Service then plugged into the Elk Habitat Effectiveness. For example, there was a worksheet that indicated displacement by cattle. In the main worksheet, there were categories that helped calculate the impacts of roads; there were entries for different types of roads (open, closed, seasonally closed, etc.) with different coefficients depending upon the cover adjacent to the road. The road coefficient was added to components like the cattle impact to come up with an Elk Habitat Effectiveness percentage, and each management area on both forests used this model to set percentages. While this model was imperfect, the public could access it and check the Forest Service's work. This is important because there have been a few instances where the Forest Service was averaging coefficients that should have been calculated separately, and we were able to inform the agency about this mistake and the agency was able to fix the analysis.

[46] An interesting article about elk declines in the Pacific Northwest suggests data are crucial. Johnson et al. Issues of Elk Productivity for research and Management. Transactions of the 69th North American Wildlife and Natural Resource Conference.

What we see with the DFP is symptomatic of an unfortunate trend from the Forest Service that effectively cloaks analysis from public scrutiny, and we encourage the Forest Service to make available the models it will use with planning and implementation so the public can access and check the Forest Service calculations. The Forest Service has presented a model that it proposes to use. But the baseline that would go into the model (the nutrition-assessment of existing conditions) is not available. Also, the public doesn't have access to this model and it is not reprinted anywhere that we were able to find. With this DFP, there is no such disclosure of the model or a worksheet that allows the public to repeat the Forest Service's calculations. So, where the Forest Service has made mistakes in calculations in the previous plans that the public could find and correct for the agency in the administrative process, that potential will be entirely eliminated. The public just has to trust the Forest Service, which is not the public scrutiny that NEPA requires. Such a move eliminates transparency and frustrates public participation because the public cannot be ensured that the agency is using the model correctly or have made inadvertent errors that could lead to more adverse impacts. Any model the agency is using to calculate nutrition and habitat use should be available to the public in a manner where the public knows the coefficients used and can actually check the agency's work project-by-project. Public scrutiny of model calculations would ensure a hard look at project impacts. Please fix this.

FW-GL-WLMU-01. Habitat contributes to wildlife populations at levels meeting Idaho Department of Fish and Game species management plan objectives.

Idaho Fish and Game focuses on hunting, and their objectives are not subject to environmental laws like the National Environmental Policy Act unless it involves listed species. This goal doesn't set a goal, but only states that the Forest Service will go along with whatever the state agency does. This may not always be legal; theoretically IDFG can create an objective that does not provide a diversity of wildlife like NFMA requires, and this goal, as vaguely worded as is, would support that. It would be okay to set a goal to work with IDFG with the Forest Service's own independent scientific analysis, but not adopting unseen objectives of the state agency. this should be amended. What happens if IDFG sets a target for a population, like for elk, which may be untenable because the state agency is using a population level at the species' highest point as a static baseline?

FW-DC-WLMU-01. Habitat supports opportunities for hunting, fishing, trapping, gathering, observing, photography, subsistence, cultural interactions, and the exercise of treaty reserved rights. Wildlife are distributed in habitats within their respective seasonal ranges.

This desired condition is anthropocentric. What is missing is a desired condition for wildlife to diversely exist without someone hunting, fishing, photographing them. Please add one.

What is also missing from the draft forest plan for elk are any standards.

<u>Proposed elk desired conditions, guidelines, objectives, and standards</u>

FW-DC-ELK-01. Habitat conditions maintain or improve elk habitat use and provide nutritional resources sufficient to support productive elk populations. The amount and distribution of early seral nutritional resources are consistent with the desired conditions in the Forestlands and Meadows, Grasslands, and Shrublands sections. Elk habitat quality is not degraded by invasive species.

FW-DC-ELK-02. Elk populations are distributed throughout the planning area in suitable habitats. Motorized access does not preclude use of high or moderate quality nutritional resources.

Why hasn't the Forest Service gone through and mapped these suitable areas? For example, in the Rowland model, slope was a large predictor of habitat use, and there is a lot of steep country in the Nez Perce-Clearwater. There is no way for the public to tell what is suitable or why it is. In the old forest plans, each management area had an elk objective, a calculable percentage, based off of the science used. It provided expectations for smaller areas on the forest. Here, however, because the management areas are so large, there are no smaller expectations to achieve the larger desired condition.

The DEIS states that this forms the management framework. But, it is important to note that models like Rowland et al. 2018, which developed digestible dietary energy and habitat-use models, pointed out that these models did not calculate carrying capacity. The habitat-use model was designed to predict elk distribution. Did the Forest Service adapt its model to predict elk distribution? Did the Forest Service validate this model as did Rowland et al. 2018? Where is that information? It seems like this is the perfect opportunity to validate the model developed and map out the current nutritional and habitat use so the public can see. Then, the Forest Service can use these models, along with slope, distance to existing edges, and distances to open road. The slope is the one thing that is fairly unchangeable, and also important because of the steep terrain in the two forests.

Management Area 1

MA1-DC-ELK-01. Elk habitats in Management Area 1 provide nutritional resources primarily through natural processes and are consistent with the natural range of variation. Vegetation is composed of native plants.

Instead of saying the above, "natural process" and "consistent with the natural range of variation," why not actually specify what those natural processes are spell out what the natural range of variation consists of? What are the native plants, and of those native plants, what to elk feed on? This desired condition gives the public minimal information.

Management Area 2

Desired Conditions Management Area 2

MA2-DC-ELK-01. High-quality elk nutrition increases so that between 10-20 percent of each Hydrologic Unit Code 12 in Management Area 2 produces at least 2.6 kcal/gram of dietary digestible energy while remaining consistent with desired conditions for vegetation described in the Forestlands section.

MA2-DC-ELK-02. Areas at least 5000 acres in size exist without motorized access open to the public to maintain habitat use by elk. Areas of high and moderate nutrition potential remain unfragmented by new motorized trails.

Objectives

MA2-OBJ-ELK-01. At least 50 percent of the treatments to accomplish desired conditions for vegetation in early seral habitats over a rolling 5-year time window will be targeted in areas with moderate or preferably high nutritional capacity. Treatments should be designed and implemented to promote and sustain high nutritional capacity for at least ten years.

MA2-OBJ-ELK-02. In Management Area 2, allow vegetation desired conditions to be achieved through wildland fire on 10,000 to 15,000 acres annually, preferably in areas with high nutritional capacity, to contribute to high quality nutritional resources for elk.

Guidelines

MA2-GDL-ELK-01. To maximize elk habitat, use and avoid fragmenting large areas of elk habitat that is currently not accessible by motorized access. New motorized trails open to the public should not be authorized unless adjacent areas of 5000 acres or larger can be maintained without motorized access. The location of new motorized trails should avoid areas of high or moderate nutrition potential when possible.

MA2-GDL-ELK-02. To increase available habitat for elk, elk habitat improvement projects should be designed to increase available summer forage in areas of moderate or high nutrition potential.

The DEIS explanation justifying some of the desired conditions and guidelines follows:

> Thus, in the plan components for Roadless Rule areas, emphasis is on higher nutrition at a landscape scale under MA2-DC-ELK-01 while maintaining the large areas without motorized access that could be impacted by development of new motorized trails. MA2-DC-ELK-02 and MA2-GDL-ELK-01 emphasize retaining areas of 5000 acres or larger without motorized vehicles consistent with Ranglack et al (2017).

The DEIS explains:

> Elk within Idaho Roadless Rule areas have ample security or distance from roads but may lack abundant high-quality nutrition. Idaho Roadless Rule areas are composed of large blocks of land without motorized access. These areas lack nutritional resources due to fire suppression. Thus, in the plan components for Roadless Rule areas, emphasis is on higher nutrition at a landscape scale under MA2-DC-ELK-01 while maintaining the large areas without motorized access that could be impacted by development of new motorized trails. MA2-DC-ELK-02 and MA2-GDL-ELK-01 emphasize retaining areas of 5000 acres or larger without motorized vehicles consistent with Ranglack et al (2017).

Are these 5,000 acres distributed across the management area? Are they in areas that are already used by elk? Where are the areas of high and moderate nutrition already in this management area? Why make it a desired condition and not a standard when the Forest Service can control motorized vehicle access?

The DEIS discusses that there have been “many roads” closed since the 1987. Ch. 3.2.3.4 p. 16. Is this a net closure? If not, how many have been built, temporary or permanent since that time?

DEIS states,

> Management of summer-fall nutrition to meet the maintenance needs of lactating females, however, may not ensure that elk use areas of higher nutrition. A variety of non-nutrition factors, including physical, vegetation, and roads), combine with available nutrition to account for elk use of landscapes. Non-nutrition factors can have a strong effect on habitat use, particularly roads and trails open to any type of public motorized use.

(2.3.2.4 p. 24) How will the non-nutrition factors help predict whether a “treatment” will have its intended effect on elk?

The DEIS states,

> Generally, during project development and analysis, the management approach will evaluate forage amounts within the HUC12’s and target treatments where nutritional response would increase the percent of high quality nutrition; evaluate how existing open roads would impact use of high quality nutrition; evaluate how new road segments might affect the use of high quality nutrition if they remain open to the public; and identify which roads, new or existing, might have the most impact to forage use and high potential forage and consider strategically closing new or existing roads to the public in alternatives where appropriate to increase elk habitat use especially of high quality nutritional resources.

(DEIS 3.2.3.2 p. 42.) Rowland et al. 2018 modeled existing digestible dietary energy amounts across a landscape—why hasn’t the agency done that here? Why hasn’t the agency overlaid these with roads and slopes? Where is the existing information per drainage?

How does this analysis consider the increase in roads that would happen with each increase in harvest and those impacts on elk, specifically roads? Please analyze this considering Ranglack et al. 2017. What about legal and illegal trails? *See* Wisdom et al. 2018; Devoe et al. 2019. The Forest Service already has closed roads and unauthorized trails experiencing illegal use. Allowing the construction of more roads onto this landscape will increase impacts to elk.

Management Area 3

Desired Conditions Management Area 3

MA3-DC-ELK-01. At least 15 percent of the landscape at the Hydrologic Unit Code 12 scale is composed of high-quality nutritional resources located at distances from open motorized access that promotes habitat use by elk. Open motorized access does not preclude elk use of newly created nutritional resources at the HUC 12 scale.

MA3-OBJ-ELK-01. In order to create a landscape that produces between 10 to 15 percent high nutritional resources for elk away from open motorized access, 20 percent of the treatments to restore the natural range of variation for early seral habitats in Management Area 3 will be targeted to produce high-quality nutritional resources and be located farther than half a mile from open motorized access. These treatments should be accomplished with methods designed to result in high nutritional response.

MA3-OBJ-ELK-02. Improve habitat use for elk on 15 percent of Management Area 3 that has high quality or high potential for nutritional resources within 15 years.

MA3-GDL-ELK-01. When conducting management activities that adversely affect elk habitat use, projects should be designed to maintain or improve predicted percent body fat of cow elk. Factors that maintain or improve predicted percent body fat include one or more of the following: the amount of high-quality nutritional resources usable by elk, increased distances from open motorized routes during spring through fall, improve habitat use on slopes less than 40%, or improved vegetation interspersion. These should be applied at the HUC 12 scale.

How much of Management Area 3 has either high quality or high potential for nutritional resources? Where is that map? What happens after 15 years? Does this objective go away? Why are all of these measures focused on nutritional use and do not consider slope, roads, or impacts from recreation? And where are the maps and reviews of existing conditions and current potential? How is the agency going to set about calculating this? What are the "high-quality" nutritional resources for each HUC12 area?

Cumulative effects

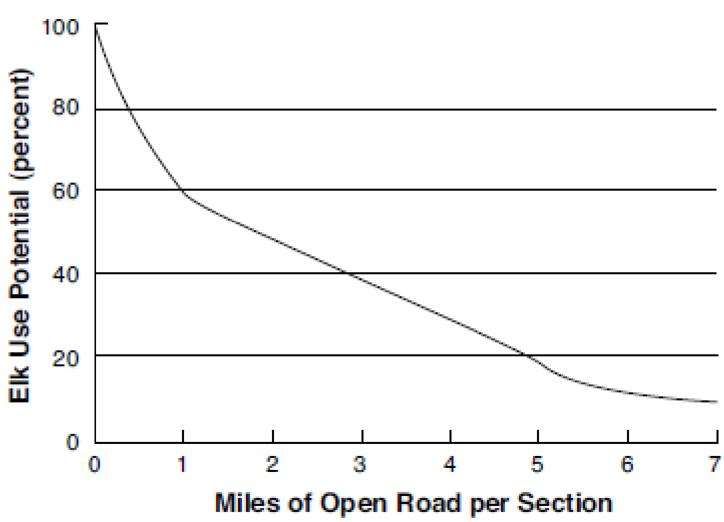
How many acres do you anticipate developing to improve for elk that are currently old, mature forests? These measures seem like they will enable a lot of logging mature areas and will have a negative, cumulative impact on species do not do well with openings created by vegetation management. This needs to be considered.

Best available scientific information

The DFP must include standards protecting habitat parameters including hiding cover, winter range, and security in the project area, and disclosure of the amounts during and after project implementation. Please consider that wintertime is an especially critical time for elk, and stress from avoiding motorized activities takes its toll on elk and populations.

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

5. Levels of habitat effectiveness:



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

Also, Ranglack, et al. 2017 investigated habitat selection during archery and rifle hunting seasons.

Scientific information recognizes the importance of thermal cover, including Lyon et al, 1985. Christensen et al., 1993 also emphasize “maintenance of security, landscape management of coniferous cover, and monitoring elk use…” This USFS Region 1 document also states, “management of winter range to improve thermal cover and prevent harassment may be as important as anything done to change forage quantity or quality.”

And Black et al. (1976) provide definitions of elk cover, including “Thermal cover is defined as a stand of coniferous trees 12 m (40 ft) or more tall, with average crown exceeding 70 percent. Such stands were most heavily used for thermal cover by radio-collared elk on a summer range study area in eastern Oregon (R.J. Pedersen, Oregon Department of Fish and Wildlife—personal communication).” Black et al. (1976) also state:

> Optimum size for thermal cover on summer and spring-fall range is 12 to 24 ha (30 to 60 acres). Areas less than 12 ha (30 acres) are below the size required to provide necessary internal stand conditions and to accommodate the herd behavior of elk.
> …Cover requirements on winter ranges must be considered separately and more carefully. Animals distributed over thousands of square miles in spring, summer and fall are forced by increasing snow depths at higher elevations to concentrate into much restricted, lower-elevation areas in mid- to late-winter. Winter range, because of its scarcity and intensity of use, is more sensitive to land management decisions.

Regarding Black et al. (1976) conclusions, Thomas et al., 1988a state, “We concur. New research on elk use of habitat on summer and winter ranges has become available, however (Leckenby 1984). Land-use planning requirements indicate that a model of elk winter-range habitat effectiveness is required.”

Thomas et al., 1988a also state:

> Thomas and others (1979, p. 104-127) defined two types of cover: thermal and hiding. Thermal cover was "any stand of coniferous trees 12 meters (40 ft) or more tall, with an average canopy closure exceeding 70 percent" (p. 114). Disproportionate use of such cover by elk was thought to be related to thermoregulation. Whether such thermoregulatory activity occurs or is significant has been argued (Geist 1982,Peek and others 1982). In the context of the model presented here, arguing about why elk show preference for such stands is pointless. They do exhibit a preference (Leckenby 1984; see Thomas 1979 for a review). As this habitat model is based on expressed preferences of elk, we continue to use that criterion as a tested habitat attribute. We cannot demonstrate that the observed preference is an expression of need, but we predict energy exchange advantages of such cover to elk (Parker and Robbins 1984). We consider it prudent to assume that preferred kinds of cover provide an advantage to the elk over nonpreferred or less preferred options.

Lyon et al, 1985 also discuss the adverse impacts of roads and clearcuts on elk. Servheen et al. 1997 do as well but also include motorized use on trails.

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Fisher

Fisher background information

Fisher are special. "(T)he fisher is unique to North America and is valued by native and nonnative people as an important member of the complex natural communities that comprise the continent's northern forests. Fishers are an important component of the diversity of organisms found in North America, and the mere knowledge of the fisher's existence in natural forest communities is valued by many Americans." Ruggiero et al. 1994b.

Research heavily associates fishers with older forests throughout the year. (Aubry et al. 2013, Olsen et al. 2014, Raley et al. 2012, Sauder 2014, Sauder and Rachlow 2014, Wier and Corbould 2010). Fine spatial scales of habitat that fisher need is well-studied. Fishers need dense overhead cover, abundant coarse woody debris, and large trees. (Aubry et al. 2014, Sauder and Rachlow 2014). The Forest Service recognizes that "[f]ishers are associated with areas of high cover and structural complexity in large tracts of mature and old-growth forests." DEIS Ch. 1 p. 15; DEIS 3.2.3.2-83. Female fishers use cavities in large-diameter live trees and snags because tree cavities regulate temperatures and protect kits from predators; "[H]eartwood decay and cavity development is more important to fishers for denning than is the tree species." Raley et al. 2012. Research has found that females more often use dens in live trees with decay. Live trees have more regulated thermal properties and stable microclimates, so the temperature fluctuates less and kits are protected from weather extremes. Fishers rest primarily in deformed or deteriorating live trees. Raley et al. 2012.

Forest patterns are divided into forest composition and forest configuration, and fishers need both. Forest composition is a patch area or proportion of landscape specific to a habitat type. Habitat loss is mostly a change in forest composition. Forest configuration, on the other hand, is spatial and accounts for how patches are arranged across the landscape, like average patch shape, distances between patches of the same type, and the cluster of patches across the landscape. Sauder and Rachlow 2014.

Forest configuration figures just as much into the type of habitat that fisher need, specifically the proximity of mature forest patches. Sauder and Rachlow 2014 found that fishers in the Clearwater used landscapes with large patches of mature forest arranged in connected patterns. The proximity among mature forest patches was a stronger predictor of fisher use than the mere abundance of mature forest. Sauder and Rachlow 2014.

Most studies have found that fishers are reluctant to stray from forest cover and that they prefer more mesic forests (Olson et al. 2014, Sauder 2014, Sauder and Rachlow 2014, Weir and Corbould 2010). Both Sauder and Rachlow (2014) and Weir and Corbould (2010) predicted the influence of openings on fisher habitat occupancy based on their data. For example, Weir and Corbould predicted that a 5% increase in forest openings would decrease the likelihood of fisher occupancy by 50%. Sauder and Rachlow (2014) suggested that an "increase of open area from 5% to 10% reduces the probability of occupation by fishers by 39%. Sauder and Rachlow (2014) reported that the median amount of open area within fisher home ranges was 5.4%. This was consistent with "results from California where fisher home ranges, on average, contained <5.0% open areas" (Raley et al. 2012). "[R]relatively small changes in the amount of open area in a landscape can have large effects on the probability of occupation by fishers." Sauder and Rachlow 2014. Indeed, Weir and Corbould (2010) states that the abundance of open areas within a landscape was the most important variable in predicting landscape occupancy by fishers. *See also* Sauder and Rachlow 2014.

Sauder and Rachlow (2014) report the average home range size is approximately 12,200 acres and for a female fisher and approximately 24,300 acres for a male fisher. Home ranges generally do not overlap greatly for the individual sexes (21.3% for females and 15.3% for males), but male home ranges can overlap female home ranges. Preferred habitat would likely occur in upland areas and stands composed of cedar and grand fir forests (Schwartz et al. 2013).

Also Jones, (undated) recognizes the following:

Roads are directly correlated with trapper access, and consequently, fisher vulnerability. Even in areas where fishers cannot be legally trapped, trapping pressure for other furbearers (i.e., marten) may contribute significantly to fisher mortality. Roads bisecting or adjacent to preferred habitats (i.e., drainage bottoms) have the greatest potential of increasing a trapper's probability of encountering fishers."

And Witmer et al., 1998 state, "The range and population levels of the fisher have declined substantially in the past century, primarily the result of trapping pressure and habitat alteration through logging (Powell and Zielinski 1994)."

Heinemeyer and Jones, 1994 stated,

Fishers are susceptible to trapping, and are frequently caught in sets for other furbearers. Additionally, populations are vulnerable to trapping, as even light pressure may cause local extinction. Western fisher populations may have lower natality and higher natural mortality rates as compared to eastern populations. Consequently, western populations may be more susceptible to over-trapping. It has been suggested that incidental captures may limit population growth in some areas.

Sauder (2014) suggests that five National Forests (Clearwater, Nez Perce, Coeur d'Alene, Kaniksu, and Kootenai) hold the key to recovery of the species in the Northern Region. As with most of the Sensitive wildlife, fishers receive little habitat protection emphasis in current forest plans. Both the Clearwater and the Nez Perce Forest Plans list fisher as an old-growth-dependent species. The old-growth standards for both of these forests are five percent old-growth per drainage and ten percent old-growth drainage wide. As discussed in the old-growth section, there is likely significant uncertainty on the real abundance of old growth and whether these areas are connected.

Ruggiero et al.,1994b discuss fisher habitat disruption by human presence:

> …The fisher's reaction to humans in all of these interactions is usually one of avoidance. Even though mustelids appear to be curious by nature and in some instances fishers may associate with humans (W. Zielinski, pers. obs.), they seldom linger when they become aware of the immediate presence of a human. In this regard, fishers generally are more common where the density of humans is low and human disturbance is reduced. Although perhaps not as associated with "wilderness" as the wolverine (V. Banci, Chapter 5), the fisher is usually characterized as a species that avoids humans (Douglas and Strickland 1987; Powell 1993).

<u>Existing condition for fisher</u>

The fisher is a sensitive species in Region 1 and the threats to this species have increased, if anything. We support choosing the fisher as a species of conservation concern (SCC) under the 2012 planning rule, but don't think the Forest Service has done near enough to ensure this species is not on a road to having to be listed under the Endangered Species Act. Fishers are known to occur in the plan area and the best available information indicates substantial concern about the species' capability to persist over the long term in the plan area. The existing information we have for these species suggests they may very well be in trouble.

The Forest Service has no current baseline information for the fisher. The assessment for potential species of conservation concern does not reflect an adequate existing baseline for this species. Without information on the species existing condition, any analysis is totally arbitrary because the agency doesn't know the impacts the 1987 plans have had on this species, nor does the agency know the proposed planning and cumulative impacts from implementing activities will have on this species. No reliable analysis can move forward without information on the current population trends and how the forest plans have impacted these species. Not knowing current population trends is problematic because of the cumulative impacts of habitat loss and trapping over the years, and especially because fisher populations should have been measured under the Nez Perce Forest Plan monitoring requirements.

The Nez Perce Forest Plan chose the fisher as a management indicator species and a standard of this plan was to "[m]onitor population levels of all Management Indicator Species on the Forest...Population levels will be monitored and evaluated as described in the Forest Plan Monitoring Requirements (Chapter V of the Forest Plan)." Nez Perce Forest Plan p. II-18. The Nez Perce Forest Plan required this monitoring every 3-5 years. Nez Perce Forest Plan p. V-7. Where is this monitoring? The Forest Service last published a monitoring report on the Nez Perce National Forest in 2004, and last reviewed fisher data in the monitoring report before that in 2002. In the 2002 monitoring report, the Forest Service summarized fisher information that was not based on any sampling the Forest Service did or verified. If the agency is not required to produce population monitoring for an entire species on a project-by-project basis over the course of the plan, surely it must account for population trends at the end of the forest-plan period after these projects have been implemented and when the agency decides to revise the plan. Otherwise, when would population trends ever be monitored? But, even now, at revision, the Forest Service admits in the SCC that it has no recent data for the fisher. The Forest Service cannot assume that fisher populations are viable based on old data while the impacts of logging and trapping have been cumulatively adding up in the interim.

Starting with the relatively low numbers that the Nez Perce 2002 Monitoring report recognizes, cumulative impacts from trapping have been accumulating over the past eighteen years. Trapping is allowed on the Nez Perce-Clearwater National Forest. IDFG has reported that, since 2012, traps set for wolves have caught 56 fisher, 20 of whom died in the traps. *See* IDFG Non-target wolf trapping LICYEAR2013-2019 spreadsheet. The year that the Forest Service drafted the assessment, in the 2013-2014 season, IDFG reported that 22 fisher were trapped that season, 10 of whom died in traps. While the trappers reporting these numbers indicated the balance were released, we don't know if trapping contributed to mortality shortly thereafter. Also, these are just the numbers reported, so we don't know if there were more unreported, either because trappers chose not to or did not check their traps. While we don't know where this trapping occurred, the Forest Service has recognized that the Nez Perce-Clearwater contains a lot of fisher habitat, so it follows that at least some of these numbers were likely from this forest. Also, it is very reasonably foreseeable that trapping is going to increase for several reasons. The first reason is that IDFG extended its wolf trapping season, so active traps will exist longer on the landscape, and these season modifications impact parts of both the Nez Perce and Clearwater National Forests. *See* IDFG 2020, compare with IDFG hunting units map (2020). The second reason is that trapping depends on access. As discussed above, roads create access for trappers, and in every alternative, logging levels are increasing, and to increase those logging levels the Forest Service will build roads, both temporary and permanent.

Starting with the relatively low numbers that the Nez Perce 2002 Monitoring report recognizes, habitat loss has cumulatively impacted fisher as well. The Forest Service has increased logging on this forest, with some of the highest amounts of timber sold over the last 20 years occurring in the last four of five. This fiscal year, 2020, looks like it will break some records. Many of these projects have eliminated and fragmented fisher habitat, with each individual project claiming that it might impact fisher, but would not impact the species as a whole. Those projects, forestwide, have added up, and now is the time to account for them. How much fisher habitat has been eliminated with projects over the last few decades?

Please explain how your model for fisher accounts for the projects that have eliminated old mature trees over the life of this forest plan and is accounting for the projects already approved and perhaps even sold but have not implemented the approved logging. Also, the modeling looks at potential habitat based on habitat type. Does the model account for the fragmentation and distribution of that fragmentation? For example, how well the current conditions meet the desired spatial condition with swaths of forest that have a dense canopy closure. The Forest Service, for the past 10 years, has been relying on Bush et al. 2010 as a starting point for the existing old growth, and has approved many timber harvests in mature forests, which probably has cumulatively eliminated and fragmented fisher habitat. We recommend the Forest Service review all of its projects of the course of this forest plan and use that logging acreage to estimate the mature forest lost under the current forest plan and to estimate the old growth lost. Please provide a table of this accounting. And please break down how much mature forest and old growth each alternative will eliminate. Because mature forests and old growth contain more than just old trees, please assume that any timber harvest approved will simplify this structure and impact species like fisher.

What currently is the conservation strategy for this species and how is the revised forest plan adding to that with any standards?

<u>DEIS Analysis</u>

There are concerns with the fisher habitat that the SIMPPLLE model mapped and how this is being used or fed into other models and calculations. In your "Fisher_Habitat.pdf map" that was disclosed with the forest plan FOIA response, the map delineates fisher habitat in green and blue for non-suitable timber, and fisher habitat in orange and yellow for the suitable timber base.

Above left: excerpt Fisher_Habitat.pdf (SIMPPLLE model); Above right: excerpt

Fisher_Sauder2015.pdf

Fisher_Sauder2015.pdf also has fisher habitat mapped out, but it appears to be less than what the SIMPPLE model shows. We've provided an example.

On the Fisher_Sauder2015.pdf map, the legend states that purple is probable habitat, red is high quality habitat, and gray is unlikely habitat. As you can see from the excerpts provided, where the Sauder map concludes habitat is unlikely, the SIMPPLLE model illustrates suitable habitat.

The Forest Service is more likely to agree with the Fisher_Sauder2015.pdf map because the Forest Service recently analyzed a project within the larger area mapped to the left, and the Forest Service concluded that a logging project in this area would not impact fishers because they were:

"[n]ot currently known or suspected to be present in the project area, and it is unlikely that fisher use the area when dispersing to other areas. The project area is considered low probability habitat and is not thought to be conducive for long-term persistence. Treatments proposed in the Windy-Shingle project will not impact fisher habitat or are they expected to impact dispersing individuals. The habitat in the project area is not thought to be contributing to the population's viability...."

USDA FS Windy Shingle Wildlife Report p. 144 (2017); *see also* USDA FS 2016 Upper Lolo Wildlife Report, p. 19 (citing the Sauder model as the best available science). The SIMPPLLE model is very generous with habitat the Sauder map considers unlikely.

Using the SIMPPLLE model will overestimate potential fisher habitat and doesn't seem to be current knowledge the Forest Service is acknowledging in other projects. Also, it isn't clear how much of this model started with recognizing the projects that have been cut. Can you please list the projects from the last 20 years that have eliminated fisher habitat, review how these projects changed the forest composition and the forest configuration, and confirm that relevant acres were omitted from potential habitat in the models? Can you please map these out in the EIS so the public can see this? Or, is the agency counting the entire landscape as potential habitat, regardless of current forest composition and configuration? Also, how much of the model started with standing volume under contract? How much habitat is slated to be lost on NEPA analyses already done?

The desired condition that the Forest Service proposes for the fisher is too general to be helpful and is not entirely based on the best available science.

FW-DC-WL-04. The Nez Perce-Clearwater provides the ecological conditions for the long-term persistence of fisher, whose habitat generally follows the distribution of the warm moist potential vegetation type, although fishers sometimes use other potential vegetation types. Fisher habitat is composed of large patches of tall forest with trees greater than or equal to 25 meters tall arranged in complex, highly connected patterns at the 20-40 square mile landscape scale. Patches of tall forest cover an extent of approximately 50 percent across the warm moist potential vegetation type group forestwide consistent with the desired conditions found in **Table 6** in the warm moist potential vegetation type section. At the eight square mile home range scale, fishers benefit from variety in successional stages resulting from a patchy mosaic of stand heights that occur in patterns that reflects natural disturbance (see Warm Moist Potential Vegetation Type). The shapes, sizes, distribution, density, and height of forest patches vary by topography, slope, aspect, and topographic position, such as ridge, mid-slope, toe slope, and valley bottom to provide variety in seasonal habitats, denning, and foraging fisher habitat. Some stands of tall forests, distributed across the warm moist potential vegetation type, provide a high prevalence of large trees and snags of 20 or greater inches diameter at breast height, abundant coarse woody debris, and multiple denning and resting habitat canopy layers (Sauder, 2014; Sauder & Rachlow, 2014).

RFP pdf p. 64. Table 6 is the "desired and current" size distribution. Are these numbers both? Are they the current distribution? Are they the desired distribution? If habitat loss has contributed to the current distribution, why is that now desired? If the current distribution is now the desired distribution, why allow any vegetative management activity immediately?

Even the Forest Service's own assessment on species of conservation concern recognizes that desired conditions may be too general to describe how to maintain or restore ecosystem characteristics. Assessment p. 18-3. While this desired condition recognizes the necessity of forest configuration, the desired condition ignores forest composition. This is highlighted by DEIS summary of expected effects on DEIS p. 3.2.1.1-81 (pdf p. 155):

This plan component addresses management of fisher habitats. Management options are limited to shelterwood harvest and commercial thinning and precludes even-aged management. May affect ability to achieve desired dominance types, and size classes.

There are more than several problems with this statement. First, the plain language of the desired condition doesn't limit anything. How is the Forest Service drawing the conclusion quoted above that management options are limited in any way? Second, any project may depart from desired conditions because desired conditions are not standards. The desired condition for fisher is dependent upon desired conditions for the Warm Moist Potential Vegetation Type Group, so there is one desired condition nested within another, and either could change. Third, shelterwood harvest *is* even-aged management—it has been defined as such in the 1987 forest plans as well as this plan revision. So, it is contradictory to say that shelterwood harvest is a management option and also say that this plan component excludes even-aged management—both cannot be true. Fourth, while the desired condition accounts for habitat configuration, it does not address forest composition at all—in fact, the quote above suggests that thinning is totally acceptable. "Large patches of tall forest" does not prescribe a canopy closure percentage or require snags or logs on the ground or even large trees in various stages of decay. Habitat fragmentation for fisher also happens because of changing the forest composition. And, the best available science and the Forest Service's own recognition of that science demonstrate that fisher use highly complex structures that include dense canopies, abundant coarse woody debris, and large trees. Thinning reduces this complexity now, and thinning prevents complexity from developing in the future because it prevents trees from becoming large, old trees in any stage of decay and thinning is intended to prevent trees from dying and falling to the forest floor. In addition to the best available science introduced, even the Forest Service, in other projects, has recognized that thinning reduces fisher habitat because thinning simplifies forest structure and fisher relies upon complex forest structure and reduces future habitat. *See, e.g.*, USDA Forest Service 2018 Little Boulder Project Wildlife Report.

Fifth, the DFP definition of Tall Forest ("stands of trees equal to or greater than 25 meters") is too vague to be of use. E.g., it lacks a metric of density of trees ≥ 25 m in the stand. And its basis in best available scientific information is tenuous, at best, according to the DEIS:

Keep in mind that tall forest was a surrogate for characteristics that contribute to fisher habitat but some younger stands can reach 25 to 50 meters tall yet lack some of the characteristics that provide for fishers (personal communication with Joel Sauder on September 11, 2019), such as snags, live trees with heart rot, and larger diameter trees.

Sixth and finally, this desired condition only seems to apply to the warm moist habitat. The Sauder-modeled habitat found other habitat types (including warm dry habitat) to be potential and high-quality fisher habitat. Even if the desired condition might limit timber harvest in warm moist habitats, which the plain language doesn't, this desired condition doesn't apply to warm dry habitat at all. In fact, the Forest Service predicts a loss of fisher habitat in warm dry forests for three of the four alternatives. But, the mapped broad-habitat types illustrate pockets of warm dry habitat distributed among the warm moist habitat. So, theoretically, the agency could log in warm dry habitat and end up fragmenting in the warm moist habitat. There is nothing in the forest plan that would stop that impact, and that seems not to have been considered.

The Forest Service includes the plan element FW-DC-WL-04 because it determined coarse-filter plan components are not be sufficient to ensure fisher persistence. So in this case the DFP must include in the plan "**species-specific plan components** that would … **maintain the viability of species of conservation concern** within the plan area." (2012 Planning Rule, emphases added.)

The trouble is, whereas the wording of this Desired Condition recognizes, as do these comments, habitat needs of the fisher, it fails to mandate the agency to provide the kind of habitat protections that would "maintain the viability" of the fisher. The Forest Service is obligated to include in the revised forest plan non-discretionary standards that genuinely address best available scientific information.

The Forest Service also summarized expected effects for Alternatives W, X, Y, and Z for FW-DC-WL-04 under the Forestlands chapter:

On page Summary of expected effects for plan component FW-DC-WL-04 (W, X, Y, Z). These plan components detail the habitat conditions within the warm moist potential vegetation type group related to shapes, sizes, distribution, density, and height of forest patches required by fisher. Components may affect economic viability of proposed treatment areas, limit ability to achieve desired conditions for dominance types, successional stages, size class distributions, PTSQ and PWSQ. (pdf 158) DEIS p. 3.2.1.1-84.

DEIS p. 3.2.1.1-84. The plain language of the plan components doesn't detail or require any particular density or canopy closure—the desired condition only states that density varies based on many factors.

Even if complying with the desired condition would be likely to preserve fisher habitat, there are simply no standards that could help achieve this desired condition. Also, again, desired conditions are not requirements, and there are no standards to ensure this desired condition is met. Unlike the 1987 Nez Perce forest plan, where the Forest Service mapped 64,659 acres for this management area specifically for species like fisher and then created a standard that prohibited logging, logging is allowed in Management Areas 2 and 3, which contain a lot of fisher habitat. The 1987 Nez Perce and Clearwater forest plans had standards that required five percent verified old growth in each drainage with ten percent old growth forest-wide. Here, there are no such requirements to ensure a minimum of mature forests protected from human efforts to simplify structural complexity. While fisher rely on habitat far more complex than just old trees, if the Forest Service recognizes that the loss of ancient trees could be permanent (DEIS 3.2.3.1-10), losing large trees (that are large by virtue of making it to a certain age) is a permanent loss as well. Without more specific geographic checks, what we fully expect to happen is the Forest Service will propose a timber harvest, generally allude that the agency is working for the desired condition above and that this condition is being met elsewhere, while logging will help achieve this desired condition for the project at hand. The agency will never assess the forest-wide condition for each project, so without that built into the plan, there is not guarantee of one integrated plan that works for a larger overall condition. How does the agency stop the effect of never looking at the big picture because it only looks at one project at a time?

What is your plan when this one, unenforceable desired condition proves not to be effective in preventing habitat loss? How do you plan on measuring this habitat loss? This proposed forest plan does not prevent or check the Forest Service from logging mature forests, and this type of deforestation will provide a loss to fisher habitat that will take centuries to recover. And if trees are not growing at the rate they once did because of climate change, this habitat loss will last longer. And, there is real uncertainty as to whether fisher would distribute into new habitat if and when it occurs. *See* McKelvey and Buotte 2017. These authors opined that the projections on habitat for Olson et al. 2014 were optimistic.

How might global warming impact combined with the Forest Service's management negatively impact fisher and its habitat over the next 30 years?

The Table on 3.2.3.2-87 is confusing. Can you explain how the current forest plans would decrease more fisher habitat than the increased logging that would happen with all alternatives? And, there is no consideration on the miles of temporary, permanent, and reconstructed road that correspond with these alternatives.

We don't understand what the Forest Service means by stating the following:

For fisher, as with wildlife on the Nez Perce-Clearwater in general, it is wildfire, insects and disease, in-growth, and stand succession that largely determines the amount and pattern of habitat on the Nez Perce-Clearwater for this species rather than management activities (Ecosystems Research Group, 2019).

DEIS 3.2.3.2-87. This suggests that nature has had more of an impact on the amount and distribution of habitat than past management activities. Is that what you mean? How is that consistent with the next sentence under the tables that states "Past timber harvest, fuels reduction, and fire suppression have intermixed to result in the amount and pattern of fisher habitat on National Forest Service lands"? Scientific information we cite indicate this second statement is true, and these are past management activities. Wildfire, insects, and disease are what kills trees that then fall to the ground and creates logs on the ground and woody debris, and these same ecological processes make large old trees decay, all of which create fisher habitat. If management activities try to alter fire regimes or eradicate insects and diseases, management activities will more largely determine the amount and pattern of habitat activities because it will eliminate large trees as well as recruitment trees for future denning and foraging. *See* USDA FS 2016 Little Boulder Wildlife Report; USDA FS 2016 Upper Lolo Wildlife Report. So not only has management activities largely contributed to the existing habitat condition, but management activities most certainly will have the greater impact going forward. Please recognize that and revise your analysis.

The agency has not examined a reasonable range of alternatives because all of these alternatives will adversely alter fisher habitat, some faster than others.

The fisher analysis should address all of the above issues.

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Pine Marten

The pine marten, also known as American marten, are recognized as management indicator species (MIS) under the current Clearwater (mid- to high-elevation mature forests) and Nez Perce (old growth) forest plans.

The current NPNF Forest Plan includes Wildlife and Fish Standard #3, requiring the FS to "Monitor population levels of all Management Indicator Species on the Forest. …Population levels will be monitored and evaluated as described in the Forest Plan Monitoring Requirements (Chapter V of the Forest Plan)." And the Clearwater Forest Plan also requires population trend monitoring of MIS.

By including MIS population trend monitoring requirements in forest plans, the agency acknowledged, wisely, that it needed to verify its assumption that allowing old-growth habitat to be reduced to 10% forestwide (a level well below the NRV)—still insures viability of pine marten. The Assessment and DEIS fail to report population trends of MIS because the Forest Service has failed to meet its MIS monitoring commitments. So the Forest Service has failed to verify this assumption.

Now, the DFP proposes no binding, nondiscretionary quantitative habitat standards for marten. Clearly, following its failings in monitoring the agency cannot claim it has any scientific expertise on such matters. The DFP is not consistent with the diversity requirements of NFMA and the viability requirements of the 2012 Planning Rule.

The pine marten is a species whose habitat is significantly altered by active forest management (Moriarity et al., 2016; Bull and Blumton, 1999; Hargis et al., 1999 and Wasserman et al., 2012).

The DEIS states the pine marten is:

> Associated with late-seral coniferous forests characterized by closed canopies, large trees, and abundant standing and fallen woody material. It dens in hollow trees or logs, in rocky crevices, or in burrows. Diet consists of rodents, hares, birds, and seasonal fruit. Voles, squirrels, and hares are the most important prey seasonally.

Also, a "habitat subgroup" for marten is identified as "Closed forest, higher density late seral or old forest, or large tree habitat with closed canopy." (Id.)

Numerous studies have found that the species is particularly vulnerable to habitat fragmentation (Webb and Boyce 2009, Hargis et al. 1999, Moriarty et al. 2011, Potvin et al. 2000). For example, Hargis et al. (1999) reported that "Martens were nearly absent from landscapes having >25% non-forest cover, even though forest connectivity was still present." Effects seem to be more pronounced in western conifer forests like the NPCNF.

Marten avoidance of openings is well documented in the literature (Potvin et al. 2000, Koehler and Hornocker 1977, Chapin et al. 1998). Moriarty et al., 2016 found that the odds of detecting a marten was 1,200 times less likely in openings and almost 100 times less likely in areas treated to reduce fuels, compared to structurally-complex forest stands. USDA Forest Service, 1990 reviewed research suggesting that martens rarely venture more than 150 feet from forest cover, particularly in winter.

Home range estimates are highly variable for marten (Burskirk and McDonald 1989, Powell 1994. Bull and Heater (2001) found that female home ranges averaged 3,500 acres in nearby Northeastern Oregon. They report that home ranges do not overlap significantly in the same sex, but larger male home ranges (6,700 acres) often overlap female home ranges. USDA Forest Service, 1990 cites research suggesting that at least 50% of female marten home range should be maintained in mature or old growth forest.

Old growth allows martens to avoid predators, provides resting and denning places in coarse woody debris and large diameter trees, and allows for access under the snow surface. USDA Forest Service, 1990 reviewed research suggesting that martens prefer forest stands with greater than 40% tree canopy closure, particularly in winter.

Habitat connectivity is essential to ensuring marten viability: "To ensure that a viable population of marten is maintained across its range, suitable habitat for individual martens should be distributed geographically in a manner that allows interchange of individuals between habitat patches (USDA Forest Service, 1990).

Ruggiero et al. 1994b recognize that for martens, "trapper access is decreased, and de facto partial protection provided, by prohibitions of motorized travel." The Hungry Ridge Wildlife Report states, "Across the project area, open roads to motorized vehicles facilitate access for trappers and firewood cutters, potentially decreasing marten populations and the downed logs important for marten and their prey species."

The DFP does not recognize the pine marten as either a focal (indicator) species or a Species of Conservation Concern (Sensitive species). Again, this is in the absence of its failure to monitor population trends of pine marten over the two Forest's combined 66 years of implementing forest plans. So the DFP includes no plan elements specific to habitat needs of pine marten.

The DEIS identifies marten as one of "22 wildlife species …specifically needing mature closed canopy habitats." We note this is the type of habitat the DFP coarse filter direction specifically targets for logging that lowers canopy cover.

The DEIS declares a key stressor is "Over-harvesting by trappers – Both allowable and incidental trapping with marten traps may be an important source of mortality, particularly where populations are small and fragmented." Also, "Trapping mortality, both legal and incidental marten trapping, can …prevent a population from increasing."

The 2012 Planning Rule states that where coarse-filter plan components may not be sufficient to ensure species recovery or persistence, species-specific plan components that maintain the viability of species must be included in the plan. The impacts of trapping (facilitated by motorized access), and logging of closed canopy forests are not addressed for species like the pine marten. The DFP includes no fine filter plan elements specific to habitat needs of pine marten. The DEIS cites no habitat trend data.

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Pileated Woodpecker

The pileated woodpecker needs habitat components found in mature and old-growth forests. It is a management indicator species (MIS) for old growth under both current forest plans. The DEIS does not consider the population trend monitoring information specified under those plans' monitoring requirements.

The Hungry Ridge project wildlife report states, "Through their selection of large dead and damaged trees, pileated woodpeckers may serve as a good **indicator of ecological function** rather than just the age of a stand or forest (Bonar 2001)." (Emphasis added.) This description plus other best available scientific information places the pileated woodpecker squarely within the definition of focal species. However, the Forest Service apparently wants to sweep this species' needs under the rug for both planning and implementation purposes.

Consistent with the notion of the pileated woodpecker as a good indicator of ecological function, USDA Forest Service 2011c states:

> Many types of disturbances, such as timber harvest, fuel reduction, road construction, blow-down, wildland fire, or insect or disease outbreaks, can affect old growth habitat and old growth associated species. This is well illustrated by **the pileated woodpecker, a "keystone" species**, which **provides second-hand nesting structures for numerous old growth species** such as boreal owls, kestrels, and flying squirrels (McClelland and McClelland 1999, Aubry and Raley 2002). A disturbance can reduce living tree canopy cover to levels below that needed by the **pileated woodpecker's main food source, carpenter ants**, forcing the pileated to forage and possibly nest elsewhere. **Carpenter ants, which live mostly in standing and downed dead wood, can drastically reduce populations of species such as spruce budworm** (Torgersen 1996), the most widely distributed and destructive defoliator of coniferous forests in Western North America. (Emphases added.)

The Committee of Scientists, 1999 define "Keystone species "as a:

> …species whose effects on one or more **critical ecological processes or on biological diversity** are much greater than would be predicted from their abundance or biomass (e.g., the red-cockaded woodpecker creates cavities in living trees that provide shelter for 23 other species). (Emphasis added.)

The old-growth standards in the Idaho Panhandle NF's original Forest Plan (USDA Forest Service, 1987c) were largely built around the habitat needs of the pileated woodpecker as an MIS. Bull and Holthausen (1993) recommend that approximately 25% of pileated home range be old growth and 50% be mature forest. They suggested that 50% of the area should have stands with greater than 60% canopy closure and at least 40% should remain unlogged (any type of logging).

Bull et al., 2007 represents over 30 years of investigation into the effects of logging on the pileated woodpecker and is some best available scientific information on such effects. The researchers found that bird density did not change in 30 years (despite major infestations of spruce budworm) in home ranges meeting guidelines, unless extensive regeneration harvesting had occurred in the home range. Also see Bull et al., 1992, Bull and Holthausen, 1993, and Bull et al., 1997 for biology of pileated woodpeckers and the habitats they share with cavity nesting wildlife.

Bull et al., 2007 suggest that the pileated woodpecker is highly sensitive to both regeneration harvest and other activities like commercial thinning and improvement harvest.

USDA Forest Service, 1990 states, "To provide suitable pileated woodpecker habitat, strips should be at least 300 feet in width…" It also indicates measurements of the following variables are necessary to determine quality and suitability of pileated woodpecker habitat:

- Canopy cover in nesting stands

- Canopy cover in feeding stands
- Number of potential nesting trees >20" dbh per acre
- Number of potential nesting trees >30" dbh per acre
- Average DBH of potential nest trees larger than 20" dbh
- Number of potential feeding sites per acre
- Average diameter of potential feeding sites

The preferred diameter of nesting trees for the pileated woodpecker is not properly considered in the DEIS. USDA Forest Service, 1990 uses an index of the "Number of potential nesting trees >30" dbh per acre" for the pileated woodpecker. McClelland and McClelland (1999) found the average nest tree to be 73 cm. (almost 29") dbh in their study in northwest Montana. The DFP provides inadequate direction for retention of specific numbers and sizes of largest trees needed by the pileated woodpecker.

B.R. McClelland extensively studied the pileated woodpecker habitat needs. McClelland, 1985 (a letter to the Flathead NF forest supervisor) states:

> Co-workers and I now have a record of more than 90 active pileated woodpecker nests and roosts, …the mean dbh of these trees is 30 inches… A few nests are in trees 20 inches or even smaller, but the <u>minimum</u> cannot be considered suitable in the long-term. Our only 2 samples of pileateds nesting in trees <20 inches dbh ended in nest failure… At the current time there are many 20 inch or smaller larch, yet few pileateds selected them. Pileateds select <u>old</u>/old growth because old/old growth provides habitat with a higher probability of successful nesting and long term survival. They are "programmed" to make that choice after centuries of evolving with old growth.

McClelland (1977), states:

> (The Pileated Woodpecker) is the most sensitive hole nester since it requires old growth larch, ponderosa pine, or black cottonwood for successful nesting. The Pileated can be considered as key to the welfare of most hole-nesting species. If suitable habitat for its perpetuation is provided, most other hole-nesting species will be accommodated.
>
> Pileated Woodpeckers use nest trees with the largest dbh: mean 32.5 inches;
>
> Pileated Woodpeckers use the tallest nest trees: mean 94.6 feet;
>
> The nest tree search image of the Pileated Woodpecker is a western larch, ponderosa pine, or black cottonwood snag with a broken top (status 2), greater than 24 inches dbh, taller than 60 feet (usually much taller), with bark missing on at least the upper half of the snag, heartwood substantially affected by Fomes laracis or Fomes pini decay, and within an old-growth stand with a basal area of at least 100 sq feet/acre, composed of large dbh classes.
>
> A cluster analysis based on a nine-dimensional ordination of nest tree traits and habitat traits revealed close association between Yellow-bellied Sapsuckers, Mountain Chickadees, and Red-breasted Nuthatches. These three species plus the Pileated Woodpecker and Hairy Woodpecker are relatively grouped by coincident occurrence in old growth. Tree Swallows, Black-capped Chickadees, and Common Flickers are separated from the above

> five species by their preference for more open areas and their frequent use of small dbh nest trees.
>
> (Most) species found optimum nesting habitat in stands with a major component of old growth, particularly larch. Mean basal area for pileated woodpecker nest sites was 150 square feet per acre. (McClelland. B.R. and others, 1979)
>
> Many large snags are being cut for firewood. Forest managers should limit firewood cutting to snags less than 15 inches in d.b.h. and discourage use of larch, ponderosa pine, and black cottonwood. Closure of logging roads may be necessary to save high-value snags. Logging slash can be made available for wood gatherers.

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

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Black-backed Woodpecker

The black-backed woodpecker is currently listed as a Sensitive species on the NPCNF. The DFP does not propose the black-backed woodpecker as either a focal (management indicator) species or a Species of Conservation Concern (Sensitive species). So the DFP includes no plan elements specific to the habitat needs of this species.

The Boise National Forest (USDA Forest Service, 2010d) selected the black-backed woodpecker as MIS in its revised forest plan in 2010:

> Black-backed woodpeckers are proposed as an MIS because of their association with high numbers of snags in disturbed forests, use of late-seral old forest conditions, and relationship with beetle outbreaks in the years immediately following fire or insect or disease outbreaks. Management activities, such as salvage logging, timber harvest, and firewood collection, can affect KEFs[47] this species performs or KECs[48] associated with this species, and therefore **its role as an MIS would allow the Forest to monitor and evaluate the effects of management activities on identified forest communities and wildlife species.** (Emphasis added.)

USDA Forest Service, 2010d discusses ecology and biology of this species:

> The black-backed woodpecker depends on fire landscapes and other large- scale forest disturbances (Caton 1996; Goggans et al. 1988; Hoffman 1997; Hutto 1995; Marshall 1992; Saab and Dudley 1998). It is an irruptive species, opportunistically foraging on outbreaks of wood-boring beetles following drastic changes in forest structure and composition resulting from fires or uncharacteristically high density forests (Baldwin 1968; Blackford 1955; Dixon and Saab 2000; Goggans et al.1988; Lester 1980). Dense, unburned, old forest with high levels of snags and logs are also important habitat for this species, particularly for managing habitat over time in a well-distributed manner. These areas provide places for low levels of breeding birds but also provide opportunity for future disturbances, such as wildfire or insect and disease outbreaks (Dixon and Saab 2000; Hoyt and Hannon 2002; Hutto and Hanson 2009; Tremblay et al. 2009). Habitat that supports this species' persistence benefits other species dependent on forest systems that develop with fire and insect and disease disturbance processes. The black-backed woodpecker is a

[47] Key ecological functions (KEFs) are "the set of ecological roles performed by a species in its ecosystem (Marcot and Vander Heyden 2004). These ecological roles are the main ways organisms use, influence, and alter their biotic and abiotic environments." (USDA Forest Service, 2010d.)

[48] Key Environmental Correlates (KECs) are "biotic or abiotic habitat elements that species use on the landscape to survive and reproduce." (Id.)

> secondary consumer of terrestrial invertebrates and a primary cavity nester. Population levels of black-backed woodpeckers are often synchronous with insect outbreaks, and targeted feeding by this species can control or depress such outbreaks (O'Neil et al. 2001). The species physically fragments standing and logs by its foraging and nesting behavior (Marcot 1997; O'Neil et al. 2001). These KEFs influence habitat elements used by other species in the ecosystem. Important habitat elements (KECs) of this species are an association with medium size snags and live trees with heart rot. Fire can also benefit this species by stimulating outbreaks of bark beetle, an important food source. Black-backed woodpecker populations typically peak in the first 3–5 years after a fire. This species' restricted diet renders it vulnerable to the effects of fire suppression and to post-fire salvage logging in its habitat (Dixon and Saab 2000).

Hutto, 1995 also discusses the indicator species potential for the black-backed woodpecker:

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

Cherry (1997) notes:

> Woodpeckers play critical roles in the forest ecosystem. Woodpeckers are primary cavity nesters that excavate at least one cavity per year, thus making these sites available to secondary cavity nesters (which include many species of both birds and mammals). Black-backed and three-toed woodpeckers can play a large role in potential insect control. The functional roles of these two woodpecker species could easily place them in the 'keystone' species category—a species on which other species depend for their existence.
>
> Wickman (1965) calculated that woodpeckers may eat up to 50 larvae per day that were each about 50 mm in length. The predation on these larvae is significant. It has been estimated that individual three-toed woodpeckers may consume thousands of beetle larvae per day, and insect outbreaks may attract a many-fold increase in woodpecker densities (Steeger et al. 1996). The ability of woodpeckers in to help control insect outbreaks may have previously been underestimated.

Also, FS biologists Hillis et al., 2002 note that "In northern Idaho, where burns have been largely absent for the last 60 years, black-backed woodpeckers are found amid bark beetle outbreaks, although not at the densities found in post-burn conditions in Montana."

Hillis et al., 2002 state:

> The greatest concerns for this species, however, are decades of successful fire suppression and salvage logging targeted at recent bark beetle outbreaks.

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

Hutto, 2008 states:

> I use data on the pattern of distribution of one bird species (Black-backed Woodpecker, *Picoides arcticus*) as derived from 16,465 sample locations to show that, in western Montana, this bird species is extremely specialized on severely burned forests. **Such specialization has profound implications because it suggests that the severe fires we see burning in many forests in the Intermountain West are not entirely "unnatural" or "unhealthy."** Instead, severely burned forest conditions have probably occurred naturally across a broad range of forest types for millennia. These findings highlight the fact that severe fire provides an important ecological backdrop for fire specialists like the Black-backed Woodpecker, and that the presence and importance of severe fire may be much broader than commonly appreciated.
>
> (S)everely burned forest conditions have probably occurred naturally across a broad range of forest types for millennia. These findings highlight the fact that severe fire provides an important ecological backdrop for fire specialists like the black-backed woodpecker, and that the presence and **importance of severe fire may be much broader than commonly appreciated**. (Emphases added.)

The emphasis on stand thinning and "salvage" of dying trees is of concern for the black-backed woodpecker (Hutto 2008, Dudley et al. 2012, and Tingley et al. 2014).

Current forest management policies, such as those proposed under each alternative under consideration, have serious implications for the black-backed woodpecker. Forestwide suppression of habitat conditions threatens population viability. The NPCNF's End of the World project Wildlife Specialist Report states, "By reducing the potential for stand-replacing wildfire and beetle outbreaks in the project area, project implementation would reduce the potential for black-backed woodpecker occupancy in the future in the project area." The NPCNF has never quantified such impacts—directly, indirectly, or cumulatively.

The viability of the black-backed woodpecker is threatened by fire suppression, "restoration" logging and "forest resilience" policies which specifically attempt to prevent its habitat from developing. "Insect infestations and recent wildfire provide key nesting and foraging habitats" for the black-backed woodpecker and "populations are eruptive in response to these occurrences" (Wisdom et al. 2000). A basic purpose of the agency's management strategies are to negate the natural processes that the black-backed woodpecker biologically relies on; the emphasis in reducing the risk of stand loss due to stand density coupled with the increased risk of stand replacement fire events. Viability of a species cannot be assured, if habitat suppression is a forestwide policy.

Dolan (1998a,b) states: "It seems that we have a huge cumulative effects problem here, and that each salvage sale removes habitat that is already very limited."

The comments by other biologists attached to Dolan (1998a,b) reveal that the FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpeckers. Fire suppression, insect and disease suppression, and "salvage" logging policies of the FS are the biggest threats to black-backed woodpecker population viability. The FS has yet to design a consistent, workable, scientifically defensible strategy to ensure viable populations of the black-backed woodpecker. Cumulative impacts on this species from the NPCNF's ongoing fire suppression policy are also not adequately considered in the DEIS.

Cherry (1997) states:

> The black-backed woodpecker appears to fill a niche that describes everything that foresters and fire fighters have attempted to eradicate. For about the last 50 years, disease and fire have been considered enemies of the 'healthy' forest and have been combated relatively successfully. We have recently (within the last 0 to 15 years) realized that disease and fire have their place on the landscape, but the landscape is badly out of balance with the fire suppression and insect and disease reduction activities (i.e. salvage logging) of the last 50 years. Therefore, the black-backed woodpecker is likely not to be abundant as it once was, and **continued fire suppression and insect eradication is likely to cause further decline.**
>
> Black-backed woodpeckers excavate their own cavities in trees for nesting. Therefore, they are referred to as primary cavity nesters, and **they play a critical role in excavating cavities that are later used by many other species of birds and mammals that do not excavate their own cavity** (secondary cavity nesters). Black-backed woodpeckers peel bark away from the entrance hole and excavate a new cavity every year. Other woodpeckers sometimes take over their cavities (Goggans et al. 1987). (Emphases added.)

The Forest Service's Fire Science Brief, 2009 states, "Hutto found that Black-backed Woodpeckers fared best on sites unharvested before fire and poorest in the heavily harvested sites." Also, Forest Service biologists Goggans et al., 1989 studied black-backed woodpecker use of unburned stands in the Deschutes NF in Oregon. They discovered that the black-backed woodpeckers used unlogged forests more than cut stands. In other words, effects to the black-backed woodpecker accrue from logging forest habitat that has not been recently burned.

And Hutto, 2008 states:

> Black-backed Woodpeckers …require burned forests that are densely stocked and have an abundance of large, thick-barked trees favored by wood-boring beetles (Hutto 1995, Saab and Dudley 1998, Saab et al. 2002, Russell et al. 2007, Vierling et al. 2008). Indeed, data collected from within a wide variety of burned forest types show that **the probability of Black-backed Woodpecker occurrence decreases dramatically and incrementally as the intensity of traditional (pre-fire) harvest methods increases.** (Emphases added.)

USDA Forest Service 2011c states:

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

> **forests that were harvested fairly intensively (seed tree cuts, shelterwood cuts) within a decade or two prior to the fires of 2003 were much less suitable as post-fire forests to the black-backed woodpecker and other fire dependent bird species. Even forests that were harvested more selectively within a decade or two prior to fire were less likely to be occupied by black-backed woodpeckers.** (Emphasis added.)

The Hanson Declaration, 2016 discusses impacts of Forest Service policies on the black-backed woodpecker, the agency's failure to adequately analyze cumulative impacts on the backed woodpecker, how the Forest Service failed apply the best available science, why agency reports (including by R-1's Samson's) are inaccurate and outdated and why reliance on them results in an improper minimization of adverse effects and cumulative impacts to black-backed woodpeckers with regard to the agency's population viability assessment.

Hutto and Gallo, 2006 state:

> Every timber-drilling and timber-gleaning species was less abundant in the salvage-logged plots, including two of the most fire-dependent species in the northern Rocky Mountains—American Three-toed (Picoides dorsalis) and Black-backed (P. arcticus) Woodpeckers. Lower abundances in salvage-logged plots occurred despite the fact that there were still more potential nest snags per hectare than the recommended minimum number needed to support maximum densities of primary cavity-nesters, which suggests that reduced woodpecker densities are more related to a reduction in food (wood-boring beetle larvae) than to nest-site availability.

Bond et al., 2012a explain the need for a conservation strategy for the black-backed woodpecker:

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

Hutto, 2006 addresses this subject:

> The bird species in western North America that are most restricted to, and therefore most dependent on, severely burned conifer forests during the first years following a fire event depend heavily on the abundant standing snags for perch sites, nest sites, and food resources. Thus, it is critical to develop and apply appropriate snag-management guidelines to implement postfire timber harvest operations in the same locations. Unfortunately, existing guidelines designed for green-tree forests cannot be applied to postfire salvage sales because the snag needs of snag-dependent species in burned forests are not at all similar to the snag needs of snag-dependent species in green-tree forests. Birds in burned forests have very different snag-retention needs from those cavity-nesting bird species that have served as the focus for the development of existing snag-management guidelines.

> Specifically, many postfire specialists use standing dead trees not only for nesting purposes but for feeding purposes as well. Woodpeckers, in particular, specialize on wood-boring beetle larvae that are superabundant in fire-killed trees for several years following severe fire. Species such as the Black-backed Woodpecker (Picoides arcticus) are nearly restricted in their habitat distribution to severely burned forests. Moreover, existing postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I call for the long-overdue development and use of more meaningful snag-retention guidelines for postfire specialists, and I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.

Cherry (1997) states:

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

The DFP provides no habitat protections in recognition of black-backed woodpecker biology and ecology: "The plan does not contain components prohibiting or restricting salvage harvest." (DEIS.) The plan elements both <u>target</u> its habitat (FW-DC-TBR-03 - "In areas suitable for timber harvest, dead or dying trees in excess of trees needed for snags and snag recruitment are available for salvage") and <u>propose excessively aggressive logging</u> of its habitat (FW-STD-TBR-11 - "Salvage and or sanitation harvest of trees substantially damaged by fire, windthrow, or other catastrophe or in imminent danger from insect or disease attack may be harvested over and above the sustained yield limit").

The only plan element restraining such targeting of black-backed woodpecker habitat is MA3-GDL-FOR-05 (Minimum Snags per 100 Acres across a Project Area) which again, recognizes nothing about black-backed woodpecker habitat needs. And elsewhere in these comments we discuss how MA3-GDL-FOR-05 is inconsistent with the best available scientific information.

The DEIS fails to comply with NEPA's requirements to analyze a range of alternatives. It fails to insure the viability of the black-backed woodpecker, in violation of the Planning Rule and NFMA.

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Northern Goshawk

The northern goshawk is an old growth management indicator species (MIS) under the current Clearwater and Nez Perce forest plans. It also was on the Sensitive species list before being arbitrarily removed by the Regional Forester.

The DEIS states the northern goshawk:

> Nests in most forest types, ponderosa pine, lodgepole, Douglas Fir, Aspen. Nests in a relatively narrow range of structural conditions of mature to old-growth forests with large trees and with 40% or greater canopy closure. Forages in a variety of structural or size classes.

The current NPNF Forest Plan includes Wildlife and Fish Standard #3, requiring the FS to "Monitor population levels of all Management Indicator Species on the Forest. …Population levels will be monitored and evaluated as described in the Forest Plan Monitoring Requirements (Chapter V of the Forest Plan)." The Clearwater Forest Plan also requires population trend monitoring of MIS.

By including MIS population trend monitoring requirements in forest plans, the agency acknowledged, wisely, that it needed to verify its assumption that allowing old-growth habitat to be reduced to 10% forestwide (a level well below the NRV) still insures viability of northern goshawk. The Forest Service failed to meet its MIS monitoring commitments, which means the agency did not verify assumptions it made about 33 years ago.

The DFP does not propose the northern goshawk as either a focal (management indicator) species or a Species of Conservation Concern (Sensitive species). This determination was made in the absence of Forest Service failure to monitor population trends of northern goshawk over the two Forests' combined 66 years of implementing forest plans. So the DFP includes no plan elements specific to the habitat needs of the northern goshawk.

Clearly, following its monitoring failures the agency cannot claim it has any scientific expertise on management impacts on the goshawk. The DFP is not consistent with the diversity requirements of NFMA and the viability requirements of the 2012 Planning Rule.

The DEIS states:

> The current conditions across the Nez Perce-Clearwater indicate a trend away from open stand conditions as a result of wildfire exclusion, forest succession, management towards old growth conditions, even aged timber harvest, and avoidance of management to conserve some wildlife species, such as lynx, goshawks, and fishers.

While the DEIS refers to "current conditions" as indicating a "trend away from open stand conditions" we do not see in the DEIS the basis for such a statement. Please cite the sources of data that define the NRV, and also cite the sources of data that define current conditions.

USDA Forest Service, 1990 cites research on northern goshawk nest stands in the Northern Rockies:

- Mean canopy cover of 80 percent
- 60 percent of nest stands with basal areas between 160 and 190 ft^2 per acre

- Nest stands had an average of 454 trees/acre larger than 3” dbh.
- Nest tree average of 20” dbh.

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

Crocker-Bedford (1990) noted:

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

The IPNF’s Lakeface-Lamb Fuel Reduction Final Environmental Impact Statement (2000) states, “The removal of downed wood and snag habitat would reduce habitat quality for northern goshawks… The removal of downed wood would reduce the availability and effectiveness of small mammal habitat which is a primary food species of the northern goshawk and the removal of snag habitat would reduce the opportunity for nesting.”

The 2012 Planning Rule states that where coarse-filter plan components may not be sufficient to ensure species recovery or persistence, species-specific plan components that maintain the viability of species must be included in the plan. Plan elements would be something like those recommended by Reynolds, et al., 1992:

Nest Stand:

- Size approximately 30 acres (3 suitable and 3 replacement totaling 180 acres per home range.
- When possible, all historical nest areas should be maintained.
- All nest areas are best located approximately 0.5 miles from each other
- No adverse management activities in nest areas at any time.
- Minimal human presence in active nest areas during the nesting season, March 1 – September 30.

Postfledging Family Area (PFA)

- PFF surrounds the nest area and, although it generally includes a variety of forest conditions, the vegetation structure resembles that found within nest stands. 300 to 600 acres (mean= 415 acres) and may correspond to the territory (a defended area) of a pair of goshawks (Kennedy 1989). PFAs provide the young hawks with cover from predators, and sufficient prey to develop hunting skills and feed themselves in the weeks before juvenile dispersal. Thus, forests in the PFAs should contain overstories with a canopy cover greater than 50%, and well-developed understories and habitat attributes (e.g., snags, nest trees, foods) critical in the life-histories of goshawk prey species.

· Post-fledgling family areas contain patches of dense, large trees that provide protection for fledglings and young trees for hiding cover near the ground.

And for home range/foraging areas, Moser (2007) and Moser and Garton (2009) reported the mean home range size of male goshawks (N=7) was 12,710 acres and female goshawks (N=12) was 9,532 acres in Northern Idaho. Studies in other areas have reported smaller home range sizes in the neighborhood of 5,000-6,000 acres (Reynolds et al. 1992). Moser's larger home range sizes may be related to the fact that Moser's study was conducted in an industrial forest landscape with a large amount of timber harvest. Other factors may be differences in methodology, use of satellite technology by Moser (2007) or differences prey availability in Northern Idaho.

Moser reported that home range size was largely related to nesting success and the amount of openings and mature forest within the home range. Successful nests generally had smaller home ranges. For example, males with successful nests (N=4) had an average home range size of 9,657 acres and females with successful nests (N=8) had an average home range size of 6,600 acres. Male bird home range size increased as the number of openings in the home range increased and the amount of closed canopy forest decreased, but these factors weren't significant for female birds.

Reynolds et al., 1992 recommends ratios of (20%/20%/20%) each in the mid-aged forest, mature forest, and old forest Vegetative Structural Stage (VSS) classes for PFAs and foraging areas.

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

The FS's Samson (2006) reports says that 110 breeding individuals (i.e. 55 pairs) are necessary for a viable goshawk population in R1. USDA Forest Service, 2005e is a map showing the results from the 2005 R1 region-wide goshawk survey using the FS's Woodbridge and Hargis goshawk monitoring protocol. That detection map shows there were 40 detections in 2005 in Region 1. Is there more recent population monitoring (utilizing positive field sightings) in R-1?

Also please consider Greenwald et al., 2005 as best available science for northern goshawk biology.

Implementing sound home range protections for the goshawk would need to be based upon sold survey methodology, consistent with the best available science. For example the recent and comprehensive protocol, "Northern Goshawk Inventory and Monitoring Technical Guide" by Woodbridge and Hargis 2006. Also, USDA Forest Service 2000b state:

> A common thread in the interviews was the lack of a landscape approach in providing goshawk habitat well distributed across the Forest (Squires, Reynolds, Boyce). Reynolds was deeply concerned that both alternatives focus only on 600 acres around known goshawk nests. He was concerned that this direction could be keeping the goshawk population artificially low**. Because goshawks move around within their territories, they are very difficult to find (Reynolds). There might be more goshawks on the Forest than currently known (Squires). One or two years of goshawk surveys is not enough (Reynolds). Some pairs may not lay eggs for five years (Reynolds). To get confidence in identifying nesting goshawk pairs, four to six years of surveys are needed (Reynolds).** (Emphasis added.)

Works cited for Northern Goshawk

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Woodbridge, B. and C.D. Hargis, 2006. Northern goshawk inventory and monitoring technical guide. Gen. Tech. Rep. WO-71. Washington, DC: U.S. Department of Agriculture, Forest Service. 80 p.

Samson, Fred 2006a. Habitat estimates for maintaining viable populations of the northern goshawk, black-backed woodpecker, flammulated owl, pileated woodpecker, American marten, and fisher. Unpublished paper by Fred Samson, Regional Wildlife Ecologist, USDA Forest Service Northern Region. 25pp. May 2006

White-headed woodpecker

The white-headed woodpecker is selected as a species of conservation concern (SCC) for planning purposes. The DEIS states:

> The species is identified as a species of Greatest Conservation Need by the State of Idaho (IDFG, 2017). The species has been identified as a Sensitive Species by the Northern Region (Region 1), Intermountain Region (Region 4), and Pacific Northwest Region

> (Region 6) of the Forest Service. The species is on the U.S. Department of Interior's Bureau of Land Management State Director's Special Status List for Oregon and Washington.

Ecosystem Research Group, 2019 (cited in the DEIS) states, "Within USFS Region 1, the NPCNF is the only forest inhabited by white-headed woodpeckers, although they are relatively common in the adjacent Blue Mountains in Oregon and Washington."

This species is not a good indicator of landscape-scale integrity and connectivity due to its very limited range on the NPCNF—there's apparently so little habitat, and what habitat there is, is highly fragmented. The DEIS states:

> …the white-headed woodpecker's **observed distribution has been limited to the Lower Salmon River canyon**. Suitable habitat for the species is typically **fragmented, making accurate estimation of their range difficul**t. However, the majority of white-headed woodpecker observations have been located where larger amounts of forests are dominated by ponderosa pine, such as those in the **lower Salmon River corridor, the mouth of the Clearwater River, and the South Fork of the Clearwater River near the western Nez Perce-Clearwater boundary**. (Emphases added.)

The DFP states, "the Idaho Department of Fish and Game's Species Diversity Database, 2017 'shows the majority of observations of white-headed woodpecker, Lewis's woodpecker, fringed myotis, Townsend's big eared bats, and mountain quail occur within this (Lower Salmon River) geographic area.'"

The DEIS also states:

> Although the warm dry potential vegetation type is typically where this species habitats occurs, the white-headed woodpecker's **observed distribution has been limited to the Lower Salmon River canyon**. (Emphasis added.)
>
> The Idaho Statewide Wildlife Action Plan estimated that **there are approximately 320 white-headed woodpeckers statewide** (IDFG, 2017). (Emphasis added.)

The white-headed woodpecker is one where "coarse filter ecosystem plan components were all that were needed to provide for…" (DEIS at 3.2.3.2-82). The DEIS is referring to Desired Conditions for vegetation as the coarse filter ecosystem plan components.

The DEIS states, "Throughout the white-headed woodpecker range, habitat includes an abundance of mature pines with large cones and abundant seed production, a relatively open canopy at 50-70 percent, and the availability of snags and stumps for nest cavities." What scientific information indicates a preference for "a relatively open canopy at 50-70 percent…"?

The DFP considers this open canopy habitat important such that it proposes to monitor "acres of Ponderosa pine in open park like setting (not encroached with Douglas fir and Grand fir)" and "acres of Ponderosa pine encroached with DF and GF." This is to answer the Monitoring

Question, "What is the status ecological conditions in Ponderosa pine habitat important for the white-headed woodpecker?" (MON-WL-02)

Since the Monitoring Question MON-WL-02 is in regards to the FW-DC-WL-02 (Desired Condition "Ecological conditions in the Nez Perce-Clearwater planning area provide for, or contribute, to the persistence of populations of species of conservation concern over the long term, with sufficient distribution to be resilient and adaptable to stressors and likely future environments") does this mean that "Ponderosa pine in open park like setting" contributes to the persistence of the white-headed woodpecker, and "acres of Ponderosa pine encroached with DF and GF" is not "Ponderosa pine habitat important for the white-headed woodpecker"?

The DFP doesn't include plan elements that recognize the importance of all habitat features noted by the DEIS. White-headed woodpeckers in central Oregon "preferred larger diameter trees with an average diameter at breast height of greater than 61 centimeters or greater than 24 inches and a preference for an increasing diameter (Rita D. Dixon, 1995; Rita Dianne Dixon, 1995)." Also:

> **Closed canopy forests** with cone-producing pine trees and insects may be important for year-round foraging, particularly outside the breeding season (Mellen-McLean et al., 2013) (Garrett et al, 1996).
>
> **These birds can thrive in recently burned or cut areas provided that large standing trees are still present** (IDFG, 2017). White-headed woodpeckers have also been found to use recently burned forest of ponderosa pine (Kozma, 2011, 2012; Saab & Dudley, 1998) (Forristall et al, 2007; Kozma and Kroll, 2013, Wightman et al, 2010). In south central Oregon, **nest success was higher in burned habitats than unburned habitats** (Mellen-McLean et al., 2013) (Forristal et al, 2007).
>
> Nest placement frequently occurs in **open canopy forest patches often adjacent to relatively closed canopy forest thought to provide critical food resources** (Hollenbeck, Saab, & Frenzel, 2011)(Wightman et al, 2010). (Emphases added.)

Ecosystem Research Group, 2019 states white-headed woodpeckers "utilize burned forests (Saab and Dudley 1998), when sufficient large diameter **snags remain following fires**" and they "can **forage within both open and closed canopy forests if large snags are available** (Wrightman et al. 2010)." (Emphases added.)

Obviously, in missing so many necessary habitat features, the DFP's coarse filter approach fails to conserve this species' viability.

The DFP also proposes to monitor "Trend in White-headed Woodpecker occupancy in coordination with Boise State…" with the monitoring interval being "annual". This implies there is population monitoring already available for some landscape. Please cite the Boise State documentation, and disclose the numbers they've noted.

Discussing Dry forest-associated Species including the white-headed woodpecker, Ecosystem Research Group, 2019 states:

> There are 628,584 acres of ponderosa pine dominated dry forest habitat (all size classes) on the NPCNF. Habitat for dry forest-associated species (the aforementioned stands containing large and very large size classes) currently total 144,281 acres, representing 23% of potential habitat on the NPCNF.

How much of these 628,584 acres and 144,281 acres occur within the range of the white-headed woodpecker? How much of these acreages occurs within, as the DFP Monitoring Plan refers to it, "Ponderosa pine habitat important for the white-headed woodpecker"?

The DEIS states:

> In Idaho, they are highly limited by suitable habitat, nesting in forests with large diameter trees and snags indicative of old growth systems (IDFG, 2017). In the plan area the species is distributed in ponderosa pine dominated stands and mixed stands of ponderosa pine and other conifer species. **These stands occur in the warm dry potential vegetation type and, to a lesser extent, in the warm moist potential vegetation type**. (Emphasis added.)

We don't see science cited in the DEIS that indicates open canopy old growth is most preferred.

Mountain Quail

The DEIS states: "Given the limited distribution in the plan area and the steep decline in populations in both Idaho and the plan area, the mountain quail was identified as a species of conservation concern for the Nez Perce-Clearwater."

The DEIS describes its current precarious status of the mountain quail:

> Mountain quail populations on the Nez Perce-Clearwater are remnants of once larger populations in Idaho and Oregon. Until the 1950s, mountain quail populations were abundant in western Idaho. They were found from the southwestern deserts north to the area along the lower Snake, Salmon, and Clearwater Rivers. Now they are found in only a few places, mostly along the Salmon River. They live in steep rugged terrain and can survive along dry slopes. The reasons for their decline are unknown. Mountain quail, as their name suggests, are usually found at higher elevations, unlike the more common California or valley quail.
>
> Mountain quail are a secretive quail that live in dense shrub and forest habitats. They are distributed along the mountains of the Pacific Coast and western Great Basin of North America, with Idaho populations representing the northern and eastern extremes of their range. While populations are secure across much of their range, major declines have occurred in populations in Idaho in the last several decades (IDFG, 2017). Mountain quail occur in Idaho centered in the lower Salmon River Canyon and Hells Canyon along the Snake River. Small, isolated populations likely occur in the Boise Mountains and Bennett

> Hills in southwest Idaho and near Dworshak Reservoir in northern Idaho (IDFG, 2017). In the plan area, mountain quail observations have been recorded along the Salmon River in the Lower Slate Creek drainage, in the Allison Creek drainage, and near Rapid River and northward in the Island area of the Nez Perce-Clearwater, which is on the west side of the Salmon River Ranger District. Sporadic and older observations have been recorded in several areas of the Nez Perce area of the Nez Perce- Clearwater.
>
> In 2016, the Intermountain Bird Observatory (Miller, Gibbons, Gleitsmann, hansen, & Carlisle, 2016) conducted targeted surveys for mountain quail on the Nez Perce-Clearwater. …Out of 54 survey grids, mountain quail were only detected on three survey routes located in the Rapid River (two routes) and Slate Creek (one route) areas. The surveys failed to detect the species within areas where the species had previously been observed in the plan area. … The surveys failed to detect the species within areas where the species had previously been observed in the plan area. These survey results are similar to statewide trends in mountain quail declines.
>
> The Statewide Wildlife Action Plan (IDFG, 2017) estimates that mountain quail population occupancy in Idaho has declined by 95 percent since 1938.

The reasons for population declines don't appear to be well-understood, according to the DEIS:

> Population declines are often attributed to deterioration and loss of habitat due to intensive agriculture, improper grazing, and fire suppression. However, there is no direct research or evidence linking declines to specific causes. It is also unknown whether competition for resources with other game birds introduced to Idaho, particularly California quail and Chukar, are a factor for mountain quail.

The DEIS describes fine scale habitat components:

> Mountain quail inhabit brushy, early-successional habitats, often within coniferous forests and on steep slopes. However, in Idaho, they typically occur in dense shrubs in steep riparian draws (IDFG, 2017). In all habitats, mountain quail use areas of dense, tall shrubs within close proximity to water. Mountain quail breed and winter in shrub-dominated communities, often within coniferous forests and on steep slopes (Vogel & Reese, 1995a, 1995b) (Rocklage and Edelmann, 2003; Vogel and Reese, 1995c). The composition of these communities consists of hawthorn, willow, and chokecherry in riparian areas of the intermountain west (Vogel and Reese, 1995a/b/c).

The DEIS states, "Long-term fire suppression can cause loss of habitat through forest succession." What is the Forest Service's estimate of the number of acres of "mountain quail habitat" (metric from Monitoring Plan) that has been lost in the historic range of this species on the NPCNF due to fire suppression?

The DEIS also states, "Livestock grazing can degrade riparian and shrubland habitat depending upon the intensity. **The degradation or loss of riparian and shrub habitats could be the most**

impactful to the species in the plan area because of the strong affiliation mountain quail have to these habitats. (Emphasis added.) What is the Forest Service's estimate of the number of acres of "mountain quail habitat" (metric from Monitoring Plan) that has been degraded in the historic range of this species on the NPCNF due to livestock grazing?

How does the DFP address protection of mountain quail habitat, specifically how does it reduce livestock impacts on "riparian and shrub habitats"?

With the allowance of more extensive natural fires as an emphasis in the DFP, yet with fire suppression still expected to continue on the NPCNF over vast areas, how does the DFP direct fire suppression to allow increased wildland fire for resource benefits to mountain quail differentially in its habitat as compare to the rest of the NPCNF?

Since the Monitoring Plan proposes to measure "Acres and locations of tall shrub component of riparian habitat in lower elevation streams in Salmon River country" (MON-WL-04), is this the only area emphasized for mountain quail conservation in the DFP?

Desired Condition GA-DC-SR-02 identifies an ideal as: "Mountain quail habitat emulates historic natural range of variation, provides connectivity, and is dominated by plant native species." Since this is only for the Lower Salmon River Geographic Area, does this mean the Forest Service doesn't provide habitat protections specific to this species in other NPCNF GAs?

Objective GA-OBJ-SR-01 (also only in effect for the Lower Salmon River Geographic Area) is, "100 acres of mountain quail habitat are restored in each five-year period." What actions will be taken to accomplish this habitat restoration?

"The species was grouped into the non-forested vegetation habitat grouping and in the shrublands subgrouping. The species may also have logically been assigned to the riparian habitat grouping." Why wasn't assigned to the riparian habitat grouping, given its habitat preference?

Beaver

The DFP does not consider the beaver with any special designation such as focal species or species of conservation concern (SCC).

In "Possible actions for Water Resources, Aquatic Ecosystems, and Fisheries" (Appendix A) the DFP does include:

- Meadow restoration, including beaver dam analogs
- Beaver reintroduction or supplementation into suitable habitats within their former range

The DEIS also recognizes both of those actions in list of "Restoration needs on the Nez Perce-Clearwater." It also states, "Past Nez Perce-Clearwater watershed, riparian, wetland, and aquatic restoration projects have included …beaver dam analogs…" The DEIS makes a good case for designating the beaver as focal species or SCC:

> Increasingly, restoration practitioners are using beavers to accomplish stream, wetland, and floodplain restoration (Castro, Pollock, Jordan, Lewallen, & Woodruff, 2018). Beaver populations have declined across much of the Nez Perce-Clearwater, primarily due to heavy trapping in the 1800s. More recently, decline is due to a combination of factors including reductions in herbaceous and woody vegetation, direct removal of animals, trapping, livestock grazing impacts, placement of roads in riparian areas, and other human activities. Under the prolonged absence of fire, riparian areas have converted more towards coniferous tree species and away from the aspen, cottonwood, poplar, and willow species preferred by beavers.

Committee of Scientists, 1999 note "The key characteristic of a focal species is that its status and time trend provide insights to the integrity of the larger ecological system. The term "focal" includes several existing categories of species used to assess ecological integrity:

> Ecological engineers: species who, by altering the habitat to their own needs, modify the availability of energy (food, water, or sunlight) and affect the fates and opportunities of other species (e.g., the beaver).

Beaver act as natural ecosystem engineers, profoundly impacting stream hydrology, sediment transport, vegetation, water storage, and late-season stream flows. They build dams and construct natural wetland reservoirs that store and slowly release spring runoff. The stored water seeps out throughout the year and increases late-season flows for downstream benefits. Water stored as groundwater surrounding beaver pools helps cool stream temperatures as it seeps into a creek downstream of the dam. Beaver-created wetlands also help mitigate flooding events. Wetlands have natural biogeochemical processes that sequester pollutants and heavy metals in sediments. These pollutants are broken down by the wetland plants that beaver ponds support, in some cases removing up to 50% of the pollutants that flows into them. Wetlands also provide habitat for a myriad of species, such as migratory waterfowl, juvenile fish, amphibians, and mammals.

Due to the beaver's ecosystem function as a beneficial modifier wetlands, it act as an agent of restoration, returning degraded streams into functioning wetlands and increasing heterogeneity of ecosystems across a landscape. In water with high turbidity, sediment accumulates in beaver dams thereby increasing the rate of aggradation, potentially restoring incised streams and addressing the water quality problems associated with erosion. Beaver dams help reconnect streams to floodplains. The flooding of land creates favorable conditions for wetland vegetation while creating unfavorable conditions for upland plants, thereby restoring riparian function. Research continues on this topic as scientists learn to increase the predictability of using beaver as restoration tools. Currently projects are underway in almost every state in the West, from California to Wyoming, to use beaver as agents of riparian restoration.

Halofsky, et al., 2018 (cited in the DEIS) mention restoring beaver populations to maintain summer baseflows as an option for increasing resilience to climate change. The also state, "Maintaining healthy American beaver populations will provide riparian habitat structure and foraging opportunities for multiple species." Figure 9.3 in Halofsky, et al., 2018 is:

Figure 9.3—Maintenance and restoration of American beaver populations are adaptation tactics for maintaining water on the landscape. Although beavers are not particularly climate sensitive themselves, the structures beavers create and their effects on aquatic habitats and floodplains may help to ameliorate the effects of climatic change on cold-water fish species and other aquatic organisms (photo: E. Himmel, National Park Service).

Also, see "Science Discussion_ Beavers as a Keystone Species – A Rattlin' Blog" for an explanation of beaver as a keystone species.

Works cited for Beaver

Committee of Scientists, 1999. Sustaining the People's Lands. Recommendations for Stewardship of the National Forests and Grasslands into the Next Century. March 15, 1999

Science Discussion: Beavers as a Keystone Species – A Rattlin' Blog

Pollinators

FW-DC-TE-04. Habitats provide forage resources, including nectar, and nesting sites for a diversity of native and desirable non-native pollinators.

We notice that the DEIS cites to a FS article, Hanula and Horn 2016, discusses gap creation in forests to benefit pollinators, which includes thinning and prescribed fire. There is a potential conflict between this desired condition and habitats that other wildlife species need, and the DEIS neither tries to account for this, nor the draft plan balance it in any way. For example, it would appear that this desired condition might justify more logging in old-growth and other mature parts of the forest.

What are "desirable non-native pollinators"? The DEIS doesn't discuss or list these. How is the Forest Service deciding what is "desirable"—why haven't these "desirable non-native pollinators" been specifically disclosed in the EIS and RFP? Do you mean the western honey bee? DEIS recognizes the loss of native pollinators Ch. 3.2.1.2. p. 34. Non-native pollinators are invasive species. Why is the Forest Service calling invasive species "desirable" and creating a desired condition for them?

Logging (like thinning) prescribed fire, and the roads built for these activities, among others, can introduce invasive plants, and there is scientific uncertainty on how this might impact native pollinators. Bezemer et al. 2014 discusses these considerations.

The DEIS needs to go in a more specific and scientifically-informed discussion on pollinators, and needs to be more specific on a desired condition. What are the native pollinators in the Nez Perce and Clearwater National Forests? What do they pollinate and are they impacted when their native plants are gone or invasive plants are introduced? Are any of those pollinators listed or sensitive species, and if so, what are the factors that caused their decline to their current levels/ conditions? For example, if vegetation management contributed to the species decline, then Hanula and Horn 2016's general support for vegetation management would not be the best science for this topic. *See, e.g.*, Burkle 2013 (noting that cavity-nesting species may be negatively impacted by landscape management that reduces woody debris used for nests).

Instead of a forest plan that assumes the Forest Service has to create habitat through logging, why not identify what has caused the decline and implement standards that prohibit activities that might contribute to this decline or otherwise conserve habitat?

Please describe the impacts to native pollinators from fostering habitats to support non-native pollinators. What are the impacts to the native pollinators? What are the impacts to the native plants from displacement of non-native pollinators. Please consider Cane and Tepedino 2017, Henry and Rodet 2018, Geldmenn and Gonzalez-Varo 2018, Galbraith et al. 2019, and Ponisio et al. 2016 with your analysis.

<u>Pollinators works cited</u>

Bezemer et al. 2014. Response of Native Insect Communities to Native Plants. Annu. Rev. Entomol. 2014.59:119-141.

Burkle 2013. Plant-Pollinator Interactions over 120 Years: Loss of species, co-occurrence, and function. Science 339: 1611-1615.

Cane and Tepedino 2017. Gauging the effect of honey been pollen collection on native bee communities. Conservation Letters 10(2): 205-210.

Henry and Rodet 2018. Controlling the impact of the managed honeybee on wild bees in protected areas. Scientific Reports

Geldmann and Gonzalez-Varo 2018. Conserving honey bees does not help wildlife: High densities of managed honey bees can harm populations of wild pollinators. Ecology 359(6374): 392-393.

Galbraith, S. M., J. H. Cane, A. R. Moldenke, and J. W. Rivers. 2019. Wild bee diversity increases with local fire severity in a fire-prone landscape. Ecosphere 10(4):e02668. 10.1002/ecs2.2668

Ponisio, Lauren & Wilkin, Kate & M'Gonigle, Leithen & Kulhanek, Kelly & Cook, Lindsay & Thorp, Robbin & Griswold, Terry & Kremen, Claire. (2016). Pyrodiversity begets plant-pollinator community diversity. Global Change Biology. 22. n/a-n/a. 10.1111/gcb.13236.

DESIGNATED WILDERNESS

Our scoping comment went into considerable detail on Wilderness. There are three overriding concerns with the DFP and DEIS that illustrate the key problems. We expand on these bullet points and the issues raised in them in the comments that follow.

- Regardless of Wilderness Act direction to protect untrammeled Wilderness, the agency will continue on a recent and ill-advised trend to manipulate (trammel) Wilderness to make it fit certain agency expectations. Direction in other and overall sections of the plan that could affect Wilderness (e.g. 2.1.7 Invasive Species); existing direction in Wilderness plans and project-level documents and decisions; and wording in the DFP and DEIS all contribute to this declining trend in untrammeled Wilderness and send the signal that the Wilderness Act is somehow in internal conflict between *naturalness* (a word that does not appear in the Wilderness Act, the Act refers to natural condition and natural conditions) and untrammeled Wilderness, thus opening the door to more manipulation and trammeling.
- The wilderness plans, in particular the Gospel-Hump Management Direction, are old. While that is not a problem in and of itself, there is no direction in the DFP to review plans for adequacy in light of monitoring that may suggest needed changes. For example, the DEIS shows on Table 2, page 3.6.1-4 that wilderness recreation use increased over 3.5 times between 2011 and 2015 on the Nez Perce and Clearwater National Forests, according to agency NVUM data. At the same time and ironically, some of the direction in the DFP effectively amends the various wilderness plans. We understood the intent was not to amend the current wilderness plans through the forest plan revision process. As such, the interplay between the existing wilderness plans and the DFP and DEIS is unclear. This is an issue we have raised in past comments.
- The concerns addressed in the above two bullet points lead to the conclusion that the DFP and DEIS need to be changed to be consistent with the Wilderness Act's mandate to preserve untrammeled Wilderness. This may also apply to the existing plans. Further, it is advisable for the DFP to provide some kind of guidance on updating or amending the wilderness plans in the future as there may be a need in some areas to do so. In addition, there are errors in and inconsistencies between the DFP and DEIS that must be rectified. There are also important issues that have been missed in the analysis.

The DEIS begins the section entitled "Designated Wilderness" with a brief description of the Act and some attributes of Wilderness. It continues:

> The existing wilderness areas are managed in order to preserve wilderness character. Five qualities help describe wilderness character (Landres et al., 2015).
>
> **Untrammeled**. Wilderness is essentially unhindered and free from modern human control or manipulation.
>
> **Naturalness.** Wilderness ecological systems are substantially free from the effects of modern civilization.
>
> **Undeveloped.** Wilderness is essentially without permanent improvements or modern human occupation.

> **Outstanding opportunities for solitude or a primitive and unconfined type of recreation**. Wilderness provides outstanding opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge.
>
> **Other features of value**. Wilderness may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

DEIS at 3.6.1-1, emphasis in original. The reference in the DEIS to Landres et al., 2015, is "Keeping it Wild 2: An updated interagency strategy to monitor trends in wilderness character across the National Wilderness Preservation System," also known by its acronym, KIW2. The listing of five qualities misses the holistic element and treats the Wilderness Act more as a procedural rather than a substantive law. A critique of this approach comes from other Wilderness professionals. Cole et al., 2015 notes:

> … to give practical meaning to wilderness character, KIW2 states that wilderness character should be defined as five separate qualities: untrammeled, undeveloped, natural, outstanding opportunities for solitude or a primitive and unconfined type of recreation, and other features of scientific, educational, scenic, or historical value. These five qualities include all the attributes mentioned in the Sec. 2(c) definition of wilderness in the Wilderness Act. They are considered to be equal in importance and often in conflict with each other (Landres et al. 2008, in press), making the concept of wilderness character internally contradictory rather than a single coherent stewardship goal.

We disagree. The purpose of the mandate to protect wilderness character above all else is to focus the attention of wilderness stewards on preserving the "essence" of wilderness— those qualities that are most unique and distinctive about wilderness and make it "a contrast with those areas where man and his own works dominate the landscape". It is about differentiating the most important things to protect from the many other things that ideally might be protected in wilderness. For this purpose, wilderness character must be defined as a coherent whole, in a manner that is not internally contradictory. It cannot be broken down into separate qualities.

Cole et al. at 3. It should be noted that Cole, the lead author, is a retired Forest Service wilderness research scientist. This is relevant in that by relegating untrammeled wilderness (sometimes referred to as wildness, though there are arguably differences) to one of five qualities, it can be de-emphasized, even though, in the words of the Act's author, Howard Zahniser, "the essential quality of wilderness is its wildness." This speaks directly to the concern in first bulleted point in this section. The agency seems to want to meddle in Wilderness and that desire seems to be increasing. Ecological manipulation, regardless of how well-intended, is not in keeping with untrammeled wilderness.

Projects whose purposes are to restore (or redirect) natural processes through the exercise of human agency, are precisely the intrusions of human culture that the Wilderness Act meant to exclude from these special places." (See Kammer 2013). Wilderness designation brings a special protection for Wildernesses and requires the federal land management agencies like the Forest Service to not manipulate or dominate the wilderness. Rather, the Forest Service is required to protect the area's wildness. This mandate is reflected in the epigram written by Howard Zahniser*, "With regard to areas of wilderness, we should be guardians not gardeners."*

This fundamental tenet of wilderness stewardship was reiterated in a program review initiated by the four federal agencies and conducted by the Pinchot Institute for Conservation in 2001. The purpose of the study was to examine the critical management issues facing Wilderness. One of the eight "fundamental principles" for stewardship emphasized the need to preserve the wildness in Wilderness. As the Pinchot report stated, "Protection of the natural wild, where nature is not controlled, is critical in ensuring that a place is wilderness….Since wild is a fundamental characteristic of wilderness that is not attainable elsewhere, if there is a choice between emphasizing naturalness and wildness, stewards should err on the side of wildness." (see Brown et al., 2001).

The DFP tends to supports natural processes (untrammeled or wild Wilderness)[49]:

MA-**DC-WILD-02** Natural ecological processes and disturbances (e.g., succession, wildfire, avalanches, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Wilderness areas provide opportunities for visitors to experience natural ecological processes and disturbances with a limited amount of human influence.

DFP at 97. The statement is positive in that processes rather than specific conditions are in this desired condition (something that we suggested be recognized and adopted forest-wide). However, the use of the word *primary* along with the omission of *untrammeled* or even wild (see Scott 2001-02, Proescholdt 2008, Nickas and Macfarlane 2001, and Brown et al. 2001) conflates what could be termed an administrative definition that places a requirement on the agency post-designation (untrammeled), with the general appearance of Wilderness (primarily). Thus, it inadvertently downplays this key attribute of Wilderness and seems to open the door to additional human influence, rather than allowing Wilderness to be truly wild. The use of the word and *natural* may also suggest a tension between natural and untrammeled. Since it is a desired condition, we suggest wording it this way:

MA-**DC-WILD-02** Ecological processes and disturbances (e.g., succession, wildfire, avalanches, insects, and disease) rather than human actions are the forces affecting the composition, structure, and pattern of vegetation. Wilderness is untrammeled. Wilderness areas provide opportunities for visitors to experience these ecological processes and disturbances.

Even though the older existing wilderness plans don't promote agency trammeling of Wilderness and didn't anticipate such actions (heavy-handed use of herbicides, for example), specific decisions made well after the plans do provide trammel Wilderness. And, Table 28 provides for prescribed fire in every Wilderness. DFP at 98. *Section* 4(d)(1) of the Wilderness Act, while allowing measures to control fire, does not allow for manager-ignited prescribed fires. The Forest Service's ongoing attempts to resist natural processes and change through active manipulation of the wilderness are at odds with the Wilderness Act and the Forest Service's own management guidance. Vegetation changes, fire interval and intensity, and wildlife disbursement attributable to a changing climate cannot logically represent degradation of wilderness character. *See* 36 C.F.R. § 293.2(a) (dictating that, in wilderness, "[n]atural ecological succession will be allowed to operate freely to the extent feasible"). The Forest Service manual directs the Forest Service to "[m]aintain wilderness in such a manner that ecosystems are unaffected by human

[49] Arguably, Wild and untrammeled are slightly different. Wild is the condition of Wilderness; untrammeled reflects our relationship to Wilderness and demonstrates our humility and restraint, see Kaye 2018, though we would disagree with seeing natural and untrammeled in conflict)

manipulation and influences so that plants and animals develop and respond to natural forces" FSM at 2320.2. For example, the Forest Service could encourage practices on private land that reduce structure flammability. Wilderness is "in contrast" to areas where our actions and decisions dominate the landscape. Nature should roll the dice in Wilderness, not managers.

What is ironic is that the Forest Service has rarely, if ever, used agency prescribed fire in any of the three Wildernesses on the Nez Perce and Clearwater National Forests. Rather, the agency has boasted, and rightly so, of the natural fire program in the Selway-Bitterroot, Frank Church-River of No Return and Gospel-Hump Wildernesses. Thus, Table 28 should be changed to note that natural fires are more than adequate in the three Wildernesses by the agency's own admission.

This is a good segue to the second bulleted point about the age of the existing wilderness plans and the interplay between those plans and the DFP and DEIS.

Our scoping comments of November 14, 2014 raised questions about the existing wilderness plans and what had been in terms of implementation and monitoring. We would like answers to these questions.

However, a review of the existing wilderness plans' and forest plans' direction reveals specific problems in the three Wildernesses in terms of monitoring and implementation. The following are a list of questions, concerns and issues dealing with implementation and monitoring under current direction.

Gospel Hump

The Gospel Hump plan promised several items including a fisheries management plan, removal of equipment at the head of Williams Creek, a cultural resource inventory, outfitter plans, and identification of areas to be managed without trails. Have all of these been completed?

Some of the direction in the plan, such as a summit register box on the top of Buffalo Hump, conflict with the Wilderness Act. What wilderness purpose does the register box serve?

What has monitoring revealed about grazing in this Wilderness? Is monitoring less extensive because it is designated as Wilderness? Friends of the Clearwater has raised problems with grazing of livestock in Slate Creek and provided photos documenting damage.

Frank Church-River of No Return

What monitoring or other actions have been taken to correct overuse at camp sites since the wilderness plan recognizes that about 1/2 of the 1400 identified campsites in the area are degraded (page 3-25) and that over 80% of campsites were located closer than 200 feet from water?

The 1997 Transportation Plan identified many redundant trails. The trails analysis showed that 45 percent of the current trail system was not needed for 6 of the 7 categories of destinations. What has been done to address this issue?

What jurisdiction does the Nez Perce – Clearwater National Forest office have in dealing with use on the Main Salmon River? The "new" wilderness plan allowed an increase in jetboat use on the Main Salmon River.

Selway-Bitterroot General Management Direction (GMD)

In part E- Forage a 25% standard is established for recreation stock. Has monitoring been done to confirm this has been met?

Part M. Land Occupancy - National Forest Lands notes no structures for meteorological or snow measurement are allowed. A former District Ranger told us the weather monitoring facility at Fish Lake was removed. Is that true? If not, why did the Forest Service mislead us? Are any others found in the Wilderness?

Part O. Aircraft Use and Airfield Facilities discuss monitoring in some detail. What data exist for the three landing meadows?

Furthermore, the data that do exist need to be analyzed and the impacts to wilderness character assessed. Direction requires that if more landings are taking place, use needs to be restricted. Has this been done? It should also be noted that Fish Lake was being considered as an emergency-only landing field. The extant Clearwater National Forest Plan uses the term "emergency airfield." (Page III-34).

Section P. Communication addresses issues of old phone lines. Have they all been removed? We are aware of at least one large bull elk that was killed because it became tangled up in the wire.

Have all administrative structures need to be evaluated to determine if they are the minimum necessary? Have any trends in research have been noted?

Our scoping comments of 2014 and the second set of scoping comments on October 7, 2019 raised the question of the interplay between this DFP and DEIS and the existing forest plans.

We have questions about whether and how various issues and human uses will be addressed. The following points are a representative sample:

- Wilderness: We are unclear whether Wilderness will be addressed in the DEIS and draft plan. There seems to be an unwritten policy that Wilderness be left until wilderness plans are updated. However, other recently revised forest plans in the region have adopted direction for administering Wilderness. This direction is not found in the current wilderness plans. Also, forest plan components in the new plans amend the wilderness plans directly or indirectly.

Further, we have a concern whether the plans are being implemented properly, including monitoring, and whether they are adequate to deal with the issues affecting Wilderness. There is no direction in the DFP to review the current plans for adequacy or an analysis in the DEIS on whether the Forest Service is implementing the wilderness plans, assuming they are adequate. Our experience suggests the wilderness plans are not being implemented as intended. One example is the lack of consistent monitoring data, as required by the Selway-Bitterroot General Management Direction, on the use of the "emergency" strip at Fish Lake in the Selway-Bitterroot Wilderness. (NOTE: Again, the Clearwater National Forest Plan refers to the landing strip as an "emergency airfield" on page III-34).

Further, the DEIS shows on Table 2, page 3.6.1-4 that wilderness recreation use increased over 3.5 times between 2011 and 2015 on the Nez Perce and Clearwater National Forests, according to agency NVUM data. How will the Forest Service deal with issues such as the apparent significant increase in wilderness visitors between 2011 and 2016? Does the agency consider the data accurate in that wilderness use increased by 3.5 times between 2001 and 2016? Are there other factors that could explain the big difference between the years in terms of use? Were the extant wilderness plans adequate in dealing with this use or did monitoring show degradation in Wilderness due to the use? Did this increase affect any particular Wilderness over the other two or was it spread evenly over the three Wildernesses? Were the standards in the three wilderness plans met with this drastic increase? For example, the Selway-Bitterroot General Management Direction page B-2 has standards intended to avoid frequent encounters so all visitors will have a wilderness experience. Other standards exist so that physical impacts will be limited at campsites. An increase in use could affect those standards as well. If standards were exceeded or if the monitoring did not occur, what will the agency do to address this problem?

The NVUM data that suggest an increase in use also raise other questions. Is this increase due to use by the general public or the outfitted public? When will updated needs assessments for outfitting and guiding be done, especially in light of increasing use? Indeed, the DEIS underscores that point:

Population growth and development increases the need for public open space. Growth in Missoula and Ravalli counties in Montana; Idaho, Kootenai, Latah and Nez Perce counties in Idaho; and Asotin and Spokane counties in Washington is likely to increase recreational use of the Nez Perce-Clearwater, which may include an increase in wilderness use. Increased recreational use may impact maintenance of the wilderness character, particularly opportunities for solitude and natural quality. Examples of potential impacts include increased opportunity for crowding in high use areas, soil compaction or erosion, and threats to native plant species from the spread of noxious weeds from sources outside the wilderness. The effects of urbanization and population growth on wilderness use and resource conditions are likely to be gradual and to extend well beyond the planning period. These areas may be affected by management of adjacent lands, such as sights or sounds from vegetation treatments, motorized use, or private development.

DEIS at 3.6.1-7. However, the fact is there is no difference between alternatives, so these issues remain unaddressed. This is particularly troubling when considering management of adjacent lands, which would differ under each alternative, yet the DEIS treats them the same. The following paragraphs also discuss this issue.

While we infer the agency does not intend to make changes to wilderness plans in this forest plan—and we agree older wilderness plans are not a problem in and of themselves—the DFP and DEIS send mixed signals on whether the DEIS and DFP amend the plans and what impacts may occur under various alternatives. For example, the DEIS states

Direction for wilderness management is detailed in laws, regulations, agency policy, and specific management plans. Therefore, management under the four action alternatives and the No Action Alternative would not differ. There is no change in the amount of designated wilderness under any alternative.

DEIS at 3.6.1-7. In this instance, one is led to believe there is no difference between alternatives, presumably including the status quo. The DEIS also states, “The alternatives will be evaluated by comparing the following qualitative indicator: • Effects of the forest plan direction and how well it supports and protects the values associated with the designated wilderness areas.” DEIS at 3.6.1-3. Yet, the alternatives are not compared and there is no analysis of individual alternatives as the previous quote from DEIS page 3.6.1-7 indicates.

Furthermore, the conclusion that there is no difference between alternatives is contradicted by the summer ROS maps in appendix 1 of the DFP which allocate a semi-primitive non-motorized classification buffer to larger areas around the Forest Service landing meadows under no action, but not in other alternatives, which are primitive (and correctly so). This is inconsistent with the existing wilderness plans (and the existing forest plans inside and outside of Wilderness) and these apparent contradictions lead to lack of clarity. We also address the ROS as it relates to Wilderness later in this section.

This is not the only example of how alternatives would differ. Logging would be more likely to occur near the boundary of Wilderness under alternative X than it would under the no-action alternative. Such logging could have a negative impact on the Wilderness. The same is true for the snowmobile use on the wilderness boundary as the winter ROS maps for alternative X allocate those areas to motorized recreation. (NOTE: We address the ROS allocation issue elsewhere in this comment).

Prescribed fire may be different under various alternatives. Actions outside of Wilderness could easily affect what happens inside Wilderness. For example, increased logging, especially at or near wilderness boundaries, could easily affect the extent to which the Forest Service allows natural fire in Wilderness and the extent to which agency-ignited fires occurs in Wilderness.

The DFP plan components also affect Wilderness in various ways. Like the DEIS, the DFP is not clear and that lack of clarity raises important problems. Two examples illustrate this problem. The goals include:

MA1-GL-WILD-03. Perce-Clearwater cooperates with Idaho Department of Fish and Game and U.S. Fish and Wildlife Service to manage fish and wildlife resources within designated wilderness while protecting the wilderness character as required by the Wilderness Act and each wilderness area's enabling legislation.

DFP at 97. What this misses is two things. First, Nie et al., 2017 clearly note that federal agencies have primacy over wildlife on public lands and this also applies in Wilderness, especially of activities may affect Wilderness.[50] Second, the wording of this goal suggests that the primary relationship is cooperating with the Idaho Department of Fish and Game while the secondary is protecting wilderness character. The Idaho Fish and Game today (unlike the past) is decidedly anti-wilderness and the Forest Service has allowed illegal activity in the Frank Church-River of No Return Wilderness as evidenced by the ruling in *Wilderness Watch et al. v. Vilsack* Case No. 4:16-cv-12-BLW. This inversion of Forest Service legal requirements (the second clause) with a way of operating with other agencies (the first clause) is a serious problem. Some of the wording in the Forest Service Manual better expresses the primacy of Wilderness in wildlife issues. Specifically, "Provide an environment where the forces of natural selection and survival rather than human actions determine which and what numbers of wildlife species will exist." FSM at 2323.31 1. Also policy point 2 is very clear, "Wildlife and fish management programs shall be consistent with wilderness values." FSM at 2323.32 2.

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[50] While Nie et al. deal with wildlife jurisdictional issues, including Wilderness, and emphasize that the federal agencies have the authority to preserve Wilderness in spite of wishes of state game agencies, we have concerns with the tangential discussion surrounding how to define wilderness character in that article, which follows *Keeping in Wild 2*. Cole et al. 2015 critiques *Keeping in Wild 2* and by extension the discussion of wilderness character in Nie et al. 2017.

Other plan components send confusing messages. "**MA1-DC-WILD-01**. Management activities within designated wilderness areas shall preserve and protect wilderness character as required by the Wilderness Act, as well as each wilderness area's enabling legislation and its specific management plan." DFP at 97. That would be good direction, assuming wilderness character is defined in such a way that is consistent with the Wilderness Act (see Cole et al. 2015). However, the standard keyed to this desired condition only states, "Management activities in designated wilderness areas shall comply with each areas' respective management plan." DFP at 97. While the planning rule inveighs against standards that restate the obvious—compliance with the Wilderness Act—in this case, it sends the bizarre message that the plans are more important than the requirements of the Wilderness Act itself. Unfortunately, plans could be interpreted in ways that contradict the Wilderness Act. Case in point, the Forest Service approved an illegal action in *Wilderness Watch et al. v. Vilsack* Case No. 4:16-cv-12-BLW.

Further the guideline keyed to the desired condition and standard only adds to the confusion by stating, "Management activities should maintain the wilderness character according to wilderness character descriptions specifically developed for each wilderness area in their respective wilderness management plans." Aside from the fact that the word "should" suggests some leeway to avoid doing what is actually required, where does a reader find the wilderness character descriptions developed for each Wilderness? They are not expressed as such in the three wilderness plans. Have they been developed yet? If not, how will they be developed? Will they go through public comment via NEPA? Will they be based upon the definition found in *Keeping it Wild 2*? If so, even the lead author has suggested that using the definition of wilderness character in *Keeping it Wild 2* as management direction is a misapplication of the wilderness character monitoring protocol.

In sum, it is unclear how the plan components will affect Wilderness under the various alternatives. While the agency suggests that the alternatives are the same, as per Table 28 on page 98 of the DFP, other direction in the plan will affect Wilderness such as the increase in logging that could occur at the boundaries. That, in turn, would affect the degree to which the agency may allow natural fires to play their role in Wilderness or the degree to which agency-ignited fire may be used in Wilderness, which is inconsistent with untrammeled Wilderness.

Aside from the error in citing the portion of the FSM that deals with Wilderness (referenced elsewhere in this comment), we have found other errors in the DFP and DEIS dealing with Wilderness. These are detailed below, beginning with the DFP.

The DEIS states regarding the Selway-Bitterroot Wilderness, "Only the 600-foot-wide Nez Perce Trail, an unimproved dirt road … separates the Selway-Bitterroot from the Frank Church–River of No Return Wilderness ... . U.S. Highway 12 forms the northern boundary." DEIS at 3.6.1-4. Highway 12 is not the northern border of the Selway-Bitterroot Wilderness. Rather, the high water mark of the Lochsa River's southern bank is the northern boundary for only a small stretch. The Lochsa River, which US Highway 12 follow, used to be the northern boundary of the Selway Primitive Area but the 1963 administrative reclassification (see Cunningham 1968 which is a history of the 1963 agency reclassification effort) erroneously excluded most of that land. It is still roadless in the South Lochsa Slope Roadless Area, which forms a large portion of the land that was previously classified as Primitive. The other two inventoried roadless areas, Sneakfoot Meadows and North Fork Spruce were also included in the old Selway Primitive Area as was a portion of the Rackliff Gedney. Most of this roadless land between the Lochsa and the current Selway Bitterroot Wilderness boundary is covered under what is referred to as the Secretary's Letter, which suggests a degree of protection for those areas.

Furthermore, the unimproved dirt road itself is not 600-feet wide. That is the width of the road *and* surrounding land excluded from the Selway-Bitterroot and Frank Church-River of No Return Wildernesses. In the less frequent instances where topographic features could be used, the width of the exclusion varies from the 300-feet from the centerline of the Magruder Road.

Regarding the Frank Church-River of No Return Wilderness, the DEIS states, "There is one grazing allotment that partially lies within the wilderness." In this "Mallard Creek allotment" … . [t]his use is allowed and is expected to continue in the future." The problem with that statement is this allotment has been vacant for over a decade, according to Forest Service data (see Nez Perce National Forest Monitoring Reports and Nez Perce–Clearwater National Forests Forest Plan Assessment 7.0 Multiple Use and Ecosystem Services at 7-10). It isn't a continuation of a use. Rather, it is an allotment that hasn't been used for many, many years and should be closed.

There is a similar statement about the Gospel-Hump Wilderness. DEIS at 3.6.1-6.[51] However, the Florence Allotment is vacant and has been for years. The attached spreadsheet is taken from a Forest Service reply to a letter from Friends of Clearwater and shows that allotments in and around the Gospel-Hump Wilderness have serious problems.

"Nez Perce-Clearwater coordinates stewardship and management of the Frank Church- River of No Return Wilderness with the Bitterroot National Forest and Salmon-Challis National Forest." DFP at 97. Aside from grammatical oddities in this descriptions, why does the DFP omit coordination with the Forest Service personnel and offices that administer the Payette National Forest?

There are some clerical and other errors in the tables in the DFP:

- Table 28 omits mention of installations tough it includes structures. It also refers only to new structures. Table 28 omits mentioning that some existing structures may not be the minimum necessary and shouldn't be maintained.
- Table 29, which is for designated wild and scenic rivers, inadvertently and wrongly allows for over the snow motorized use in the Salmon Wild River segment, most of which is within Wilderness. Only motorboat use is allowed on that river in the Wilderness segment. It also allows for logging in wild river segments, most of which are in Wilderness. That is prohibited. It also allows for mechanized use in all existing wild rivers. That is prohibited in those designated as Wilderness. It is also agency guidance to keep eligible rivers them free of mechanized use. This table conflicts with Table 28 and must be changed.

In summary, the DFP/DEIS send mixed signals about Wilderness, existing wilderness plans, and alternatives. With a few exceptions, monitoring data are not mentioned. Questions we asked in our previous comments have not been answered. We have no idea whether extant wilderness plans will be updated and, if so, when. Lastly, the DEIS and DFP sent up conditions where untrammeled Wilderness will be lost to agency desires to manipulate Wilderness.

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[51] This same page also misstates the Wilderness Act, using the singular *national condition* rather the Act's plural *natural conditions*.

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<u>ROADLESS PROTECTION AND RECOMMENDED WILDERNESS</u>

Introduction: We use the term Roadless in the way as originally intended, to apply to areas that have attributes for wilderness designation. Due to the controversy over developing roadless areas, just before the turn of the century the Forest Service embarked on a rulemaking process to offer some protection for the areas that had been identified as roadless in past inventories. The way the roadless rule and eventually the Idaho Roadless Rule evolved resulted in a bifurcation of roadless areas. Specifically, it divided the roadless areas in the inventory at the time the rules, particularly the IRR, were completed from the iterative roadless inventory process that occurs during forest plan revision since RARE II. The Forest Service currently and exclusively uses the term roadless to apply to areas that were mapped and inventoried when the roadless rules were put into place. The parallel process to inventory areas that have wilderness attributes during forest plan revision is no longer referred to as a roadless inventory by the agency. Because no roadless inventory has been fully accurate, the iterative process for forest plan revision is crucial to correct past mistakes as well as take into account conditions that have changed since the last inventory such as logging and road building activity. In this case this process was intentionally skipped. Because the IRR provides limited protection of roadless areas and *because it missed areas that should be studied, it is an inadequate representation of what is truly roadless on the ground.*

Our previous comments went into considerable detail on roadless areas, recommended wilderness and layering of protection. Questions we have raised have not been addressed.

ROADLESS/WILDERNESS RECOMMENDATIONS

Introduction

This section deals with allocation and administration of roadless areas, both inventoried and uninventoried, and roads. This continues our ongoing, longstanding participation in the management of the Nez Perce and Clearwater National Forests.

The Clearwater and Nez Perce National Forests contain some the most valuable roadless areas for wildlife and ecosystem integrity left in the lower 48. (see Carroll, et al. 2001). Indeed, the agencies' own Interior Columbia Basin Ecosystem Management Project (ICBEMP) also identified the value of these roadless areas. The whole wild land area, referred to as the Big Wild, is the largest wildland in the lower U.S. The uniqueness and size of these wild public lands provide many important assets to the public. The biological diversity is unmatched in the Northern Rockies and need effective protection. Former Clearwater Supervisor Larry Dawson's three-pronged approach was a good start in protecting these lands from roading and logging, though the Idaho Roadless Rule falls short of needed protection. However, that rule allows for strengthening amendments to be added and the forest plan revision process is the appropriate venue for such a change. Other threats to these wild lands should also be recognized and addressed include fire suppression, motorized and mechanized off-road travel, grazing and mining.

All roadless are important in the long-term health of the public lands in this ecosystem. Indeed, the eminent biologist E.O. Wilson has proposed that half the terrestrial land, mass in the world, including the United States be preserved as Wilderness (see Attachment 5). We see all roadless areas in the area as one important resource worthy of permanent protection.

There are unroaded areas greater than 5,000 acres in size and/or contiguous to Wilderness or identified roadless areas that need protection. Also, the science in the ICBEMP recognizes the value of protecting areas over 1000-acre areas. These areas should be identified in the RFP and allocated to a non-motorized setting.

Mechanized recreation use causes serious damage to the natural values of these areas. With thousands of miles of existing roads, there is no need for mechanized travel in roadless lands that are proposed for wilderness in HR 1187. This issue is addressed in more detail in the following sections.

Some of these roadless areas are separated by only a few, seasonally used primitive dirt roads. We support obliterating unnecessary roads to combine roadless areas into bigger wildlands. Connectivity is an important issue that needs to be addressed in the forest plan, whether it deals with roadless areas or not. This is addressed in the section on travel analysis.

NEPA

The alternatives analyzed must give a full consideration to all 1.5 million acres of roadless land and any other areas missed that may qualify for wilderness designation. In essence, the range of alternatives must include at least one option that designates the entire roadless base of areas that are 5,000-acres in size or, if smaller, contiguous to existing Wilderness. The Citizens' Conservation Biology Alternative--which is the same as HR 1187, the Northern Rockies Ecosystem Protection Act--does precisely that. HR 1187 and the conservation biology alternative include minor modifications to the roadless areas, and one major one (the inclusion of areas contiguous to the Gospel Hump Wilderness, which the agency erroneously failed to evaluate). These issues are discussed in a bit more detail in a following subsection.

The older WARS system may be useful in the development of other alternatives. Also, options for protection should be explored in the draft EIS. For example, the existing Clearwater National Forest Plan allocates some areas to non-development status for wildlife and/or recreation (C-1, C-6 and A-3, for example), including semi-primitive non-motorized allocations. It may be useful to layer on that kind of protection to agency-recommended wilderness in case Congress rejects a recommended wilderness, or portion thereof, in its deliberations. The agencies have the full authority to protect roadless areas, allow natural processes to determine their fate, and to promote primitive non-mechanized types of recreation in those areas.

The no-action alternative must be based upon the 1993 Clearwater National Forest lawsuit Settlement Agreement, which allocates over 500,000 acres to protective roadless management where "such lands will be managed according to Forest Plan standards and guidelines for recommended wilderness

(Management Area B2). This agreement is the existing situation and the no-action alternative. It was arrived after several years of discussion, appeals and finally legal action on the 1987 Clearwater Forest Plan..

The RFP must include a re-inventory of roadless land. 36 CFR 219.7 requires the agency to "Identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend any such lands for wilderness designation." Areas were erroneously missed in the fatally flawed Idaho Roadless Rule. The agency also needs to come clean with the public in its analysis of roadless areas as to what constitutes a development that would remove a roadless area from roadless status and/or be unavailable for consideration in the plan as a recommended wilderness. In terms of areas missed, most significant, are the potential additions to the Gospel-Hump Wilderness in Boulder Creek, Indian Creek, Johns Creek, and Tenmile Creek. A map of those additions is attached in electronic form on the enclosed disk (Map Folder, Map 1) and is also available at: http://www.friendsoftheclearwater.org/inventoried-roadless-areas/ (Look under the Gospel Hump Additions section). Simply put, the assessment seems to have erroneously conflated the Idaho Roadless Rule with the required inventories for Roadless land of wilderness value under NFMA.

Proposed Action Problems/Assessment

The proposed action (PA) has paltry wilderness recommendations and misses crucial areas the Forest Service recognizes have the highest wilderness values. Examples include but are not limited to Weitas Creek, the western part of Meadow Creek and other additions to the Selway-Bitterroot, Pot Mountain, Fish and Hungery Creeks, the upper North Fork, and additions to the Frank Church-River of No Return Wilderness. The PA is also based upon faulty assumptions as the two options appear to be based upon the flawed Clearwater Basin Collaborative. A report demonstrating the problems with that proposal is included in electronic form on the disk as Attachment 6, not the least of which is that the status quo is far larger as per the 1993 Lawsuit

Settlement Agreement, in terms of protected roadless management where, “such lands will be managed according to Forest Plan standards and guidelines for recommended wilderness (Management Area B2).”

Furthermore, the PA would provide inadequate protection to recommended wilderness. How does this comply with 36 CFR 219.10 and the Forest Service Manual at 1923.03? While the PA does propose to protect those areas from mechanized and motorized use—a good step—it fails to protect those areas from other actions equally incompatible with wilderness preservation and which “may reduce the wilderness potential of an area.” Those uses include the conversion of agency structures, no longer needed for administration, to lodges and cabins for use by outfitters and/or the general public. Examples include the cabins and other facilities at the Meadow Creek Guard Station complex.

Some errors in the PA undoubtedly tier from the *Nez Perce–Clearwater National Forests Forest Plan Assessment: 15.0 Designated Areas.* For example, page 15-11 of this assessment conflates the needed inventory, which has not yet occurred, with the Idaho Roadless Rule. Page 15-12 divides Cayuse and Weitas Creeks into two separate roadless areas; they are one area. And the assessment has already biased any evaluation of potential wilderness, based upon the Idaho Roadless Rule, which was not an exercise in wilderness evaluation or allocation. Does the agency intend to do the potential wilderness (roadless) assessment inventory required by the 2012 planning rule, or will the suggestion in the assessment that the 2006 effort and roadless rule were the inventory hold sway? Will the Idaho Roadless Rule predetermine the range of alternatives in the DEIS in terms of wilderness recommendation?

The newer rating systems discussed in the assessment are illogical and inconsistent with the Wilderness Act. (Pages 15-12 to 15-16.) For example, ratings suggest that recreation (primitive) is lesser in rough, trailless areas than in areas with high-standard trails, so such a wild area would receive a lesser rating. This is illogical. The needs analysis also does not adequately consider the importance of large contiguous blocks of wildland and roadless areas. We refer you to the final EIS on the Roadless Area Conservation Rule, which cites several scientific studies on the importance of roadless areas. While flawed, the older WARs ratings seem to have been more objective and did not discriminate against large roadless areas because they were near large Wildernesses. The DEIS should scrap the process(es) referenced in the assessment and come up with something grounded in the Wilderness Act, rather than based on issues like proximity to population centers or whether an area is near an existing Wilderness.

Friends of the Clearwater’s September 7, 2015 letter (roadless, both de facto and inventoried, and wilderness recommendation process) and February 28, 2018 letter on alternatives, which deals largely with this same topic, have internal footnotes, pagination, or graphics relevant to the points addressed. For sake of clarity, we have appended both letters at the end of this comment letter and incorporate them into this comment by reference. Unfortunately, few if any of the comments and questions we raised in those letters have been answered or addressed in the DEIS or DFP. This is another opportunity for you to address those topics and questions. We suggest you read those two letters now.

A few key points, though not all-inclusive, seem to be at the heart of most of problems in the DEIS and DFP regarding roadless areas and recommended wilderness. We will delve into these issues further though they are also addressed in our earlier comments. For purposes of this discussion, roadless areas include almost all of the inventoried roadless area acreage (except those portions areas that have been developed, addressed in these and previous comments) and the univentoried roadless areas or roadless expanse.

- The Forest Service has been arbitrary and capricious in what constitutes development of roadless areas. This also extends to how roadless areas (including areas with wilderness characteristics) are identified, or not in the case of the revision, and leads to the next bullet point.
- The Forest Service failed to follow its own directives in considering areas to recommend as wilderness. The most obvious error is the failure to do an inventory as prescribed by the planning rule and FSH 1909.12 Chapter 70. These errors are also addressed in site-specific area discussions.
- The Forest Service has refused to consider protection for areas such as in the current Clearwater National Forest Plan for C1, C6, and A3 management with the addition of prohibiting mechanized use. We addressed this also in context of layering protection and the inadequate protection offered by the Idaho Roadless Rule.
- The Forest Service has a completely inadequate range of alternatives regarding recommended wilderness and/or a protective administrative designation that would provide similar protection to recommended wilderness (e.g. non-mechanized and non-motorized). For example, the failure to consider updating the Idaho Roadless Rule as allowed in the rule itself in the revision process suggests an inadequate range of alternatives.
- The DEIS analysis has serious errors, inconsistencies, and omissions that could result in lessened protection for roadless area habitat. Perhaps the most telling is an incorrect no-action alternative.

The Forest Service has been arbitrary and capricious in what constitutes development of roadless areas

The DEIS states in the section about the Idaho Roadless Rule (IRR), “The 1970s processes for inventoried undeveloped areas typically exceeded 5,000 acres and met the minimum criteria for wilderness consideration under the Wilderness Act.” DEIS at 3.6.1-18. What does the FS believe are the minimum criteria for wilderness consideration? Similarly, the DEIS continues, “While a management allocation may allow activities, such as vegetation management in a roadless area, it does not require it.” Ibid. How does this fit in with the agency’s claim on site-specific analyses that logging must occur to meet the purpose and need and because the IRR allows it? “If such activities are proposed, they would need to be further evaluated in site-specific NEPA prior to approval and implementation.” Ibid. Is a CE sufficient to analyze roadless logging in light of the 9th Circuit Court’s rulings? In *National Audubon Society v. Lyons*, 46 F.3d 1437 (9th Cir. 1993) the court ruled:

The Audubon Society alleges the Forest Service completely ignored the roadless nature of the timber sales when it prepared the environmental assessments. In its defense, the Forest Service repeats its argument that, under the OWA, it was not required to consider the roadless nature of the four timber sales. We again reject this argument, and we agree with the district court that the decision to harvest timber on a previously undeveloped tract of land is "an irreversible and irretrievable decision" which could have "serious environmental consequences." See *California v. Block*, 690 F.2d 753, 763 (9th Cir. 1982).

National Audubon at 1448. Here the Ninth Circuit reaffirms that logging in roadless areas is irreversible and irretrievable. The courts and agency policy have decreed that roadless area logging is a major federal action requiring analysis of the impact on logging of the area's roadless values through EIS. *California v. Block, Smith v USFS, National Audubon v. Lyons, Tenakee Spring v. Block,* and *ICL v. Mumma* are only some of the decisions that reach this conclusion.

The attached paper from Friends of the Clearwater (Bilodeau and Macfarlane 2019) reveals Forest Service arbitrary behavior on what constitutes development of roadless areas. The DEIS and DFP engage in that same kind of doublespeak. On one had, the DFP does not commit to protecting areas recommended as Wilderness because of the permissions in the Idaho Roadless Rule. DFP Table 33 at 105 allows for logging and so-called temporary road building in recommended Wilderness, in spite of requirements in the planning rule to protect the areas.[52] Yet, the DEIS claims that all roadless areas would be protected, "Areas not recommended for wilderness through the forest planning process may still be considered for wilderness by Congress and would remain roadless areas under the new forest plan unless Congress designates them." DEIS at 3.6.1-18. This is a very deceptive slight of hand by using the word roadless without attaching to it the undeveloped nature of the landscape as per the definitions in the Idaho Roadless Rule, the Wilderness Act, and the Forest Service directives.

Aside from our roadless report, these inconsistencies are also evident in comparison analysis of NEPA documents done six years ago by a graduate student for Friends of the Clearwater (See Hirsh 2014). Recent agency proposals and actions also illustrate, inadvertently, this inconsistency. The Annie Rooney proposal by the Forest Service (attached) now claims a portion of the inventoried roadless area identified under the IRR does not have roadless characteristics. The following photo, taken from that document, show the arbitrary nature of this post hoc allegation when compared with the photos from the Orogrande timber sale, where the Forest Service claimed the roadless characteristics would not be harmed.

[52] See the statement on page 3.6.1-19 of the DEIS about Idaho Roadless Rule and the provisions for changing the classification of areas recommended as Wilderness. More on this is addressed in the discussion of alternatives in this section.

USFS Photo from Annie Rooney Briefing Paper

FOC File Photo of “roadless” area, including logging, post logging burning, and “temporary” road

Photo courtesy of Alpha 1 Photography

Yet the Forest Service claims the area covered by the above two photos was not affected by the recent logging. Friends of the Clearwater attended a field trip to look at this area with the Idaho Roadless Commission. It was the concurrence of all in attendance that the claim of no or little impact was inaccurate. More detail is provided in the site-specific discussion of this area (Gospel-Hump Additions).

There is further evidence the DEIS analysis and DFP are inconsistent regarding impacts to roadless areas. The DEIS recognizes logging activity that has taken place recently, DEIS at 3.6.1-21, leading the reader to conclude that the action may have removed roadless or wilderness attributes. See also DEIS at 3.6.1-28. Yet, the DEIS states, “No roadless areas are proposed to change from being roadless areas.” Ibid. That is made as if the classification is what makes a roadless area roadless rather than the area’s attributes. This defies common sense as well as the court’s finding in *Kettle Range Conservation Group v. Forest Service*.

The DEIS also fails at basic math. It states:

> The final environmental impact statement for the Idaho Roadless rule projected that 0.01 percent of the lands managed under the Idaho Roadless Rule would be affected by timber removal or road construction in the first 15-years. For the nearly 1,500,000 acres of roadless areas on the Nez Perce Clearwater, this would total 1,500 acres over the 15-year period, or approximately 100 acres per year (U. S. Department of Agriculture, 2008).

DEIS at 3.6.1-21. The figure 0.01 percent (1/10,000th) amounts to 150 acres, not 1500 acres. Regardless, the DEIS further recognizes the logged amount “is greater than the Idaho Roadless

Rule projection" though fire lines are included in that acreage, which may not disqualify an area from being considered for wilderness because they are not likely to be as significant as logging an they would be allowed under wilderness designation. Ibid. Simply put, the DEIS is not clear as to what portions of the IRR areas have lost attributes that would be consistent with wilderness designation because no inventory was conducted and because the agency has been arbitrary in what it considers roadless development.

The Forest Service failed to follow its own directives in considering areas to recommend as wilderness

The Forest Service failed to follow its own directives in considering areas to recommend as wilderness as required by the planning rule and FSH 1909.12 Chapter 70. The first step, inventory, was not done. Rather, the agency adopted the Idaho Roadless Rule areas without doing a new inventory.[53] How can the public have confidence in the integrity of the agency when it fails to follow its own process?

Again, we ask you to read our earlier letters, attached, which raise this same issue. The absence of an inventory, especially for areas the Forest Service recognizes as roadless (unroaded) that are contiguous to the Gospel-Hump Wilderness, is telling. The attached Little Slate and Clean Slate EISs show the documented unroaded areas contiguous to the Gospel-Hump Wilderness. Additionally, the areas that have been logged—specifically the portions of the West Fork Crooked River and Rackliff-Gedney—would no longer have the attributes of Wilderness and slight boundary adjustments would need to be made.

The substitution of the IRR with the required inventory process is at the heart of this problem. The IRR is a point in time identification over a decade old that recognized most, but not all, roadless areas in the state. It intentionally, erroneously, and inconsistently refused to recognize most (but not all) of the contiguous roadless land to the Gospel-Hump Wilderness. Other areas, in whole or part, discussed elsewhere, were also omitted. The inventory is supposed to take a fresh look, under the criteria in Chapter 70. The DEIS underestimates the impact to real roadless areas because the IRR does not include all of the roadless areas and because the DEIS assumes the IRR protects roadless attributes.

What the agency could have done was take the opportunity to update the Idaho Roadless Rule and/or make the DEIS consistent with Chapter 70 by following the Chapter 70 process, starting with an inventory, and then making changes to the Idaho Roadless rule based upon various alternatives that were analyzed when the final decision was made. Instead, the Forest Service chose the worst path, maintaining a fiction that the IRR areas and the Chapter 70 inventory process were one and the same.

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[53] The IRR for the Nez Perce and Clearwater National Forests was apparently based upon a draft inventory done for the 2006 revision process, as the maps seem to be consistent. See https://www.fs.usda.gov/detail/nezperceclearwater/landmanagement/planning/?cid=stelprdb5403192 and https://www.fs.usda.gov/detail/nezperceclearwater/landmanagement/planning/?cid=stelprdb5404024 though the individual maps seemed to have been purged. We have included those maps in a folder called 2006 forest plan revision roadless maps.

The Forest Service recognizes a larger unroaded expanse as demonstrated in the attached NEPA documents on the Nez Perce and Clearwater National Forests. That alone is reason the to do a new inventory.

In essence, the IRR was not an inventory under chapter 70 and can't be made to substitute for it. For better or worse, the agency chose to bifurcate the inventory/wilderness recommendation process from a process designed to ostensibly protect some, but not all, of areas previously identified roadless areas.

The Forest Service has refused to consider protection for areas such as in the current Clearwater National Forest Plan for C1, C6, and A3 management with the addition of prohibiting mechanized use

Other than recommended wilderness, and that does not apply to Alternative Z, roadless habitat receives no additional protection in the DFP/DEIS. The DEIS does not suggest any protective categories other than recommended wilderness. The existing forest plans, particularly the Clearwater National Forest Plan, have protection for significant roadless acreage. Such protective measures could have been done in conjunction with an update of the IRR and/or in addition to also recommending areas for Wilderness. Instead, the ROS inventory/allocation in the DEIS provides little protection for areas not recommended as Wilderness in spite of the confusing and misleading information contained in the charts about ROS, part of which is based upon a flawed no-action alternative. Areas would be turned over to motorized use. The habitat would be carved up into fragments, bisected by motorized routes in the summer and overlain by snowmobile use in the winter. Alternative Z provides no real protection for roadless areas, sacrificing recommended wilderness to winter motorized and summer mechanized use.

The Forest Service has a completely inadequate range of alternatives regarding recommended wilderness and/or a protective administrative designation that would provide similar protection to recommended wilderness (e.g. non-mechanized and non-motorized)

There is no alternative that recommends all of the IRR roadless areas as Wilderness yet, there is an option that recommends no additional Wilderness be designated.[54] The percentage of roadless land in the IRR that would recommend wilderness by the various alternatives is also skewed. Table 6 shows 1,481,565 acres of IRR areas. DEIS at 3.6.1-20. Table 18 lists the acreage recommended under each alternative. DEIS at 3.6.2-16. Looking at the percentage of IRR lands by alternative results in the following:

- No Action: 13%
- Alternative W: 58%
- Alternative X: 0%
- Alternative Y: 21%
- Alternative Z: 38%

[54] The Forest Service told us in meetings that all-wilderness option would be evaluated. It wasn't.

The range of alternatives itself is therefore seriously flawed and inadequate to meet NEPA requirements. The most generous wilderness option only recommends 58% the potential. The average for the action alternatives is only 29.5%, hardly an adequate range. One would expect 50% to be the average under an adequate range of alternatives. Both the Flathead and Custer Gallatin had alternatives that recommended all roadless areas or almost all of them as Wilderness. Both also did real inventories that expanded upon the inventoried roadless area base (attached). It should also be noted that the no-action alternative is misrepresented and that is discussed in the next subsection of this comment.

The DEIS misleads the public in describing what the alternatives do in terms of recommended wilderness. For example:

Alternative W

Resources and land allocation on the Nez Perce-Clearwater are not mutually exclusive. It may be possible to have high levels of timber harvest, sustain rural economies, recover listed fish and wildlife species, provide clean air and clean water, and provide habitat for viable populations of wildlife species all at the same time. For instance, areas evaluated for recommended wilderness are independent from most areas that provide for timber harvest due to the Idaho Roadless Rule. As such, it is possible to recommend all or nearly all Idaho Roadless Rule Areas for recommended wilderness and have a very high level of timber outputs. This thought process led to the idea of a "have it most" alternative. This alternative has higher levels of recommended wilderness coupled with a higher timber output and a faster rate of movement towards forest vegetation desired conditions. Forest vegetation desired conditions would be minimally met within thirty years. Areas not selected as recommended wilderness allow for motorized use, including in the roadless areas. Wild and Scenic Rivers stem from a collaborative approach that looks at rivers outside the wilderness. The intent is to couple items that may otherwise be viewed as being mutually exclusive.

DEIS at 2-12. However, Alternative W does not "recommend all or nearly all Idaho Roadless Rule Areas for recommended wilderness" as alleged. Only 58% of the acreage, hardly all, and only 10 of the 34 roadless areas are proposed.

Another, perhaps more egregious, example of agency dissembling is the following:

All Idaho Roadless Areas as non-motorized

Groups requested that an alternative be considered that assigns non-motorized classifications to all Idaho Roadless Rule Areas, or all Recommended Wilderness Areas. Alternatives W and Y do manage all recommended wilderness as non-motorized. However, managing all the Idaho Roadless Areas as non-motorized would preclude valid and existing multiple uses from occurring on the Forest and is thus inconsistent with law, regulations and policy. Idaho Roadless Areas will continue to be managed under the Idaho Roadless Rule, which supersedes the forest plan, in all alternatives.

DEIS at 2-17. That statement about the inability to close all roadless areas to motorized use (recreation) is patently false. The executive orders on off-road vehicles require that impacts be minimized. The Forest Service has not made a decision on the Nez Perce travel plan so the agency can't declare that any roadless areas should be open (or closed) to motorized use. The Clearwater National Forest Travel Plan was found deficient in a court of law, including on the grounds the agency didn't demonstrate that it minimized impacts from off-road vehicles (see *Friends of the Clearwater v. United States Forest Service* Case No. 3:13-CV-00515-EJL). What valid uses would be precluded from closing all roadless areas to motorized or mechanized use? Are there no trails that are motorized and/or mechanized outside of roadless areas on the Nez Perce and Clearwater National Forests? Are there no areas to ride snowmobiles outside of roadless areas? Why can't all inventoried roadless areas be protected if the agency, via the various roadless rules, can ostensibly protect areas from logging? (See Final EIS for the 2001 Roadless Rule). Why does the draft Custer-Gallatin forest plan have an alternative that protects all roadless areas as recommended Wilderness but not the draft forest plan for the Nez Perce – Clearwater National Forests?

Even prime wilderness candidates like the additions to the Selway-Bitterroot Wilderness--Lochsa Slope and Rackliff-Gedney, both of which are over 50,000 acres in size—and the Cove-Mallard additions to the Frank Church-River of No Return Wilderness are excluded under every single alternative. Other areas, like Weitas Creek, arguably the prime wilderness candidate on the two national forests, is only recommended under one alternative. That is not an adequate range of alternatives.

When looking at the ROS "allocations" a similar problem occurs. Except for Z, which doesn't protect recommended wilderness from motorized (winter) or mechanized intrusion, only the areas recommended as Wilderness provide for this kind of protection in any meaningful way--contiguous large blocks of land free from motorized and mechanized use.

No alternative recommends amending the IRR. There is a suggestion that the Forest Service might, at a later date do this. But, it would be easiest to do this at this stage, as an EIS/45-day comment period is required to make such changes to the IRR. We go into more detail on this issue in the next two paragraphs immediately below, but also in the next subheading.

The DEIS at 3.6.1-28 leads one to believe that the so-called community protection zone (CPZ), a number inconsistently reported in the DEIS and DFP, could see the most intense damage to roadless values, but that damage is not quantified. The CPZ itself is not based upon the best available science that shows structure and community protection is only effective within 40 meters of structures and that anything beyond that is wasted (Cohen 1999). There is no alternative to amend the CPA in the IRR.[55]

Indeed, the confluence between the IRR and the planning rule present a challenging policy question. The agency seems unwilling to objectively consider any area not in the IRR's wildland recreation theme for recommended wilderness, with the possible exception of Meadow Creek's eastern half, which is in the primitive theme. Coupling the failure to do an inventory with the extant IRR suggests the decision has already effectively been made and the narrow parameters revolve around alternative Y. This further suggests the roadless rule is the surrogate for the inventory and the wild land recreation theme is the surrogate for the areas that are recommended for Wilderness. In other words, the wilderness recommendation process is a farce as the decision has already been made by the agency in violation of NEPA and the planning rule.

[55] In any case, the CPZ does not correspond to the 2008 IRR map. Rather, the IRR map identified overly large swaths, in which the CPZ would be found, but it didn't intend that all of the acreage would be the CPZ.

The DEIS analysis has serious errors, inconsistencies, and omissions that could result in lessened protection for roadless area habitat.

The no-action alternative is improperly identified. Rather than basing it on the 1993 Lawsuit Settlement Agreement for the Clearwater National Forest Plan, it is based upon the Forest Plan prior to the agreement. That agreement states:

The Forest Service agrees, effective immediately, not to approve any timber sale or road construction project decisions within the area covered by the proposed 'Idaho Wilderness, Sustainable Forest and Communities Act of 1993,' H.R. 1570 and that **such lands will be managed according to Forest Plan standards and guidelines for recommended wilderness (Management Area B2**). The Forest Service further agrees to apply these management prescriptions to any area(s) added by amendment to H.R. 1570, and to any area(s) included in any other Idaho wilderness proposal introduced in Congress by any member of the Idaho delegation.

Emphasis added. There are no exceptions. Even the Forest Service recognizes the areas will be so managed in the BHROWS document (attached). Thus, the no-action alternative should have reflected the Clearwater National Forest Plan Lawsuit Settlement Agreement by including all the settlement agreement areas as recommended wilderness.

This is not the only area where the no-action alternative is incorrectly represented. The ROS maps as do not reflect the original Forest Plan, the lawsuit settlement agreement, or the decision in *Friends of the Clearwater v. United States Forest Service* Case No. 3:13-CV-00515-EJL. In the latter case, the FS has not complied with the court's order to fix the problems in the travel plan as they relate to 100% elk habitat effectiveness and minimizing impacts. The attached documents in the roadless folder deal with these issues.

Throughout the DEIS, there are assumptions that the Idaho Roadless Rule would protect areas. For example, page 3.2.3.2-46 states logging is only allowed for restoration purposes. The list of allowable logging exemptions is long and not just for so-called restoration, as pointed out elsewhere in the document.[56] Two other points about roadless logging are instructive. It stretches credulity, given that the roadless/ wilderness attributes expressed in the IRR, 2001 Roadless Rule, and the Wilderness Act are nearly identical, that logging could ever help roadless character. The idea that logging is restoration in a Wilderness or roadless context is contradictory to what the Forest Service claimed in the Johnson Bar roadless analysis. Second, and similarly, it doesn't matter the purpose behind roadless logging. The impacts on the character of the area will be the same.

There is also contradictory messaging about whether the IRR permissions would be changed. The statement, "Identification of recommended wilderness would convert some lands into more restricted Idaho Roadless Rule area themes," indicates the change would be automatic. (DEIS at 3.2.3.2-38). DEIS at 3.2.3.2-14 states, "the Nez Perce-Clearwater will make a recommendation to the Chief of the Forest Service recommending a change in Roadless Rule theme to the Wildland Recreation theme for any areas identified as recommended wilderness," which is not an automatic change. (See also DEIS 3.2.3.3 – 48). DFP Table 33 at 105 indicates logging can occur in recommended Wilderness, suggesting that roadless themes won't be changed. DEIS

[56] It should also be noted that the Forest Service, in the various purpose and needs for non-roadless timber sales uses language similar to the exemptions in the Idaho Roadless Rule.

page 3.6.1-22 states regarding all action alternatives, “no roadless area themes will be changed under the new forest plan.”

If those contradictions are not enough, the DEIS is vague and opaque in its analysis with statements like, “The Idaho Roadless Rule does not discuss all of the activities that may affect other designations and is less potentially restrictive than the other designation. In cases where multiple management areas are present, the Idaho Roadless Rule direction will stand in conjunction with the other management area restrictions.” What does that mean?

To probe a bit deeper into the issue of what the DEIS and DFP actually mean, it is instructive to look at a NEPA document dealing with roadless logging. The Orogrande EA at page 281 it states “ The no action alternative is consistent with the Idaho Roadless Rule, because this alternative does not propose any new activities.” Therefore *not* logging an area is consistent with Idaho Roadless Rule. Does that mean that additional protections could be added in the forest plan that would prohibit logging in some or all of the roadless areas with the Primitive or Backcountry themes? If not, why not? Not logging is consistent with the IRR, according to the Forest Service.

The DEIS and DFP complicate the issue further by making in difficult to evaluate between alternatives becaseu the protection offered recommended Wilderness is different under each alternative. DEIS at 3.6.2-4 to 3.6.2-13. See also the DFP, Table 5 at 2-20. However, when looking at the DEIS for other topics, the DEIS doesn’t consider the differences in allowing motorized and mechanized uses under the various alternatives. For example, allowing mechanized (year-round) and motorized (winter) use as alternative Z for all recommended Wildernesses (indeed, all roadless areas), could have a significant negative impact on grizzly recovery. Mountain bikes and grizzlies don’t mix. (See attached article and citations within).

These differences also raise other questions. Could the Forest Service mix alternatives for a final decision? For example, Pot Mountain and the most (not all) of the western portion of Meadow Creek are only recommended in alternative Z, which allows for motorized and mechanized use in recommended Wilderness. Could the management standards for alternative Y be adopted for recommended Wilderness with the addition of areas not in alternative Y?

The analysis makes some biased allegations:

> This alternative and Alternative Y would result in the most changes to wheeled motorized use, mechanized transport, and motorized over-snow vehicle use opportunities on the Nez Perce-Clearwater. Displacement of both wheeled and over-snow motorized vehicles and mechanized transport on the Nez Perce-Clearwater would occur if a site-specific decision is completed that prohibits these uses in recommended wilderness. Should these closures occur, use might become concentrated in areas that remain suitable for motorized wheeled and motorized over-snow vehicle, causing some users to have negative experiences or go elsewhere to an off-forest location or to other lands open to motorized use and mechanized transport.

DEIS at 3.6.2-6. Where is the concern for the wildlife affected by the motorization and mechanization? Where is the concern for those who have been displaced by motorized and mechanized use. Could the great increase in Wilderness use be due to Forest Service negligence in allowing creeping motorization and mechanization in places where that use was rare to nonexistent in past years, all in violation of the Clearwater National Forest Plan and the Judge Lodge’s decision?

Bias is further evident in the following:

> This plan component complies with designation of lands under the Idaho Roadless Rule. The component is unlikely to allow for achievement of desired conditions for forest vegetation. The current forest conditions are not functioning under the natural range of variation and can be expected to continue to experience unnatural wildland fire events and insect outbreaks.

DEIS at 3.2.1.1-84. Aside from the fact that the best science shows the allegation of unnatural wildlife fire events and insect outbreaks to be false (see our discussion on Fire Ecology), the fact that no desired condition was contemplated to allow roadless areas to operate under natural processes shows how subjective the analysis is in the DEIS, in violation of NEPA. This statement is also contradicted elsewhere in the DEIS.

The Roadless Appendix folder sent via US Mail contains the attachments to this general section, a site-specific discussion of the roadless areas, and supporting materials to that discussion.

POST-FIRE LOGGING

"If we want our land-use decisions to be based, at least in part, on whether a proposed activity affects the ecological integrity of our forest systems, burned forests should be the LAST, rather than the first places we should be going for our wood."

—Richard Hutto, biologist, University of Montana.

The DEIS states, "The term *salvage* indicates that trees being removed were killed by natural disturbance, most commonly wildfire or insects, with one purpose of the treatment being to capture their economic value." This notion of "salvage" denotes saving something from going to waste. For the Forest Service to consider trees killed or otherwise affected, directly or indirectly, by the natural process of wildland fire—a process that is vital in sustaining the ecosystem and its interwoven components—to be "wasted" if not logged contradicts agency claims to be sustaining ecosystems. The entire notion of "salvage" as it pertains to forest management is propaganda—a way to mislead the public into swallowing industrially imposed damage under the guise of stewardship. Furthermore, managers are responding to timber industry-created social expectations and playing politics with our public forests. Investing money into harmful post-fire logging projects (instead of proposing genuine restoration to deal with the legacy of past mismanagement seen all over the roaded portion of the NPCNF) will waste taxpayer dollars. The management perspective underlying the DFP is hostile towards the naturally functioning ecosystem's co-evolution with fire, towards those who advocate for managing in harmony with natural processes, and towards anyone who believes government should be run with fiscal responsibility.

Plan element(s)

Desired Condition FW-DC-TBR-03 is "In areas suitable for timber harvest, dead or dying trees in excess of trees needed for snags and snag recruitment are available for salvage (see MA3-GDL-FOR-05 for requirements)."

Translation: The Forest Service wants to maximize the production of timber.

Given all the other logging-centric direction in the DFP, need this be stated at all?

Also, we see nothing in the DFP specifically prohibits salvage in areas unsuitable for timber.

Standard FW-STD-TBR-07 states "FW-STD-TBR-05 and FW-STD-TBR-06 shall not apply to the size of salvage harvest openings created as a result of stand replacing or stand initiating natural disturbances."

Translation: The Forest Service REALLY wants to maximize the production of timber. How is this "standard" a "mandatory constraint" on anything?

Standard FW-STD-TBR-11 states "…Salvage and/or sanitation harvest of trees substantially damaged by fire, windthrow, or other catastrophe or in imminent danger from insect or disease attack may be harvested over and above the sustained yield limit."

Translation: The Forest Service REALLY, REALLY wants to maximize the production of timber. How is this "standard" a "mandatory constraint" on anything?

Summary of best available scientific information on the ecological benefits of fire and the damage caused by post-fire logging.

The DFP and DEIS fail to recognize or acknowledge the huge volume of scientific information on the ecological damage caused by logging on post-fire forest landscapes. The DEIS states, "salvage cutting following fire is a controversial management approach." Ignoring best available scientific information only fans the flames of controversy.

The Center for Biological Diversity and John Muir Project (2014) explain:

Burned forests are not dead zones, but rather teem with life. The reflex reaction to log after forest fires directly contradicts decades of scientific research showing both the immense ecological importance of post-fire landscapes and the significant harm that can occur when such areas are logged. Forest fires like the Rim fire are essential to maintain biological diversity in the Sierra's ecosystems, and burned and dead trees provide critical habitat to numerous wildlife species. Of course, a legitimate public-safety exception is warranted to protect the public from falling trees in heavily traveled corridors.

This report analyzes the Rim fire in relation to the relevant biological science and recommends: **Rather than industrial scale salvage logging, post-fire management should focus on activities that benefit forest health, water quality and the many species that depend upon fire for their very existence.** (Emphasis in the original.)

Numerous studies document the cumulative impacts of post-fire logging on natural ecosystems, which led 250 scientists concerned about post-fire logging to transmit their concerns to Congress. In their open letter to members of Congress (Scientists Post-fire Letter, 2013), the scientists state:

> (N)umerous scientific studies tell us that even in patches where forest fires burned most intensely the resulting post-fire community is one of the most ecologically important and biodiverse habitat types in western conifer forests. …Post-fire conditions serve as a refuge for rare and imperiled wildlife that depend upon the unique habitat features created by intense fire. … Moreover, it is the least protected of all forest habitat types and is often as

> rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging practices.

> Numerous studies document the cumulative impacts of post-fire logging on natural ecosystems, including the elimination of bird species that are most dependent on such conditions, compaction of soils, elimination of biological legacies (snags and down logs) that are essential in supporting new forest growth, spread of invasive species, accumulation of logging slash that can add to future fire risks, increased mortality of conifer seedlings and other important re-establishing vegetation (from logs dragged uphill in logging operations), and increased chronic sedimentation in streams due to the extensive road network and runoff from logging operations. 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 the nation's public lands.

> Moreover, it is the least protected of all forest habitat types and is often as rare, or rarer, than old-growth forest, due to damaging forest practices encouraged by post-fire logging practices.

A similar letter was sent to U.S. Senators and President Obama by 264 scientists in September 2015 (Scientists Post-fire Letter, 2013).

Hutto (1995) states, "Fire (and its aftermath) should be seen for what it is: a natural process that creates and maintains much of the variety and biological diversity of the Northern Rockies." Hutto (1995) further notes:

> Fire is such an important creator of the ecological variety in Rocky Mountain landscapes that the conservation of biological diversity [required by NFMA] is likely to be accomplished only through the conservation of fire as a process…Efforts to meet legal mandates to maintain biodiversity should, therefore, be directed toward maintaining processes like fire, which create the variety of vegetative cover types upon which the great variety of wildlife species depend.

> Unfortunately, we are not currently managing the land to maintain the kind of early successional seral stages that follow stand-replacement fires and, hence, many fire-dependent plant and animal species. . . . Most of the forested landscape in the northern Rockies evolved under a regime of high-intensity, large fires every 50-100 years, not under a regime of low-intensity, frequent understory burns.

> Indeed, stand-replacing crown fires are part of the fire regime that creates the biodiversity which the agency is required by law to insure. Put bluntly, there is a kind of ignorance, bordering on mass hysteria, that needs to be addressed in today's political climate, which sees all wildland fire as bad and all burned forests as wasted resources, a view which is every bit as dangerous (and actually quite consistent with) the now acknowledged agency ignorance that favored suppression of wildfires at all costs for many decades.

DellaSala and Hanson (2015) state:

> Along with the surge in scientific investigation into historical fire regimes over the past 10-15 years has come enhanced understanding of the naturalness and ecological importance of

> mixed- and high-severity fire in many forest and shrub ecosystems. Contrary to the historical assumption that higher-severity fire is inherently unnatural and ecologically damaging, mounting evidence suggests otherwise. Ecologists now conclude that in vegetation types with mixed- and high-severity fire regimes, fire-mediated age-class diversity is essential to the full complement of native biodiversity and fosters ecological resilience and integrity in montane forests of North America (Hutto, 1995, 2008; Swanson et al., 2011; Bond et al., 2012; Williams and Baker, 2012a; DellaSala et al., 2014). Ecological resilience is essentially the opposite of "engineering resilience," which pertains to the suppression of natural disturbance to achieve stasis and control of resources (Thompson et al., 2009). Ecological resilience is the ability to ultimately return to predisturbance vegetation types after a natural disturbance, including higher- severity fire. This sort of dynamic equilibrium, where a varied spectrum of succession stages is present across the larger landscape, tends to maintain the full complement of native biodiversity on the landscape (Thompson et al., 2009).
>
> …As discussed above, in mixed-severity fire regimes, higher-severity fire occurs as patches in a mosaic of fire effects (Williams and Baker, 2012a; Baker, 2014). In conifer forests of North America, higher-severity fire patches create a habitat type, known as complex early seral forest (DellaSala et al., 2014), that supports levels of native biodiversity, species richness, and wildlife abundance that are generally comparable to, or even higher than, those in unburned old forest (Raphael et al., 1987; Hutto, 1995; Schieck and Song, 2006; Haney et al., 2008; Donato et al., 2009; Burnett et al., 2010; Malison and Baxter, 2010; Sestrich et al., 2011; Swanson et al., 2011; DellaSala et al., 2014). Many rare, imperiled, and declining wildlife species depend on this habitat (Hutto, 1995, 2008; Kotliar et al., 2002; Conway and Kirkpatrick, 2007; Hanson and North, 2008; Bond et al., 2009; Buchalski et al., 2013; Hanson, 2013, 2014; Rota, 2013; Siegel et al., 2013; DellaSala et al., 2014; Baker, 2015; see also Chapters 2–6). The scientific literature reveals the naturalness and ecological importance of multiple age classes and successional stages following higher-severity fire, as well as the common and typical occurrence of natural forest regeneration after such fire (Shatford et al., 2007; Donato et al., 2009; Crotteau et al., 2013; Cocking et al., 2014; Odion et al., 2014). These and other studies suggest that mixed-severity fire, including higher-severity fire patches, is part of the intrinsic ecology of these forests and has been shaping fire- dependent biodiversity and diverse landscapes for millennia.

The black-backed woodpecker is a sensitive species. Cherry (1997) states:

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

USDA Forest Service (2000a) also finds that the removal of dead trees associated with post-fire logging has the potential for significantly changing wildlife habitat both structurally, through removing existing and future snags and large woody material, and functionally, by means such as reducing populations of insect prey. The majority of studies reviewed by USDA Forest Service (2000a) observed substantial adverse habitat impacts associated with post-fire logging. They note that habitat modification associated with salvage logging may particularly impact cavity nesting birds, and that aspects of a post-fire forest provide desirable habitat resources:

> In four recent independent studies conducted in the intermountain West, post-fire logging caused significant changes in abundance and nest density of cavity-nesting birds, although the effect differed somewhat by location (Caton 1996, Hejl and McFadzen 1998, Hitchcox 1996, Saab and Dudley 1998). Most cavity-nesters showed consistent patterns of decrease after logging, including the mountain bluebird and the black-backed, hairy, and three-toed woodpeckers; abundance of the Lewis' wood-pecker increased after logging.
>
> Several authors point out that on a landscape scale, wildfire creates patches of highly attractive habitat for a distinct array of species (Hutto 1995). To maintain healthy metapopulations of these species over the landscape, post-fire patches should be managed with great care (Caton 1996, Hejl and McFadzen 1998, Hitchcox 1996, Saab and Dudley 1998).

Many adverse consequences to soil, ecological processes, wildlife, and other elements of the natural environment are associated with logging, including thinning. 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.)

Considering that these forests have evolved with fire and thus regenerate successfully following fire, "salvage" logging can only disrupt the natural process of regeneration. The scientific understanding of post-fire forest regeneration and potential for major impacts of salvage actions on sensitive post-fire ecosystems suggests that a carefully contemplated rather than a hasty response is essential for seeing that the highest priority—restoration—will be accomplished. Lindenmayer, et al. (2004) note a whole host of ecosystem damaging aspects of post-fire logging:

> Natural disturbances and the biological legacies produced by them are often poorly understood by policy-makers and natural-resource managers. …(N)atural disturbances are key ecosystem processes rather than ecological disasters that require human repair.
>
> …Major disturbances also can aid ecosystem restoration by recreating some of the structural complexity and landscape heterogeneity lost through previous intense management of natural resources. … Salvage harvesting activities undermine many of the ecosystem benefits of major disturbances. …
>
> (S)alvage harvesting removes critical habitat for species, such as cavity-nesting mammals, woodpeckers, invertebrates like highly specialized beetle taxa that depend on burned wood, and bryoflora closely associated with recently charred logs. …(S)alvage logging can impair ecosystem recovery. …(S)ome taxa may be maladapted to the interactive effects of two disturbance events in rapid succession.

Noss and Lindenmayer (2006) state:

> . . . available evidence points to often severe and long-lasting negative effects of post-disturbance logging on a wide variety of ecosystems and their biota. To log what is often the most biologically diverse and threatened forest condition in the landscape is fundamentally irrational.

Beschta et al. (1995) found:

> There is no ecological need for immediate intervention on the post-fire landscape. 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. Ecologically speaking, fires do not require a rapid human response. We should not talk about a "fire crisis" but rather of managing the landscape with the anticipation that fire will eventually occur. Given the high degree of variability and high uncertainty about the impacts of post-fire responses, a conservative approach is warranted, particularly on sites susceptible to on-site erosion. Although our current understanding of the ecological effects of postfire logging is incomplete, what we do know suggests that such logging can and often has resulted in significant damage to soils, streams and wildlife by: eliminating or significantly reducing large, dead standing trees critical for many wildlife species; damaging the soil through increased soil erosion and compaction; creating warmer, drier microclimate conditions (thereby increasing fire danger); simplifying forest structure; removing important sources of nutrients and organic material (potentially reducing long-term productivity); and, encouraging the spread of noxious weeds into burned areas. In short, post-fire logging reduces important components of the forest ecosystem, and tends to further exacerbate stresses caused by the initial disturbance event.

Beschta et al. (1995) question the ecological justifications of post-fire logging stating that while "there is little reason to believe that post-fire salvage logging has any positive ecological benefits… there is considerable evidence that persistent, significant adverse environmental impacts are likely to result from salvage logging, based on many past cases of salvage projects."

There is also no scientific support that post-fire logging is needed to reduce risk of future fires. Beschta et al. (1995) state they "…are aware of no evidence supporting the contention that leaving large dead wood material significantly increases the probability of reburn." Additionally USDA Forest Service (2000a) states, "no studies have specifically looked at how postfire logging alters the size distribution of fuel and the concomitant changes in future fire risk."

In a response to Beschta et al. (1995) commissioned by R-6 Regional Forester John Lowe, Everett (1995) conceded that there was "little to no evidence" that post-fire salvage removal of trees limits the intensity of future fires." He also found no support for frequent claims by salvage proposals that post-fire logging results in no more environmental damage than green harvest. The Forest Service recently addressed this discussion by reviewing the results of 21 studies of postfire logging (USDA Forest Service, 2000a). We note a general finding, "we know enough about both logging activity and structural change to recommend caution" in post-fire salvage operations.

Evidence that logging can affect vegetative production in the absence of significant ground disturbance was collected by Sexton (1998) in a study in central Oregon in post-fire ponderosa pine stands, logged over snow. Sexton found that biomass of vegetation produced 1 and 2 years after post-fire logging was 38 percent and 27 percent of that produced in post-fire unlogged stands. He also found that post-fire logging decreased canopy cover, increased exotic plant species, increased graminoid cover, and reduced overall plant species richness. Pine seedlings grew 17 percent taller on unlogged sites in this short-term study.

Ground based winter logging may not be effective mitigation for soil impacts and may impede re-establishment of vegetation and soil cover on the burned area. (USDA Forest Service, 2000a.)

Research suggests that post-fire succession occurs best in the absence of logging and that logging pushes conditions in an artificial trajectory (Donato et al. 2006). Riggers, et al. (2001):

> . . . emphasize the importance of wildfire, including large-scale, intense wildfire, in creating and maintaining stream systems and stream habitat. In western Montana, the two primary natural disturbance mechanisms responsible for initiating stream dynamics that ultimately increase habitat complexity and diversity are fires and floods. In the short-term, fires trigger other processes, such as erosion and woody debris recruitment, which are critical in the formation of young, biologically rich stream systems. Over longer time periods, fires recycle nutrients, regulate forest development and biomass, and maintain biological pathways (Keane, et al. 1999). The effect of fire on these processes is ultimately transferred to stream channels. Fires, and the ecological processes associated with them, are thus an integral part of maintaining our native fish populations.
>
> . . . Post-fire activities such as (salvage logging) that increase the probability of chronic sediment inputs to aquatic systems pose far greater threats to both salmonid and amphibian populations and aquatic ecosystem integrity than do fires and other natural events that may be associated with undesired forest stand condition (Frissell and Bayles 1996).

Other research reports similar findings. DellaSala et al. 2006 state:

> Recent controversy concerning post-fire logging in Oregon is emblematic of the problems of "salvage logging" globally. Although tree regeneration after disturbances in forested areas is important, a narrow view of this issue ignores important ecological lessons, especially the role of disturbances in diversifying and rejuvenating landscapes. Scientific advances in recent decades demonstrate that disturbances are not catastrophes, trees in these landscapes are not wasted if they are not harvested, and post-fire logging is not forest restoration. (Disturbances) create and sustain the structure and composition of forests; disturbed areas also support species that are rare or absent from closed-canopy forests, including many that are restricted to recently burned areas.
>
> . . . When viewed through an ecological lens, a recently disturbed landscape is not just a collection of dead trees, but a unique and biologically rich environment that also contains many of the building blocks for the rich forest that will follow the disturbance.
>
> . . . Ecological damage caused by post-disturbance logging may outweigh short-term economic benefits. If conducted improperly, timber harvest of any kind damages soils and below-ground processes, spreads invasive species, increases sediment delivery to streams and destroys or degrades key environments for terrestrial and aquatic species. With post-disturbance logging, however, these impacts occur when forest recovery is most vulnerable to the effects of additional especially anthropogenic, disturbances, creating cumulative effects not associated with logging in undisturbed forests. Such effects can extend for a century or more, because of the removal of long-persisting and functioning biological legacies. Moreover, a focus on post-disturbance logging will divert the attention of forest managers from conducting legitimate fuels reduction in fire-prone areas by, thinning overly stocked trees and undergrowth…

Karr et al. (2004) in an evaluation of the effects of post-fire salvage logging on aquatic ecosystems provides the following background:

> Throughout the American West, a century of road building, logging, grazing, and other human activities has degraded stream environments, causing significant losses of aquatic biodiversity and severe contractions in the range and abundance of sensitive aquatic species, including native salmonid fishes (Reiman et al. 2003). Compounding these problems, federal land management has worsened ecological degradation, rather than conserving or restoring forest ecosystems (Leopold 1937, Langston 1995, Hirt 1996). Land managers' focus on commodity extraction sharpened by recent changes in forest policy, regulations, and laws that encourage salvage logging after fires perpetuates this trend and its harmful impacts.

Karr et al. (2004) also state, "Although often done in the name of postfire restoration, salvage logging typically delays or prevents natural recovery in several important ways (Beschta et al. 1995, 2004, Lindenmayer et al. 2004)." Noss et al. (2006) also shows the problem with post-fire logging. Beschta, et al. (2004) state: "Forest ecosystems in the western United States evolved over many millennia in response to disturbances such as wildfires. …Forest ecosystems area especially vulnerable to postfire management practices because such practices may influence forest dynamics and aquatic systems for decades to centuries." The plethora of information strongly implicates post-fire logging as ecologically detrimental.

Fire is a natural and essential component of forest ecosystems and the presence of fire indicates high degrees of ecosystem function. Beschta et al. (1995) state, "Land managers should be managing for the naturally evolving ecosystems, rather than perpetuating artificial ones we have attempted to create."

Post-fire forests are extremely susceptible to erosion. While roads have extremely detrimental impacts on unburned forests (through changing water flow patterns, increasing erosion, and influencing wildlife habitat and migration), their impacts are greatly intensified on burned landscapes.

The Johnson Bar Fire Salvage Final EIS (Nez Perce/Clearwater National Forests, 2016) states:

> Haul roads can be a source of sediment to project area streams, particularly where there are existing sediment delivery points (roadside ditches leading to stream channels). Increased heavy-truck traffic related to log hauling can increase rutting and displacement of road-bed material, creating conditions conducive to higher sediment delivery rates (Reid and Dunne, 1984).

Roads often have devastating impacts on water quality and fish habitat by increasing landslides, erosion, and siltation of streams. Roads also fragment forests and degrade or eliminate habitat for species that depend on remote landscapes, such as bears, wolves, and other large, wide-ranging predators (Trombulak and Frissell 2000).

USDA Forest Service (2000a) cite several studies that find that "post-fire logging associated with road building, conducted with ground-based log retrieval systems, or undertaken in stands having steep slopes and sensitive soils likely will have the greatest potential for exacerbating the erosion problems typically observed in burned watersheds."

Old-growth forests feature valuable habitat characteristics because of the diversity found only in old growth. Even after a disturbance such as severe fire, these stands retain important habitat characteristics found nowhere else.

In 2015, Dr. Jerry Franklin wrote a letter to the Forest Service concerning a post-fire project proposed for Late Successional Reserves (LSRs) in a national forest covered under the Northwest Forest Plan (NWFP). Dr. Franklin was a principle scientist that assisted the Forest Service in creation of the NWFP as a member of the Forest Ecosystem Management Assessment Team (1993). His letter stated, "Given the important and well defined ecological role assigned the LSRs in the ...(NWFP) I have paid special attention to the scientific rationale offered for the extensive salvage logging that is proposed in LSRs." His specific comments (Franklin, 2015) include:

> Salvage logging of large snags and down boles does not contribute to recovery of late-successional forest habitat; in fact, the only activity more antithetical to the recovery processes would be removal of surviving green trees from burned sites. Large snags and logs of decay resistant species, such as Douglas-fir and cedars, are particularly critical as early and late successional wildlife habitat as well as for sustaining key ecological processes associated with nutrient, hydrologic, and energy cycles.
>
> Stand-replacement fires provide large pulses of coarse woody debris (CWD) including snags and logs, which lifeboat dependent species and processes until the regenerating forest begins to produce large and decay-resistant dead wood structures, which is typically not for a century or more. Since this pulse provides all of the large CWD that is going to be available to the ecosystem for at least the next 100 to 150 years, it is not appropriate to use the levels of CWD found in mature and old stands of a particular Plant Association Group (PAG) as a guide to levels of CWD that should be retained after salvage. Effectively none of the large snags and logs of decay-resistant species can be viewed as being in excess of what is needed to assist in natural recovery to late-successional forest conditions and, hence, appropriate for salvage on land allocations where ecological objectives are primary, such as LSRs. Retention of large snags and logs are specifically relevant to Northern Spotted Owl (NSO) since these structures provide the habitat that sustain most of the owl's forest-based prey species.
>
> Large snags and logs are the most important surviving structural elements or biological legacies of a forest disturbance (Franklin et al. 2002), excepting only surviving large live trees. Importance, in this case, refers to the roles of these structures in:
>
> (1) Providing essential habitat for an immense array of species;
>
> (2) Maintaining important ecosystem functions; and
>
> (3) Structurally enriching the young forest stands, making it possible for mid- and late-successional species to re-colonize the stand much earlier in its chronological development than would otherwise be the case (Franklin et al. 1987).
>
> (Large snags and down wood) ...structures provide habitat for early as well as late successional species and sustain many important ecosystem processes (e.g., Harmon et al. 1986). ...(L)arge Douglas-fir logs continue to fulfill important ecological functions, such as

> habitat for small mammals and salamanders, for 200 to 250 years after their death. Cedar snags can persist for at least as long as 1½ centuries and as logs for over twice that long.
>
> The massive input of large dead wood is characteristic and critical to stand development processes and the ultimate provision of habitat for late-successional species following stand replacement fires (Maser et al., 1988; Franklin et al. 2002). As noted, these wood structures may persist and play functional roles for several centuries, particularly in the case of decay resistant species. Large pines may also persist as snags for several decades and additional periods as logs on the forest floor. In fact, the entire recovering forest ecosystem will depend upon this pulse of CWD until it reaches a point in its development where the new stand begins to generate snags and logs of comparable size and heartwood content—generally between 100 and 200 years (Maser et al., 1988; Franklin et al. 2002).
>
> Consequently, basing snag and CWD retention following salvage on levels of these structures found in existing mature and old forests is not appropriate; *all of this initial pulse of wood is needed to reach those levels one to two centuries from now!* Indeed, the use of mature forests as a standard for CWD is particularly inappropriate since this is the period when CWD levels are at their lowest level during the entire *natural* developmental sequence from stand-replacement fire to old growth.

Jones and Grant (1996) describe the relationship of roads and clearcutting:

> The addition of roads to clear-cutting in small basins produced a quite different hydrologic response than clear-cutting alone, leading to significant increases in all sizes of peak discharges in all seasons, and especially prolonged increases in peak discharges of winter events. These results support the hypothesis that roads interact positively with clear-cutting to modify water flow paths and speed the delivery of water to channels during storm events, producing much greater changes in peak discharges than either clear-cutting or roads alone. Roads alone appear to advance the time of peak discharges and increase them slightly. Road surfaces, cutbanks, and ditches, and culverts all can convert subsurface flow paths to surface flow paths (Harret al., 1975; King and Tennyson, 1984; Wemple, 1994; Wright et al., 1990). Reid (1991) and Reid and Dunne (1984) estimated discharges from culvert outfalls in western Washington and associated them with runoff from road surfaces.

Post-fire logging and pre-fire thinning reduce on-site carbon storage by removing tree boles from the forest as logs. Research finds that tree boles, even in severely burned forests, account for less than 5% of the carbon released during fire, which consumes primarily needles and surface fuels. Even in high severity fires, only about 25% of above-ground carbon stores are released. For these reasons, research finds that forest thinning in anticipation of fire releases more carbon to the atmosphere than would fire (Meigs et al 2009, and Campbell et al 2007).

In failing to address the controversy of post-fire logging the Forest Service also ignores overwhelming evidence that post-fire logging disrespects the uniqueness and biological diversity found in early post-fire forests. Appendix "Post Fire Logging" explores these issues, as explained by news media reporters along with the scientists, agency experts, and other interviewees

With the notorious "Salvage Rider", Congress made a huge error in authorizing the Forest Service to bypass public and judicial review to facilitate "salvage" logging for a few years in the mid-1990s. The agency claimed it could be trusted to follow all laws Congress authorized it to ignore, but not surprisingly without any legal mechanisms to hold the agency accountable, the Forest Service exemplified untrustworthiness. (See the Forest Fraud website at: http://www.wildrockies.org/forestfraud/) This is not unusual in the heat of the flames the Forest Service has fanned into controversy. Figures 1 and 2 below are from the Forest Fraud website.

Figure 1

Death by Chainsaw

These images show the same cutting units as the previous web page. Again, they show the same exact views two years apart.

This picture was taken in 1996, two years post-wildfire: "The current appearance of green trees may be confusing" says the EIS.

This second photo was from 1998, after logging: "Fifty to ninety percent of the timber was killed or will die within the next three years" claimed the EIS.

Killed by chainsaw, they forgot to say.

Next, see a close-up of this area

Figure 2

Yet Another Comparison

This is a view of the main Studebaker Fire area, from across O'Brien Creek. Top is 1996, below is 1998--you know the story.

After the fire and before logging, the EIS said of this area "These are stand replacing burns that may be considered as an opening in regard to wildlife cover." "These areas are considered low value as cover for big-game."

The Forest Service's justification for this atrocity was,"Where catastrophic conditions such as insects, disease, or fire creates a condition whereby larger unit sizes will have no additional effect on wildlife habitat, larger cutting units may be used."

The FEIS also said,"Recreational users may be temporarily displaced during the salvage activities, but they would return to the area upon completion of the activities."

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ROADS

Concern

The Nez Perce-Clearwater (hereafter, "Nez-Clear") Draft Plan and DEIS fail to provide for, or consider and analyze, forest plan components that provide for an ecologically and economically sustainable forest road system, thereby failing to meet planning rule requirements.

Rationale

<u>The best available science shows that the Nez-Clear National Forest's road system is economically and environmentally unsustainable.</u>

Best available science shows that roads cause significant adverse impacts to National Forest resources.[57] A 2014 literature review from The Wilderness Society surveys the extensive scientific literature—including the Forest Service's General Technical Report synthesizing the scientific information on forest roads[58] —on a wide range of road-related impacts to ecosystem

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[57] *See,* e.g., 66 Fed. Reg. at 3208 ("Scientific evidence compiled to date [2001] suggests that roads are a significant source of erosion and sedimentation and are, in part, responsible for a decline in the quality of fish and wildlife habitat.")
[58] Gucinski, M., J. Furniss, R. Ziemer, and M.H. Brookes. 2001. Forest Roads: A Synthesis of Scientific Information. Gen. Tech. Rep. PNWGTR-509. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 103 p. Available at: http://www.fs.fed.us/pnw/pubs/gtr509.pdf.

processes and integrity on National Forest lands.[59] Erosion, compaction, and other alterations in forest geomorphology and hydrology associated with roads seriously impair water quality and aquatic species viability. Roads disturb and fragment wildlife habitat, altering species distribution, interfering with critical life functions such as feeding, breeding, and nesting, and resulting in loss of biodiversity. Roads facilitate increased human intrusion into sensitive areas, resulting in poaching of rare plants and animals, human-ignited wildfires, introduction of exotic species, and damage to archaeological resources.

Forest road networks have been shown to have detrimental effects on water and aquatic resources in forested landscapes. Road systems can change a natural hydrologic regime by altering natural flow patterns and increasing sediment delivery to streams. Roads have been shown to destabilize side-casted material and hillsides, expand the lengths of gullies and stream channels, increase sediment delivery, and alter streamflow and channel adjustments. The presence of roads can also affect natural drainage patterns over the long-term by intercepting subsurface drainage in cutslopes, capturing rainfall on hardened road surfaces, and routing excess runoff into the stream channel system. Where a dense road network is well connected to the stream network, it can be an "extension" of the actual stream network and alter streamflow regimes.

Sediment from the road system can be delivered to streams by direct erosion of cut and fill slopes associated with stream crossings or by surface runoff from roads and ditches that carries sediment-laden water directly or indirectly to streams. Roads lacking surface rock, those with steep grades and steep side slopes, and those that cross streams or are in close proximity to streams are the greatest contributors of sediment from surface erosion.

Forest road culverts can deliver large amounts of sediment to receiving waters when the culvert plugs and fails. Culverts that remain in a road behind a gate or berm that are not properly sized, positioned, and inspected have an increased risk for failure by reducing awareness of potential maintenance needs. The accumulation of debris has the potential to obstruct culverts and other road drainage structures. Without maintenance and periodic cleaning, these structures can fail, resulting in sediment production from the road surface, ditch, and fill slopes.

Forest roads contribute to the spread of invasive species. Roads themselves—regardless of whether they are open or closed to the public, system roads or temporary—split apart the forest landscape, creating more buffers where invasive species are likely to grow.[60] The Forest Service must assess how forest roads are likely to provide a vector for the spread of invasive species by fragmenting the landscape and creating buffers that are less resistant and resilient to stressors like invasive species. It should also assess how use of forest roads by log hauling trucks and other motorists will further exacerbate the risk of spreading invasive species.

Science also shows that forest roads and trails play a role in affecting wildfire occurrence.[61] (noting human-ignited wildfires account for more than 90% of fires on national lands and are almost five times more likely in areas with roads). Closed roads (as opposed to decommissioned roads) remain on the landscape and thus continue to allow for human caused wildfires. What's

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[59] *See* The Wilderness Society, May 2014. Transportation Infrastructure and Access on National Forests and Grasslands: A Literature Review.
[60] See *id.* p. 11.
[61] *Id.,* p. 29.

more, closed roads that remain on the landscape can affect where and how forests burn.[62] The Forest Service should consider how forest roads and trails increase the risk of human-caused wildfires.

Climate change intensifies the adverse impacts associated with roads. The Forest Service should analyze the cumulative impacts of forest roads and climate change. The need to evaluate climate change impacts is bolstered by the fact that "*[t]he harms associated with climate change are serious and well recognized*," and environmental changes caused by climate change "*have already inflicted significant harms*" to many resources around the globe.[63]

For example, as the warming climate alters species distribution and forces wildlife migration, landscape connectivity (large, intact areas without roads) becomes even more critical to species survival and ecosystem resilience.[64] Climate change is also expected to lead to more extreme weather events, resulting in increased flood severity, more frequent landslides, altered hydrographs, and changes in erosion and sedimentation rates and delivery processes.[65] Many forest roads are poorly located and designed to be temporarily on the landscape, making them particularly vulnerable to these climate alterations.[66] Even those designed for storms and water flows typical of past decades may fail under future weather scenarios, further exacerbating adverse ecological impacts, public safety concerns, and maintenance needs.[67] At bottom, climate change predictions affect all aspects of road management, including planning and prioritization, operations and maintenance, and design.[68]

The inability of the Forest Service to maintain its road system to standard exacerbates many of these risks, leading to increased road failures, stream sedimentation, and blocked fish passages, among other harmful environmental consequences. Nationally, the Forest Service has a massive deferred maintenance backlog of roughly $5.2 billion dollars.[69] It is unclear how much the Nez-Clear National Forest contributes because the DEIS lacks any discussion of its road maintenance backlog or the corresponding harmful environmental consequences that result from inadequate maintenance. The Forest Service does acknowledge the following in its Forest Plan Assessment:

An annual need of approximately $6,100,000 was identified as being necessary to maintain Maintenance Level 3 through 5 roads along with major Maintenance Level 2 routes. Appropriated funding for road maintenance was approximately 20% or less at the time of this

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[62] *Id.*
[63] *Massachusetts v. EPA*, 549 U.S. 497, 521 (2007).
[64] Attachment A at 9-14.
[65] *See, e.g.*, Halofsky, J.E. et al. eds., USDA, Forest Service, Pacific Northwest Research Station, *Adapting to Climate Change at Olympic National Forest and Olympic National Park*, PNW-GTR-844 (2011), pages 21-27.
[66] *Id.* at 36-38.
[67] *See, e.g.*, Strauch, R.L. et al., *Adapting transportation to climate change on federal lands in Washington State*, Climate Change 130(2), 185-199 (2015) (noting the biggest impacts to roads and trails are expected from temperature-induced changes in hydrologic regimes that enhance autumn flooding and reduce spring snowpack).
[68] Halofsky, J.E. et al. eds., USDA, Forest Service, Pacific Northwest Research Station, *Adapting to Climate Change at Olympic National Forest and Olympic National Park*, PNW-GTR-844 (2011) at 35.
[69] USDA Forest Service FY 2021 Budget Justification, p. 75.

analysis. This level did not address maintenance needs for the remainder of the Maintenance Level 2 and Maintenance Level 1 roads. Appropriated road funds have since declined by 50% over the last 3 years, which will profoundly affect road access to National Forest System lands.

To date, no clear resolution has been reached to address the gap in funding road maintenance.[70]

Yet, the DEIS states that annual open road maintenance is $2,900,000 and that budgets are 33-50 percent less than what is needed.[71] This suggests there is a $3.2 annual maintenance shortfall, but the DEIS fails to specify this number or provide any adequate corresponding discussion. Rather, the Forest Service simply asserts 3,900 miles of maintenance level (ML) 2-5 roads are kept in a drivable condition, while 3,800 miles of stored ML 1 roads do not receive basic custodial maintenance.[72] The general discussion fails to specify the miles of road by ML that does not meet its objective maintenance level or its road management objectives. Drivable conditions do not preclude roads from contributing to degraded watershed conditions or other harmful effects.

<u>Forest plan components must be consistent with the Forest Service's regulatory framework.</u>

In order to meet the 2012 Forest Planning Rule requirements for sustainability and providing for a diversity of species, the final forest plan will need much stronger road management direction, especially in order for the Forest Service to achieve a sustainable, minimum road system. Among other things, the draft plan does not adequately incorporate Subpart A of the Travel Management Rule within the 2012 Forest Planning framework, or provide adequate components to move towards an ecologically and economically sustainable minimum road system. Most notable is the absence of road density thresholds, and lack of components that address fiscal sustainability, ecological impacts, or climate change resilience. Plan components should provide direction for expeditiously identifying and implementing the minimum road system through a subsequent NEPA process and project-level actions.

> *Forest plan components for roads infrastructure must comply with the 2012 Planning Rule and Forest Service Directives.*

The 2012 Planning Rule guides the development, amendment, and revision of forest plans, with an overarching goal of promoting the ecological integrity and ecological and fiscal sustainability of National Forest lands:

Plans will guide management of [National Forest System] lands so that they are ecologically sustainable and contribute to social and economic sustainability; consist of ecosystems and watersheds with ecological integrity and diverse plant and animal communities; and have the capacity to provide people and communities with ecosystem services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future.[73]

To accomplish these ecological integrity and sustainability goals, the rule imposes substantive mandates to establish plan components—including standards and guidelines—that maintain or

[70] Nez Perce-Clearwater NFs Assessment, p. 11-3.
[71] DEIS, p. 3.4.4-8.
[72] DEIS, p. 3.4.4-10
[73] 36 C.F.R. § 219.1(c).

restore healthy and aquatic and terrestrial ecosystems, watersheds, and riparian areas, and air, water, and soil quality.[74]

Plan components must be designed *"to maintain or restore the structure, function, composition, and connectivity"* of terrestrial, riparian, and aquatic ecosystems;[75] must take into account stressors including climate change, and the ability of ecosystems to adapt to change;[76] and must implement national best management practices for water quality.[77] The rule also requires the Forest Service to establish riparian management zones for which plan components *"must ensure that no management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment that seriously and adversely affect water conditions or fish habitat shall be permitted."*[78] In addition, plans must include plan components for *"integrated resource management to provide for ecosystem services and multiple uses,"* taking into account *"[a]ppropriate placement and sustainable management of infrastructure, such as recreational facilities and transportation and utility corridors."*[79] Plan components must ensure social and economic sustainability, including sustainable recreation and access.[80]And the Forest Service must *"use the best available scientific information"* to comply with these substantive mandates.[81]

Given these substantive requirements of the 2012 Planning Rule, the Forest Service must comprehensively address the road system in its plan revision. The significant aggregate impacts of that system on landscape connectivity, ecological integrity, water quality, species viability and diversity, and other forest resources and ecosystem services, necessitates that the Forest Service satisfy the rule's substantive requirements by providing sufficient management direction for transportation infrastructure. As described above, plans must provide standards and guidelines to maintain and restore ecological integrity, landscape connectivity, water quality, and species diversity. Those requirements simply cannot be met absent integrated plan components directed at making the road system considerably more sustainable and resilient, especially given changing climate conditions.

The Forest Service's final directives on infrastructure recognize this: *"[t]he central consideration in land management planning for infrastructure is that the integrated desired conditions and other plan components set a framework for the sustainable management of the plan area's infrastructure and mitigation of adverse impacts."*[82] To that end, plan components should *"reflect the extent of infrastructure that is needed to achieve the desired conditions and objectives of the plan,"* and *"provide for a realistic desired infrastructure that is sustainable and can be managed in accord with other plan components including those for ecological*

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[74] *Id*. §§ 219.8(a)(1)-(3); 219.9(a) (corresponding substantive requirement to establish plan components that maintain and restore the diversity of plant and animal communities and support the persistence of native species).
[75] *Id.* § 219.8(a)(1) & (a)(3)(i).
[76] *Id.* § 219.8(a)(1)(iv).
[77] *Id*. § 219.8(a)(4).
[78] *Id*. § 219.8(a)(3)(ii)(B).
[79] *Id*. § 219.10(a)(3).
[80] *Id*. § 219.8(b).
[81] Id. § 219.3.
[82] FSH 1909.12, ch. 20, §23.23l

sustainability."[83] Plan components also must ensure fiscal sustainability.[84] More generally, the revised plan is the logical and appropriate place to establish a framework for management of the forest road system. Plans *"provide a framework for integrated resource management and for guiding project and activity decisionmaking."*[85] Plans allow the Forest Service to comprehensively evaluate the road system in the context of other aspects of forest management, such as restoration, protection and utilization, and fiscal realities, and to integrate management direction accordingly. Plans also provide and compile regulatory direction at a forest-specific level for compliance with the Clean Water Act, Clean Air Act, Endangered Species Act, and other federal environmental laws relevant to the road system and its environmental impacts.[86] And plans allow forest managers and the public to clearly understand the management expectations around the road system and develop strategies accordingly.

With frequent turnover in decision-making positions at the forest level, a plan-level management framework for the road system and transportation infrastructure is particularly critical. Moreover, with climate change anticipated to necessitate forest-wide upgrades and reconfigurations of transportation infrastructure, it is especially important that plans provide direction for identifying and achieving an environmentally and fiscally sustainable road system under future climate scenarios.

Lastly, the Forest Service does not have another planning vehicle to direct long-term and forestwide management of the road system and to ensure compliance with current policy and regulatory direction. We recognize the Forest Service completed a Travel Analysis Report in 2015 as part of its efforts to produce a Travel Management Plan in compliance with Subpart B of 36 C.F.R. part 212. Yet, the report and its supporting information is not a replacement for clear components in a forest plan that directs the Forest Service to identify and ultimately achieve a minimum road system that provides for the protection of National Forest Service System lands.

Forest plan components for roads and infrastructure must reflect the agency's duties under the TMR Subpart A.

To address its unsustainable and deteriorating road system, the Forest Service promulgated the Roads Rule (referred to as "Subpart A") in 2001.[87] The rule directs each National Forest to conduct *"a science-based roads analysis,"* generally referred to as a travel analysis report.[88] Based on that analysis, forests must: (1) identify unneeded roads for decommissioning or other uses;[89] and (2) identify the minimum road system needed for safe and efficient travel and for the

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[83] Id. § 23.23l(1)(b); see also *id*. § 23.23l(2)(a) (desired condition for roads "should describe a basic framework for an appropriately sized and sustainable transportation system that can meet [identified access and other] needs").
[84] 36 C.F.R. § 219.8(b); see also *id.* §219.1(g) (plan components generally must be "within . . . the fiscal capability of the unit"); FSH 1909.12, ch. 20, § 23.23l(1)(c) (same).
[85] 36 C.F.R. § 219.2(b)(1); see also *id.*§ 219.15(e) (site-specific implementation projects, including travel management plans, must be consistent with plan components).
[86] See id. § 219.1(f) ("Plans must comply with all applicable laws and regulations . . . .").
[87] 36 C.F.R. §§ 212.1-212.21 (Administration of the Forest Transportation System), 66 Fed. Reg. 3206 (Jan. 12, 2001).
[88] 36 C.F.R. § 212.5(b)(1). Forest Service Manual 7712 and Forest Service Handbook 7709.55, Chapter 20 provide detailed guidance on conducting a travel analysis.
[89] 36 C.F.R. § 212.5(b)(2).

protection, management, and use of National Forest system lands.[90] Subpart A defines the minimum road system (MRS) as the road system determined to be needed to:

(1) Meet resource and other management objectives adopted in the relevant land and resource management plan;

(2) Meet applicable statutory and regulatory requirements;

(3) Reflect long-term funding expectations; and

(4) Ensure that the identified system minimizes adverse environmental impacts associated with road construction, reconstruction, decommissioning, and maintenance.

Id.[91]

While Subpart A does not impose a timeline for agency compliance with these mandates, the Forest Service Washington Office, through a series of directive memoranda, ordered forests to produce a travel analysis report by the end of fiscal year 2015.[92] The memoranda articulate an expectation that forests, through the Subpart A process, *"maintain an appropriately sized and environmentally sustainable road system that is responsive to ecological, economic, and social concerns."*[93] They clarify that travel analysis reports must address *all* system roads—not just the small percentage of roads maintained for passenger vehicles. And they require that travel analysis reports include a list of roads likely not needed for future use. Completion of the travel analysis process is a crucial first step in achieving compliance with Subpart A, but forests then must utilize that analysis to identify the MRS and unneeded roads for decommissioning through site-specific analysis under NEPA at the appropriate scale. Providing forest plan components that ensure completion of this process is necessary to achieve the substantive requirements of the 2012 Planning Rule we note above.

The plan revision is the appropriate place to ensure that Subpart A's requirements will be met over the next 10 to 15 years, and to set standards and guidelines for achieving an environmentally and fiscally sustainable MRS through decommissioning or repurposing unneeded roads and upgrading the necessary portions of the system. With forest plans determining the framework for integrated resource management and "an appropriately sized and sustainable transportation system," direction for identifying and achieving that MRS belongs in the forest plan.[94] Indeed, the regulatory history of the Roads Rule makes clear that the Forest

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[90] *Id.* § 212.5(b)(1).

[91] The requirements of subpart A are separate and distinct from those of the 2005 Travel Management Rule, codified at subpart B of 36 C.F.R. part 212, which addresses off-highway vehicle use and corresponding resource damage pursuant to Executive Orders 11644, 37 Fed. Reg. 2877 (Feb. 9, 1972), and 11989, 42 Fed. Reg. 26,959 (May 25, 1977).

[92] Memorandum from Leslie Weldon to Regional Foresters *et al.* re Travel Management, Implementation of 36 C.F.R., Part 212, Subpart A (Mar. 29, 2012); Memorandum from Leslie Weldon to Regional Foresters re Completion of Travel Management and Next Steps (Sept. 24, 2015); Memorandum from Leslie Weldon to Regional Foresters re Travel Analysis Reports, Subpart A – Data Management (Sept. 19, 2016).

[93] *Id.*

[94] *See* FSH 1909.12, ch. 20, § 23.23l(2)(a).

Service intended that forest plans would address Subpart A compliance. In response to comments on the proposed Roads Rule, the Forest Service stated:

> *The planning rule provides the overall framework for planning and management of the National Forest System. The road management rule and policy which are implemented through the planning process must adhere to the sustainability, collaboration, and science provisions of the planning rule. For example, under the road management policy, national forests and grasslands must complete an analysis of their existing road system and <u>then incorporate the analysis into their land management planning process.</u>*[95]

If the revised plan does not provide specific components for achieving a sustainable MRS, it is unlikely that the Forest Service will satisfy the requirements of Subpart A during the life of the plans (as evidenced by the lack of direction in the existing plans and the inability of forests to achieve environmentally and fiscally sustainable road systems to date). Forest managers and the public need forest-specific direction on how to achieve the desired MRS and ensure its sustainability in the face of climate change, all within realistic fiscal limitations of the unit. The purpose of a forest plan is to provide that direction, and it would be arbitrary for the Forest Service to fail to do so in its plan revision. At the very least, the revised plan must include standards and guidelines that direct compliance with Subpart A within a reasonable timeframe following plan adoption. As we explain below, the Draft Plan fails to provide the necessary components to meet Subpart A requirements, sustain the forest's ecological integrity, provide for a diversity of species, or ensure the road system does not impede connectivity.

The need to include direction in the Draft Plan for Subpart A compliance is not only necessary for meeting forest planning rule mandates, but also because the Nez-Clear National Forest has yet to identify, let alone achieve, a MRS that complies with Subpart A requirements. It is unclear if the Forest Service recognizes this fact, as it asserts, "*[i]n 2015, a forest-level roads analysis was completed for the Nez Perce-Clearwater. This analysis established a minimum road system for arterial, collector, and important local class National Forest roads on the Nez Perce-Clearwater.*"[96] Only NEPA-level decisions can identify the minimum road system, as the analysis may have acknowledged when it explained agency officials utilize the report as it works to identify the MRS.[97] The Forest Service should clarify its duties in the subsequent forest plan final EIS. Further, we question the utility of the 2015 Travel Analysis Report as it recommended only 14 miles of road as "unneeded."[98] The Nez-Clear National Forest contains 7,682 miles of NFS road, and 14 miles represents just 0.18 percent of the total road system. It is beyond likely such a reduction could ever represent long-term funding expectations as required by Subpart A, or that such a small reduction would result in a road system that provides for the protection of NFS lands. A fact the Forest Service seems to recognize since it has decommissioned over 200

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[95] 66 Fed. Reg. at 3209 (emphasis added).
[96] DEIS, p. 3.4.4-7.
[97] *Id.*, (stating, "The travel analysis report is used by the Nez Perce-Clearwater to prioritize maintenance needs and identify opportunities to decommission roads or put them into intermittent stored service as the Nez Perce-Clearwater works to identify the minimum number of routes needed for an efficient transportation system, as directed in 36 CFR § 212 subpart A.").
[98] *Id.*

miles of road between 2015-2018.[99] As such, the Forest Service cannot rely on its 2015 TAR to adequately inform recommendations that will satisfy Subpart A requirements.

The next steps toward compliance with the TMR Subpart A is for the Forest Service to fully analyze all its system roads at the project level. Such project-level analysis can be at a landscape scale either district-wide or greater. Doing so would finally identify and implement the minimum road system at the appropriate geographic size under NEPA,[100] and to decommission unneeded roads starting with the most environmentally problematic. The Forest Service must include specific objectives and other components in the final revised forest plan in light of and consistent with its duties under the TMR Subpart A to identify a minimum road system and prioritize unneeded roads for decommissioning. Among those components, the Forest Service should include direction to generate a new travel analysis report and keep it updated until the forest actually implements its minimum road system. We recommend updates be completed every five years.

Recommendations: The final EIS should better clarify the Forest Service's duties and obligations under Subpart A. The final Forest Plan should include plan components requiring identifying the MRS within three years of adoption and achieve full implementation of the MRS within the life of the plan.

The Draft Plan and DEIS fail to include or fully consider components that will ensure an ecologically and economically sustainable national forest road system.

The Draft Plan and DEIS does not incorporate road density thresholds

The Forest Service must consider and adopt road density standards in order to ensure compliance with the forest planning rule requirements for sustainability and diversity of species, especially in the context of connectivity and ecological integrity. Such standards should be an essential component to ensure the forest plan will maintain and restore terrestrial and aquatic ecosystems and watersheds in the plan area particularly in regards to structure, function, composition, and connectivity.

The Forest Service explains that under the Watershed Condition Framework (WCF), "*...140 subwatersheds were rated as 'Functioning Properly,' 73 were rated as 'Functioning at Risk,' and 7 were rated as 'Impaired.'*'"[101] Yet, watershed conditions are much worse as it relates to the road and trail indicator, and the associated attributes that include open road densities.[102] We note

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[99] *Id.*, p. 3.4.4-10, Table 1. (The DEIS states incorrectly that Table 2 provides decommissioning numbers for the Nez Perce National Forest, but the table's title states "Miles of roads constructed from 1999 to 2018 on the Nez Perce National Forest.").

[100] *See, e.g.*, Memorandum from Leslie Weldon to Regional Foresters re Completion of Travel Management and Next Steps (Sept. 24, 2015).

[101] DEIS, p. 3.2.2.1-8

[102] See USDA Forest Service. July 2011. Watershed Condition Classification Technical Guide. FS-978, p. 26.("For the purposes of this reconnaissance-level assessment, the term "road" is broadly defined to include roads and all lineal features on the landscape that typically influence watershed processes and conditions in a manner similar to roads. Roads, therefore, include Forest Service system roads (paved or nonpaved) and any temporary roads (skid trails, legacy roads)

here that roads need not be open to have significant harmful environmental consequences.[103] Looking more closely, 85 watersheds are at or above 2.4 mi/mi^2, meaning they have a poor rating for the open road density attribute, and 47 watersheds have only a fair rating.[104] "*For these subwatersheds, the density and distribution of roads and linear features indicates that there is a higher probability that the hydrologic regime is substantially altered*."[105] Overall, the road and trail indicator shows 138 watersheds (63%) are functioning poorly or only fairly.[106] Road densities within 300 ft of stream are particularly concerning given "*[s]ediment was a primary cause for streams on the Nez Perce-Clearwater to not meet beneficial uses and become listed as impaired by the Idaho Department of Environmental Quality.*"[107]

We recognize the Forest Service proposes several plan components to address sediment delivery and improve watershed conditions. While we generally support many of these, several guidelines should be standards as we detail below, but none of the proposed components serve the same function as road density standards. Of particular note is the Draft Plan objective to implement varying numbers of Watershed Restoration Action Plans depending on alternative.[108] While such an objective has the potential to improve watershed conditions, simply implementing an undefined number of projects in these action plans does not necessarily mean watershed conditions will improve. The Forest Service should direct measurable improvements in condition class scores with the requisite monitoring to verify the projects actually achieved better watershed function.

The Forest Service also fails to adequately consider road densities in the context of habitat fragmentation and wildlife connectivity. This is a critical omission because the adoption of road density thresholds, especially for important watersheds, migratory corridors and other critical wildlife habitat, is one of the most effective strategies for achieving an ecologically sustainable road system. For example, there is a direct correlation between road density and various markers for species abundance and viability.[109] As such, the Forest Service must include road density standards and recognize the plan revision process as an opportunity to examine current road densities, identify their cumulative impacts, and determine how plan components will influence these densities over the life of the revised plan.[110]

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not closed or decommissioned, including private roads in these categories. Other linear features that might be included based on their prevalence or impact in a local area are motorized (off-road vehicle, all-terrain vehicle) and nonmotorized (recreational) trails and linear features, such as railroads").

[103] See The Wilderness Society 2014, Gucinski, et al., 2001.

[104] DEIS, p. 3.2.3.4 - 17-21, Table 6 (listing road densities by subwatershed).

[105] *Id.*, 3.2.2.1-38

[106] DEIS, Appendix K, p. K-9, Table 3.

[107] *Id.*, p. 3.2.2.1-24

[108] Draft Plan, p. 46 (FW-OBJ-WTR-01).

[109] FSH 1909.12, ch. 10, § 12.13 & Ex. 01 (identifying road density as one of the "key ecosystem characteristics for composition, structure, function, and connectivity" used to assess the "status of ecosystem conditions regarding ecological integrity."

[110] For guidance see attachment #2 of The Wilderness Society, May 2014. Transportation Infrastructure and Access on National Forests and Grasslands: A Literature Review.

The Forest Service must establish road densities and direction for decreasing habitat fragmentation in a manner that facilitates wildlife connectivity. Plan components that direct the removal of unneeded roads, seasonal closures, and that limit the construction and use of roads in areas important for fish and wildlife are critical for addressing habitat fragmentation and improving connectivity. As proposed, the Draft Plan provides some components for wildlife that are specific to roads, but overall they fail to include the necessary direction to provide for, or improve, connectivity for terrestrial wildlife.[111]

The final EIS should utilize Table 6 in the DEIS and compare how road densities would change under each of the alternatives.[112] Maps at varying scales should be included as a visual representation. The EIS should analyze the impacts of road densities and determine what density thresholds are necessary to protect ecological values in the forest, with a particular focus on sensitive areas including watersheds, wildlife habitat and migration routes, and areas that are vulnerable to flooding (which may wash out roads and cause harm). The plan components should incorporate road density thresholds, based on the best available science, as a key tool in achieving a sustainable minimum road system that maintains and restores ecological integrity.[113] The density thresholds should incorporate the use of the term "road" under the Forest Service Watershed Condition Framework, applying it to all open and closed linear features on the Nez-Clear National Forest, including known unauthorized roads, temporary roads, and motorized trails.

Recommendations: The final EIS should compare current road densities with those resulting from each of the alternatives. The final revised plan should incorporate road density thresholds at a level that would protect and maintain ecological integrity, and facilitate connectivity for at-risk species.

The Draft Plan and DEIS fail to provide for or consider an economically sustainable national forest road system.

As we noted previously, the Nez-Clear National Forest fails to adequately acknowledge the fiscal challenges of maintaining a sustainable road system. As such, the DEIS fails to fully incorporate maintenance shortfalls in its analysis or provide specific direction in the plan components directing action for roads that cause increased resource risk due to lack of maintenance. Therefore, it is critical for the Nez-Clear National Forest to include plan components that ensure limited maintenance funding adequately address deteriorating road conditions, especially where they degrade ecological integrity.

Given the fiscal constraints and history of inadequate maintenance, the Forest Service should better identify the resulting probable impacts, using the best available science, so the Nez-Clear National Forest can better meet the challenges ahead. Clearly identifying likely impacts of the forest's transportation funding shortfall and poorly maintained road system is the first step

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111 Draft Plan, p. 64 (FW-GDL-WL-02), p. 66 (FW-GDL-WLMU-01), p. 67 (MA2-GDL-ELK-01)

112 DEIS, p. 3.2.3.4 - 17-21, (the table is specific to elk analysis, but it serves to show overall road densities that affect numerous wildlife species).

113 FSH 1909.12, ch. 10, § 12.13 & Ex. 01 (identifying road density as one of the "key ecosystem characteristics for composition, structure, function, and connectivity" used to assess the "status of ecosystem conditions regarding ecological integrity."

towards addressing them as effectively as possible. The Forest Service must then identify how to move towards a minimum road system using the funds available, with concrete actions that will reduce the amount of maintenance required over the life of the plan. We urge the Forest Service to include plan components that directs updating its travel analysis given it was last completed in 2015 and only recommended decommissioning 14 miles of road. The Draft Plan should require analyzing updated TAP results on a landscape scale in order to identify a minimum road system that will reflect long-term funding expectations.

As it stands the Draft Plan does not provide adequate direction to provide for a road system that reflects long-term funding expectations, and in fact, ties road maintenance directly to vegetation management. The Forest Service provides the following explanation for the road maintenance measurement indicator:

Timber Management contracts include road maintenance responsibilities on haul routes to provide additional operators to perform road maintenance on Forest System roads….Gravel surface replacement is currently accomplished on the Nez Perce-Clearwater using timber harvest receipts and approximately 25 percent of forest road maintenance is performed by timber purchasers. Roughly 23 percent of the road improvements for watershed benefits on the Nez Perce-Clearwater are a result of Timber Management and Stewardship receipts and another 50 percent is funded and supported by various partners, with the largest of those contributors being Bonneville Power Association and the Nez Perce Tribe.[114]

The flaw in this analysis is the failure to consider or incorporate other road maintenance funding such as provided under Capital Maintenance Road budget (CMRD), or other line items. Further, in describing actions common to all alternatives, the Forest Service states, "[t]imber harvest would continue to maintain roads within vegetative units."[115] The Forest Service then continues to compare each alternative's proposed timber harvest sales: for Alt. W, roughly 60 percent of all road maintenance would be completed with funds from those sales, 62% for Alt. X, 46% for Alt. Y, and 25% for Alt. Z.[116] We strongly object to measuring road maintenance exclusively through the lense of timber sales. First, the agency erroneously assumes it will be able to sell all its advertised timber sales. Next, it ignores other funding sources, even as inadequate as they may be, but most glaringly, it ignores all other roads not utilized for timber sale projects. The Forest Service cannot rely on timber sales to identify a MRS that reflects long-term funding expectations, or to provide for the protection of NFS lands when it was past harvest activities that created an unsustainable forest road system.[117]

Further, even with this flawed analysis, the Forest Service will still fail to maintain its road system to standard. The Draft Plan directs maintaining roads to only operational standards, instead of objective levels, which begs the question of the Forest Service ever plans on meeting its Road Management Objectives (RMOs)[118] While RMOs and objective maintenance levels

[114] DEIS, p. 3.4.4-6.
[115] *Id.*, p. 3.4.4-13.
[116] *Id.*, p. 3.4.4-15 -17.
[117] DEIS, p. 3.4.4-7 (discussing the history of the road system and its ties to timber harvests).
[118] Draft Plan, p. 80, (FW-OBJ-INF-02).

were established for good reason. Specifically, the Forest Service Manual provides the following direction:

Operate and maintain NFS roads in a manner that meets road management objectives (RMOs) and provides for:

1. *Safe and efficient travel;*
2. *Access for the administration, utilization, and protection of NFS lands; and*
3. *Protection of the environment, adjacent resources, and public investment.*[119]

Note, Subpart A also directs that the identified MRS will provide for the protection of NFS lands. The Nez-Clear National Forest contains 7,682 miles of road and the final forest plan must contain components that will ensure their proper maintenance, including basic custodial maintenance for ML 1 roads. Including strong direction to identify and implement a MRS is a better approach than relying on timber sales to achieve maintenance needs.

Inadequate road maintenance increases the fiscal burden of the entire system, since it is much more expensive to fix decayed roads than maintain intact ones, and it endangers and impedes access for forest visitors and users as landslides, potholes, washouts, and other failures occur. A sustainable road system must be sized and designed so it can be adequately maintained under current fiscal limitations.[120] This precludes using aspirational, and unsustainable timber harvests to maintain the road system. The Nez-Clear National Forest must proactively identify what reliable actions can be done over the life of the plan given available resources and make measurable progress over time.

Recommendations: The final EIS must identify likely impacts of the transportation funding shortfall and deferred road maintenance. The final plan must include enforceable plan components that require effective prioritization of the forest's transportation funding and move the forest towards a minimum road system.

> *The draft plan and DEIS fail to adequately address ecological impacts of the forest road system in the context of climate change.*

The draft plan and DEIS do not sufficiently analyze the impacts of the Nez-Clear National Forest's transportation system on forest ecology, including water resources, wildlife and connectivity in the context of climate change. The Forest Service provides some discussion of the cumulative effects climate change will have on the transportation system, but does not consider the direct and indirect harmful environmental consequences. The DEIS explains:

Effects from climate change on infrastructure should be considered during infrastructure planning and maintenance activities under all alternatives. Culverts may need to be sized larger to handle increased flow volumes during spring runoff events and bridge structures may require more scour protection... Roads may be closed or relocated due to the potential for damage during high flow events. Seasonal closures may need to be adjusted to protect roads from traffic damage during wet conditions.[121]

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[119] FSM 7730.2
[120] See FSH 1909.12, ch. 20, § 23.23l(1)(c) (plan components for road system "must be within the fiscal capability of the planning unit and its partners").
[121] DEIS, p. 3.4.4-18

Changing climate conditions increase risks to the road system and pose direct and indirect effects to forest resources that the Forest Service must better analyze in the final EIS. In addition, the Forest Service fails to acknowledge how roads provide a vector for human-ignition of wildland fires, or in areas of high road densities, actually change wildfire behavior. Climate change effects will only exacerbate these risks. As described in the 2014 transportation literature review provided by The Wilderness Society, the impacts of climate change on roads and forest ecology, watersheds, and species are profound. [122] Further, the Forest Service Office of Sustainability and Climate has compiled climate change vulnerability assessments for several regions of the Forest Service discussing near-term consequences for managers to consider.[123]

"Warmer locations will experience more runoff in winter months and early spring, whereas colder locations will experience more runoff in late spring and early summer. In both cases, future peakflows will be higher and more frequent."[124]

"The frequency and extent of midwinter flooding are expected to increase. Flood magnitudes are also expected to increase because rain-on-snow-driven peak flows will become more common."[125]

"Roads and other infrastructure that are near or beyond their design life are at considerable risk of damage from flooding and geomorphic disturbance (e.g., debris slides). If road damage increases as expected, it will have a profound impact on access to Federal lands and on repair costs."[126]

The Forest Service should use the regional reports as the best available science to discuss the environmental consequences of the Nez-Clear National Forests over-burdened and under-maintained road system within the context of changing climate conditions. In particular, the Forest Service must seek to answer specific questions, such as:

- How many miles of road are within areas of moderate to very high wildfire risk?
- How many of these roads are susceptible to increased erosion due to wildfire risk that may also cause increased sedimentation to streams with at-risk fish species?
- How many miles of ML 2 roads not currently maintained to their objective standard are in areas of increased risk due to climate change?
- How many miles of ML 1 roads are hydrologically connected and vulnerable to wildfire risks?

The DEIS lacks the necessary specificity to answer these questions. Certainly the draft plan components include some management direction that would limit the negative impacts of roads. This is a start, but more is needed. The final plan should include comprehensive plan components that will minimize the impacts of the Nez-Clear National Forests' road system on watersheds, wildlife, and ecological values across the forest.

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[122] *See* The Wilderness Society 2014 pp. 9-14.
[123] Halofsky et al. 2017, 2018a, 2018b, 2019.
[124] Halofsky et al. 2018b at ii.
[125] *Id.*, at 83.
[126] *Id.*, at viii.

In particular the final EIS and revised forest plan should incorporate direction from the Forest Service's recently released a transportation resilience guidebook that advises the Forest Service to identify and address climate vulnerabilities in its transportation systems.[127] The guidebook specifically mentions forest plans as an example of planning processes that provide "*an opportunity to analyze baseline conditions and climate change vulnerabilities and to develop climate resilient strategies for the future*."[128] The Nez-Clear National Forest should use the transportation resilience guidebook to develop specific plan components that will effectively reduce climate change vulnerabilities specific to the forest's transportation system.

Recommendations: The final EIS must better discuss ecological impacts of the forest's road system, identify impacts of climate change on the road system, and explain how the alternatives would address these impacts. The final revised plan should include enforceable plan components that would minimize the ecological impacts of the forest's road system and increase the road system's resilience to climate change impacts.

<u>The DEIS fails to take a hard look at the road system and its effects under the alternatives.</u>

The forest transportation system is a significant issue that must be meaningfully analyzed under NEPA.[129] As we note above, the DEIS lacks sufficient analysis pertaining to the Nez-Clear National Forest road system in the context of climate change effects, the consequences from the lack of adequate maintenance or road densities. The dedicated roads section in the DEIS provides very little information on the environmental consequences from the road system and lacks adequate analysis that can satisfy NEPA's hard look requirements, even at the programmatic level.[130]

Beyond the dedicated roads section, the DEIS provides some information and discussion related to specific road-related impacts for other forest resources, but such analysis is still insufficient. As we noted above, the Forest Service provides a table illustrating the WCF road and trail indicator scores for each subwatershed, but then it fails to provide the rankings for each attribute, or how these would change under the draft plan alternatives.[131] For example, the analysis shows just 37 percent have properly functioning road and trail indicator rankings under the WCF, (meaning 138 watersheds have poor or fair indicator rankings).[132] Yet, the analysis does not specify or discuss how lack of maintenance, proximity to water, road density or mass wasting contributes to these scores, or how they would change under each alternative. We already explained above the flaws in the analysis related to road density and lack of maintenance. In regards to mass wasting, the Forest Service states, "*[t[ogether, landslide prone exists on*

[127] U.S. Forest Service Transportation Resiliency Guidebook: Addressing Climate Change Impacts on U.S. Forest Service Transportation Assets (Sept. 2018), https://www.fs.fed.us/eng/transp/documents/pdf/USFSTransportationResiliencyGuideBook.pdf,
[128] U.S. Forest Service Transportation Resiliency Guidebook: Addressing Climate Change Impacts on U.S. Forest Service Transportation Assets (Sept. 2018), p. 39. https://www.fs.fed.us/eng/transp/documents/pdf/USFSTransportationResiliencyGuideBook.pdf,
[129] See 40 C.F.R. §§ 1501.7, 1502.1.
[130] DEIS, pp. 3.4.4.1-24.
[131] DEIS, Appendix K, Table 3.
[132] *Id.*, p. 128, Table. 20.

approximately 857,000 acres, covering approximately 22 percent of the Nez Perce-Clearwater."[133] The DEIS should have included the miles of road within these areas by ML and their potential for failure due to lack of maintenance. In addition, the analysis shows the miles of road within riparian management zones at a subbasin scale, but the DEIS fails to specify how much these contribute to the proximity to water attribute score, or how these would change under each alternative.[134]

Another example where the Forest Service failed to provide adequate analysis is in regard to future construction and use of temporary roads. With each alternative increasing timber production, the agency will increase its reliance on temporary roads, as the analysis explains, "*[n]ew road construction is likely to be limited; temporary road construction would be used more commonly to meet short-term access needs.*"[135] Yet, the Forest Service failed to dedicate a section to the history and harmful effects from temporary roads. When discussing past road decommissioning, the analysis states, "*[m]ost of this decommissioning took place on the non-system roads that were legacy roads from former timber harvest practices, which are no longer needed for new harvest techniques...*"[136] Further, the Forest Service acknowledges that, "*[t]he greatest impacts to the soil resource have resulted from log yarding and temporary road construction associated with timber harvest*."[137] Clearly, there is a history of temporary road construction and a failure to adequately remove them that needs more discussion as the analysis explains efforts to remove them: "*[s]ince the mid-1990s, the watershed restoration program has obliterated hundreds of miles of historic harvest related skid trails, non-system roads, and landings.*"[138]

The Forest Service must disclose the extent to which unauthorized roads contribute to the existing condition, and how many miles constitute remnants of temporary roads versus that are user-created. This is especially important given each alternative will emphasize the use of temporary roads in the future, and the agency needs to demonstrate it has the ability and components in place to track temporary roads and ensure their removal. We recognize that, "*[b]eginning in 2012, a number of timber harvest projects included design measures to restore detrimental soil disturbance on skid trails and landings, in addition to temporary roads. Skid trail, landing, and temporary road decommissioning following harvest activities utilize methods similar to Forest Service system road decommissioning.*"[139] We also recognize the draft plan proposes several components pertaining to the construction, reconstruction and maintenance of temporary roads, yet, none actually direct their removal. The final forest plan must include strong components, including standards, that will ensure the Forest Service tracks and removes temporary roads. The need for such action is evident in the DEIS where it explains,

"*Light detection and ranging remote sensing information has been used to verify and correct road data and to detect unclassified non-system roads. These non-system roads and roads with a*

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[133] *Id.*, p. 3.2.1.6-10
[134] Id., p. 3.2.2.2-12, Table 1.
[135] DEIS, p. 3.4.4-21.
[136] *Id.*, p. 3.4.4-10.
[137] *Id.*, p. 3.2.1.6-7.
[138] *Id., p.* 3.2.1.6-8.
[139] *Id.*

history of high erosion or instability would continue to be evaluated for addition to the road system or decommissioning."[140]

To be clear, all non-system roads are unauthorized roads according to current Forest Service definitions,[141] and the agency should not be considering adding roads to the system that have a history of high erosion or instability. Without clear standards directing the removal of temporary roads, it is likely they too will become unauthorized, discovered at some later date and then proposed for use, especially since the Draft Plan directs using existing or past disturbed areas in place of new disturbance.[142] The Forest Service failed to properly analyze how each alternative may contribute to the presence of unauthorized roads due to the lack of requirements directing their removal.

As it stands, the DEIS overall fails to provide the requisite level of analysis for each forest resource where roads pose some environmental consequence: air quality, soils, watersheds and water resources, riparian & wetlands, at-risk species, habitat connectivity, wildlife and plant species, and species of conservation concern. In order for the Forest Service to meet its substantive duties under NEPA, it needs to conduct a much more robust analysis, including but not limited to sufficiently describing or disclosing:

- The condition of the road system including the number of miles that are in departure from objective maintenance levels. The Forest Service needs to analyze the environmental consequences of these departures to specific forest resources;
- How system and known unauthorized roads affects the character of inventoried roadless and recommended wilderness areas;
- The fiscal sustainability of the transportation system absent the agency's reliance on timber sales;
- The number, miles and location of system and known unauthorized roads that are in wildlife linkage areas and possibly impeding wildlife movement;
- The number, miles and location of system and known unauthorized roads that are proximal to streams with at-risk fish species, and the degree to which the road segments are impacting or threatening species' habitats; and
- How climate change may impact the road system and its effects on other resources.

As we noted previously, the DEIS makes clear that the current transportation system is unsustainable and leading to resource damage. Yet the Forest Service fails to evaluate or disclose the adverse impacts to natural resources that will occur if adequate transportation management funding is not available.

Recommendation: The absence of a hard look analysis as we describe here and in the above sections is a violation of NEPA and must be rectified in the final EIS.

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[140] DEIS, p. 3.4.4-13.
[141] 36 C.F.R. 212.1.
[142] Draft Plan, p. 44, ("MA2 and MA3-GDL-SOIL-02. To limit additional soil disturbance, existing or past disturbed areas should be utilized before creating new soil disturbance for temporary roads, skid trails, or landings.").

The Forest Service must consider and include plan components that provide for an ecologically and economically sustainable forest road system.

We support several Draft Plan components that provide good direction toward achieving a sustainable forest road system, but more is necessary to truly achieve this goal. We urge the Forest Service to consider the following components to supplement or replace those in the Draft Plan.

Desired Conditions

The Draft Plan lacks a specific desired condition in its section for infrastructure that would ensure the long term ecological and economic sustainability of the forest road system. While other sections include, either directly or indirectly, plan components that may improve the current condition, the forest plan still needs clear direction to achieve the intent of Subpart A. We suggest the following desired conditions be included in the final plan's infrastructure section:

- Fiscal Sustainability: The transportation system provides a well-maintained system of needed roads that is economically and environmentally sustainable.
- Climate Resilience: The design, management and maintenance of roads provides for a climate resilient transportation system able to withstand variable storm events and wide fluctuations in precipitation.
- Connectivity: The design, management and maintenance of the transportation system provides landscape and aquatic connectivity necessary for the recovery and viability of fish and wildlife species.
- Sustainable Access: The design, management and maintenance of the road system provides for safe and consistent access for the appropriate utilization and protection of forest resources and ecosystem services.
- The forest road system meets road density standards based on the best available science.
- Road decommissioning is prioritized to enhance primitive and semi-primitive non-motorized ROS settings, improve the character of Inventoried Roadless Area and recommended wilderness areas, and increase habitat connectivity and the ecological integrity of sensitive areas.

Objectives

Objectives should provide a concise, measurable, and time-specific statement of a desired rate of progress towards achieving a sustainable minimum road system. The draft plan falls far short of this, including only a single objective that directs decommissioning or placing in storage just 30 miles every 5 years.[143] This objective would result in just a 150 mile reduction over the 15 year life of the plan. With 7,682 miles of road, including 3,799 miles in ML 1 status this objective is woefully inadequate to achieve a MRS. The Forest Service needs to greatly increase its road decommissioning objective, and also establish others in order to achieve the desired conditions.

[143] Draft Plan, p. 80.

In addition, the Draft Plan objectives need to address temporary roads. We recommend the following objectives:

- Within 3 years of plan adoption, the forest shall identify its minimum road system and an implementation strategy for achieving that system that is consistent with forest plan direction and relevant regulatory requirements.
- Over the life of the plan, implement the minimum road system (pursuant to 36 C.F.R. § 212.5(b)).
- The forest shall make annual progress toward achieving the minimum road system and road density standards, including but not limited to decommissioning 5% of roads identified as unneeded each year.
- Within 10 years of plan approval, decommission high-priority, unneeded roads with the most benefit in achieving an ecologically and fiscally sustainable transportation network (e.g., roads posing a high risk to forest resources, roads in inventoried roadless areas and other ecologically sensitive areas, etc.).
- Within 10 years of plan approval, address all roads within at-risk or impaired watersheds according to the Watershed Condition Framwork's roads and trails indicator, and within watersheds contributing to sediment or temperature impairment under section 303(d) of the Clean Water Act.
- Within 5 years of plan approval establish a publicly available system for tracking temporary roads that includes but is not limited to the following information: road location, purpose for road construction, the project-specific plan (required below), year of road construction, and projected date by which the road will be fully decommissioned.
- Within 10 years of plan approval, all temporary roads will be reflected in the tracking system.
- Over the life of the plan, all temporary roads without a project-specific plan will be fully treated to remove the road template, restore hydrological function and soil conditions, and return the slope to its original contour.

Standards

Standards ensure that roads do not impair ecological integrity and otherwise satisfy the substantive requirements of the 2012 Planning Rule and Subpart A under the TMR. Generally, we support the proposed standards listed for infrastructure as it relates to aquatics and riparian areas, though we list additions and some key changes below.[144] Foremost we urge the Forest Service to establish road and motorized trail density standards. Such standards are absolutely necessary to meet the substantive requirements under the 2012 Planning Rule. We recommend establishing road and motorized trail density standards that will protect and restore the forest's ecological integrity and ensure species viability. Such standards should be based on the best available science:

- in important watersheds, wildlife habitat, migratory corridors, and general forest matrix;

[144] Draft Plan, p. 58.

and

- for relevant species or resources present on the forest, including but not limited to threatened and endangered species and species of conservation concern.

Further, we propose the following specific standards (changes to proposed standards indicated in bold) to ensure compliance with Subpart A and to achieve a sustainable MRS.

- FW-STD-ARINF-01. Road maintenance and new road construction **or reconstruction** shall be designed to minimize adverse effects to threatened, endangered, proposed, or candidate aquatic species and their habitat.
- FW-STD-ARINF-02. Best Management Practices shall be used during dust abatement applications on roads, and ensure chemicals are not applied directly to watercourses; water bodies such as ponds and lakes; or wetlands. **Chemicals shall not be applied to roads within or adjacent to Riparian Management Zones.**
- No increase to the combined baseline total road and motorized trail density to protect important watersheds, Riparian Management Zones, migratory corridors, and general forest matrix.
- No increase to the combined baseline total road and motorized trail density to protect important wildlife habitat, including but not limited to habitat important to threatened and endangered species, and species of conservation concern.
- Temporary road plan: No temporary road shall be constructed prior to the development of a project-specific plan that defines how the road shall be managed, constructed and scheduled for removal to fullest extent possible.
- Temporary roads shall be located and constructed to facilitate removal and restoration following the needed use. All temporary roads shall be closed and rehabilitated within a reasonably short time (not to exceed 3 years) following completion.

Finally, the Forest Service should convert several proposed guidelines into standards, changing "should" to "shall" or "must," specifically we urge the following for conversion: FW-GDL-ARINF-01, 3, 4, 5, 8 & 9. Further, the Forest Service should recognize that decommissioning treatments should result in its full removal or a condition that will prevent it from being discovered in the future and proposed for use again. Otherwise, the Forest Service is simply creating a ghost road network that it continually uses. As such we recommend changing FW-GDL-ARINF-02 into a standard and revising it to read as follows:

- To reduce the risk to aquatic resources when **~~decommissioning roads~~**, making roads impassable, or closing roads for longer than one year, roads should be left in a hydrologically stable condition where road drainage is routed away from water resources and landslide prone areas and towards stable areas of the forest floor to provide filtering and infiltration. **When decommissioning roads (unauthorized, temporary, or system) treatments will return the road to pre-disturbance conditions removing the road template as much as practicable, and at a minimum the road must be re-vegetated, no longer function as a road, and all stream-aligned culverts must be removed.**

Further, defining "hydrologically stable condition" is critical to implementation and effect of this plan component, as is distinguishing between decommissioned - reclaimed - impassable roads and intermittent stored service roads.

Guidelines

Adopting strong standards as we propose will ensure the final plan complies with the 2012 Planning Rule's substantive requirements, and achieves an ecologically sustainable road system. Toward this end, we also propose the follow guidelines:

- The forest should make annual progress toward achieving the minimum road system, and road/motorized trail density standards.
- For projects with road-related actions, the purpose and need statement should include achieving a sustainable minimum road system, road/motorized trail density standards, and the analysis should consider recommendations from an updated travel analysis report.
- To enhance landscape connectivity and ecological integrity, prioritize road decommissioning based on:
- ○ Effectiveness in reducing fragmentation, connecting un-roaded and lightly-roaded areas, and improving water quality in stream segments, with a focus on inventoried roadless areas, important watersheds, and other sensitive ecological and conservation areas and corridors;
- ○ Benefit to species and habitats;
- ○ Addressing impaired or at-risk watersheds;
- ○ Achieving road/motorized trail density standards; and
- ○ Enhancement of visitor experiences.
- ○ Cost-effectiveness and feasibility, including opportunities to incorporate road decommissioning work into other forest projects.
- To enhance public safety and efficiency of the transportation system, prioritize maintenance of needed routes based on:
- ○ Storm-proofing needs and opportunities (e.g., relocating roads away from water bodies, resizing or removing culverts, etc.);
- ○ Restoring aquatic and terrestrial habitats and habitat connections by, in part, reducing or upgrading stream crossings.
- Design road construction, reconstruction, decommissioning, and maintenance activities to minimize adverse environmental impacts. To minimize sediment delivery to streams from roads when constructing, reconstructing, or maintaining roads, road drainage should be routed away from potentially unstable channels, fills, and hillslopes.

Recommendation: We urge the Nez-Clear National Forest to analyze our recommended forest plan components in the final EIS, and include them in the Revised Forest Plan.

Monitoring

The Forest Service's plan monitoring program should provide information that enables the agency to determine if a change in components or other plan content guiding management of resources may be needed.[145] The monitoring program must set forth questions and associated indicators designed to inform management by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving the forest plan's desired conditions or objectives.[146]

In order to ensure effective monitoring of the Nez-Clear National Forest road system in relation towards achieving the Desired Conditions, we propose the following monitoring questions/indicators:

- How many miles of road have been improved or maintained to meet objective maintenance standards?
- How many miles of road have been treated to meet best management practices?
- How many miles of road have been effectively treated within at-risk and impaired watersheds according to the WCF roads and trails indicator, and within watersheds contributing to sediment or temperature impairment under section 303(d) of the Clean Water Act?
- What percentage of road miles have been decommissioned in subwatersheds with a "poor" WCF roads and trails indicator?
- What percentage of unneeded road miles have been decommissioned and reclaimed within inventoried roadless areas or areas with identified wilderness characteristics,[147] critical habitat, or other areas with recognized conservation values.
- What is the percentage of forest with decreased habitat fragmentation in areas important for providing connectivity and wildlife habitat?
- What percent of the road system is regarded as climate ready?
- What percentage of subwatersheds have an identified minimum road system?
- What percentage of subwatersheds have an implemented minimum road system?

Recommendations: We urge the Forest Service to include these or other comparable monitoring questions and indicators in order to effectively track progress toward achieving the desired conditions for the Nez-Clear National Forest road system.

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[145] 36 C.F.R. § 219.12(a)(1). See also FSH 1909.12, ch. 30.2.
[146] Id. § 219.12(a)(2).
[147] See FSH 1909.12, chapter 70, section 72.

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SUSTAINABLE RECREATION PLANNING AND MANAGEMENT

Concern

The Draft Plan and DEIS fail to provide for, or consider and analyze, forest plan components that provide for sustainable recreation, thereby failing to meet planning rule requirements. There is also no carrying capacity analysis for various types of recreation.

Rationales

Sustainable Recreation and the Recreation Opportunity Spectrum in the Planning Rule and Forest Service Directives

The 2012 planning rule establishes ecological sustainability as the overarching goal of planning, and directs that land management plans should provide people and communities with ecosystem services and multiple uses that provide a range of benefits – including recreational, educational, and spiritual – for the present and into the future.[148] To achieve this, the rule requires the Forest Service to provide for "sustainable recreation," which the rule defines as "the set of recreation settings and opportunities on the National Forest System that is ecologically, economically, and socially sustainable for present and future generations."[149]

In regard to the intersection between sustainable recreation and protecting environmental resources, the planning rule requires plan components, including standards or guidelines, to ensure achievement of the substantive provisions related to ecological integrity, sustainability, and diversity.[150] The planning rule also requires the plan to include "plan components, including standard and guidelines, to provide for…[s]ustainable recreation, including sustainable

[148] 36 C.F.R. § 219.1(c).
[149] Id. § 219.19.
[150] 36 C.F.R. §§ 219.8(a) and 219.9

settings....”[151] The Forest Service, therefore, has an obligation to develop plan components guiding the management of recreation settings, opportunities, infrastructure, and access that enable the agency to achieve these substantive provisions.

Further, the planning directives add detail to the planning rule’s provisions. Drawing on the unit’s distinctive role and contributions, the directives urge the forest to be proactive in developing a “coherent system of sustainable and socially compatible recreation opportunities.”[152] In doing so, the Forest Service should:

- *Use the ROS to define recreation settings, and then establish compatible activities (opportunities) within those settings. The Forest Service can create ROS sub-classes to reflect specific situations on a forest or reflect seasonal variations, as well as create different ROS settings for winter*.[153]
- *Map desired ROS classes based on management areas, geographic areas, designated areas, and/or independent overlay mapping, noting that desired ROS settings may be different from existing ROS settings.*[154]

The plan must include components, including standards or guidelines, to drive the transformation from existing to desired ROS settings.[155] It must also include components to direct management in specific 1) ROS classes, 2) management areas, 3) geographic areas, 4) designated areas, or 5) other places (e.g., landscapes with unique character, high conflict potential, cultural values, water features, scenic quality, important recreation destinations).[156]

The DEIS fails to provide Recreation Opportunity Spectrum settings that ensure sustainable recreation. The Draft Plan includes several components specific to the ROS settings, and provides a table showing suitable uses.[157] Yet, the proposed settings and suitability determinations fail to ensure recreation is ecologically sustainable, and therefore the settings fail to provide for sustainable recreation as the planning rule requires. Specifically, the Draft Plan allocates ROS settings providing for motorized recreation in areas that will harass wildlife and/or significantly disrupt wildlife habitat. This is especially true for returning grizzly bear, elk, wolverine, mountain goat, and other at-risk species. In previous comments we explained at length the importance of specific Inventoried Roadless Areas (IRAs) in providing secure habitat for a range of species. Yet, the Draft Plan proposes motorized ROS settings in several IRAs. To ensure full protection of IRAs, we urge the Forest Service to allocate them all as recommended wilderness with the Primitive ROS classification. As it stands, no draft plan alternative considers this management direction though we urged the Forest Service to do so.

Please see our specific IRA discussions.

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[151] 36 C.F.R. § 219.10(b)(1)(i)
[152] FSH 1909.12, § 23.23a(1)(d)(2)
[153] Id., § 23.23a(1)(d)(1).
[154] Id., § 23.23a(2)(a).
[155] Id., § 23.23a(2)(c) & (g).
[156] Id., § 23.23a(2)(h).
[157] Draft Plan, p. 72-75 - FW-DC-REC-02, FW-DC-REC-04,FW-DC-REC-14, FW-STD-REC-01, FW-GDL-REC-01

In addition, the Forest Service proposes definitions for Semi-Primitive Nonmotorized (SPNM) and Semi-Primitive Motorized (SPM) stating that mountain bike use may occur in these settings.[158] Unfortunately, the definition of the Primitive (P) ROS setting does not explicitly prohibit mountain bikes or mechanized travel, which is a non-conforming use in designated and recommended wilderness areas. The Primitive definition should be modified to preclude both motorized and mechanized travel. Further, the summer and winter ROS settings for Alternatives W and Y need correcting to reflect suitable uses in recommended wilderness areas (RWAs) under each of these alternatives. Draft management direction for Alternatives W and Y states that RWAs are not suitable for off-highway vehicle use or mechanized travel.[159] Classification of RWAs as SPNM is in conflict with this direction because mountain biking is allowed in a SPNM setting. RWAs should be classified as Primitive instead of SPNM under Alternatives W and Y to correct this oversight. Similarly, Alternative Z winter ROS allocations allows over-snow vehicle use in RWAs, which should also be converted to Primitive. Any final forest plan to ensure all RWAs receive the Primitive allocation, otherwise it will fail to meet the sustainable recreation definition by promoting conflicting uses.

Finally, we urge modifying the definition for the Semi-Primitive Nonmotorized classification to make it clear that ebikes are not present.

<u>The Forest Service must properly analyze off-road vehicle use and incorporate plan components to ensure motorized use is ecologically sustainable</u>

Subparts B and C of the Travel Management Rule (TMR) require that motorized use occur only on a designated system of roads, trails and areas.[160] Executive Orders establish that off-road vehicle trails and areas must be located to minimize damage to forest resources and existing and potential recreation uses.[161] The executive orders also include protective mechanisms designed to ensure that off-road vehicle designations are not impairing the protection of public lands. Specifically, they obligate the Forest Service to: 1) periodically monitor the effects of off-road vehicle use, and based on the data amend or rescind the off-road vehicle designations,[162] and 2) immediately close areas and trails to off-road vehicle use if the Forest Service determines that the use of off road vehicles "will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands … until such time as [the agency] determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence."[163]

Although travel management for the most part is decided in conforming project-level plans and decisions, land management plans should reinforce the travel management rule's provisions and requirements in standards, and provide the necessary detail on how the Forest Service will carry out and comply with the executive order provisions. Additionally, to the degree land

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[158] DEIS, p. 3.4.2-10.
[159] Draft Plan, p. 105.
[160] 36 C.F.R. § 212.51(a), 212.81(a)
[161] Exec. Order No. 11644, 37 Fed. Reg. 2877 (Feb. 8, 1972), as amended by Exec. Order No. 11989, 42 Fed. Reg. 26,959 (May 24, 1977).
[162] *Id.*. § 8
[163] *Id.*. § 9

management plans allocate areas as suitable for motorized use, these allocations are subject to the minimization criteria established in the executive orders. The Draft Plan lacks components incorporating the minimization criteria, which are necessary to meet the 2012 Planning Rule's sustainability and diversity requirements.[164] Specifically, the plan must include standards that establish the Forest Service will apply the Executive Order minimization criteria to projects that propose to create or modify off-road vehicle area or trail designations. Application of the criteria requires the Forest Service to demonstrate how each area and trail as well as the aggregate system minimizes – not just considers – impacts to forest resources and other existing and projected recreation uses.

To the extent that motorized recreation occurs on system roads, plan components must ensure that such access and use is sustainable. To that end, it is necessary to also apply the minimization and monitoring concepts in the Executive Orders to motorized recreation occurring on roads. Specifically, standards and guidelines should ensure that:

- all motorized designations minimize impacts;[165]
- are periodically monitored, reviewed, and modified as needed; and
- are modified immediately when considerable adverse damage is occurring.

These plan components are necessary to ensure that recreation is sustainable regardless whether it occurs on a trail, in an area, or on a road.

<u>Over-Snow Vehicle Use</u>

Regulatory Framework

Under Subpart C of the Forest Service's travel management regulations, 36 C.F.R. part 212, each national forest with adequate snowfall must designate and display on an "over-snow vehicle use map" a system of routes and areas where over-snow vehicle (OSV) use is permitted based on protection of resources and other recreational uses.[166] OSV use outside the designated system is prohibited.[167] Implemented correctly, the rule presents an important opportunity to protect wildlife during the vulnerable winter season, and prevent avoidable damage to vegetation, air and water quality, wilderness values, and other resources. It is important that the revised forest plan provides a strong framework for management of OSV use and for subsequent winter travel management planning under the regulation.

The OSV rule requires designation of areas and routes for OSV use "where snowfall is adequate for that use to occur."[168] Particularly with climate change leading to reduced and less reliable snowpack, low-elevation and other areas that lack regular and consistent snowfall should not be suitable for OSV use. Protecting those areas is necessary to adhere with the sustainable

[164] 36 C.F.R. §§ 219.8(a) and 219.9
[165] This reinforces the provision at 36 C.F.R. § 212.5(b)(1) that requires the Forest Service to identify a minimum road system ("forests must first "identify the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands.") See Section VI of these comments for a more in-depth discussion of this requirement.
[166] 36 C.F.R. § 212.81
[167] Id. § 261.14
[168] 36 C.F.R. § 212.81(a).

recreation definition and to ensure future OSV designations comply with the minimization criteria. To account for variable snowpack and ensure that OSV use occurs only where and when snowfall is adequate, minimum snow depth restrictions are an important forest plan component to further minimize impacts associated with current and future OSV area and trail designations. The best available science shows that minimum snow depths should be at least 18 inches for cross-country travel and 12 inches for travel on groomed trails.[169] These depths are generally sufficient to minimize impacts to water quality, soils, and vegetation and to buffer for variable snow conditions (e.g., while a shaded trailhead may have 12 inches of snow, south-facing slopes further up the trail may have little or no snow). The Forest Service should also address plans to enforce minimum snow depth restrictions, including protocols for monitoring snow depths, communicating conditions with the public, and implementing emergency closures when snowpack falls below the relevant thresholds. Minimum snow depths measurements should be taken at established locations that are representative of varying snow depths based on factors such as wind, orientation, slope, tree cover, etc. Depths should be reported regularly on the forest website and posted at popular access points.

In addition, forests should clearly identify season of use restrictions based on wildlife needs, water quality considerations, average snow depth figures, and other relevant information, with those restrictions serving as bookends, and minimum snow depth requirements providing an additional limitation on use.[170]

Existing Decisions

The Clearwater National Forest correctly included OSV designations in the 2012 Clearwater Travel Plan and 2017 motorized winter recreation plan. The Forest Service needs to complete its work to comply with Subpart C for the Moose Creek, Salmon River, and Red River Ranger Districts when forest plan revision is complete. Including OSV planning as a forest plan objective will ensure the Forest Service does not improperly rely on the Subpart C's "grandfather provision" under which the Forest Service can avoid preparing a new winter travel plan if it has made previous decisions that underwent public involvement and restrict over-snow vehicle use to designated routes and areas, if no change is proposed to those previous decisions.[171] The Forest Service can only use the "grandfather provision" to avoid completing a new winter travel plan if its prior decisions comply with the minimization criteria and other substantive requirements of the 2015 Over-Snow Vehicle Rule and Executive Order 11644. The Forest Service should disclose in the forest plan final EIS the status of its winter travel plan, and any future plans for winter travel planning processes.

The 2012 planning rule requires the review of the planning and land use policies of other Federal agencies, State and local governments, and Indian tribes.[172] This review includes (1) consideration of the objectives of these entities as expressed in their plans and policies, (2) the

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[169] Switalski, Adam, 2016. Snowmobile Best Management Practices for Forest Service Travel Planning: A Comprehensive Literature Review and Recommendations for Management – Introduction to Snowmobile Management and Policy. Journal of Conservation Planning Vol 12, pages 1 – 7.
[170] 36 C.F.R. § 212.81(a) (OSV rule permits agencies to designate areas or trails by "time of year" to tailor designation decisions to account for snowfall patterns).
[171] 36 C.F.R. §§ 280(b), 281(b).
[172] 36 CFR § 219.4(b).

compatibility and interrelated impacts of these plans and policies, (3) opportunities for the plan to address the impacts identified or contribute to joint objectives, and (4) opportunities to resolve or reduce conflicts, within the context of developing the plan's desired conditions or objectives. The Forest Service asserts it completed such a review and found no issues of concern or conflict, and cites project records for supporting discussion.[173] This is hardly sufficient and we strongly question the agency's conclusion given the Lolo National Forest does not permit OSV use within its portion of the Great Burn recommended wilderness, directly adjacent to the Hoodoo IRA. Any Nez-Clear final forest plan must include consistent management direction with the Lolo National Forest, or show in the final EIS how the agency complied with 2012 planning rule requirements. This is especially important regarding opportunities to resolve or reduce management conflicts, such as the likely trespass into Montana's protected area that will result from any future OSV designations in the Hoodoo IRA as a result of the final forest plan decision. Such illegal use has been well documented in past correspondence with the Forest Service and independent reports.[174]

OSV Suitability and Winter Motorized Impacts

Over-snow vehicles may have substantial harmful impacts on a variety of resources, including air quality, water quality, vegetation and wildlife. Over-snow vehicles may adversely impact the experiences of other users on the Nez Perce Clearwater National Forest, such as those seeking quiet recreation and natural, undisturbed landscapes. Over-snow vehicles may degrade Wilderness characteristics, including opportunities to experience solitude and participate in primitive forms of recreation.

Technological advances in recreational machinery have increased the power and ability of snowmobiles and other over-snow vehicles.[175] New technological capabilities of over-snow vehicles allow riders to navigate steeper terrain, deeper snow, and more dense forests. Over-snow vehicles are able to travel much farther into the backcountry as a result of increased power and ability of over-snow vehicles. New technology allows over-snow vehicles to partake in activities such as highmarking—where over-snow vehicles race up steep slopes toward ridge tops and then quickly turn before capsizing and race back down the slope.

Motorized snow bikes are becoming popular and allow riders to go through tighter spaces than traditional snowmobiles. Motorized snow bikes allow riders to access more narrow terrain and more dense forests than traditional snowmobiles. Motorized snow bikes, or e-bikes, are considered motor vehicles under § 212.1 of the Travel Management Rule.

Modern technology gives over-snow vehicle users the ability to travel to steep, remote, ungroomed areas that were never previously accessible to riders. In turn, increases in machine

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[173] DEIS, p. 3.9.5.

[174] Knight and Reissen 2003. Stopping Snowmobile Tresspass in its Tracks: Native Forest Network's Last Refuge Campaign 2003 Report; Knight and Reissen 2002. Tracking Snowmobile Trespass: Native Forest Network's Last Refuge Campaign Documents Illegal Motorized Travel in Wilderness Areas and Roadless Lands. And snowmobiling has only grown in popularity since the early 2000s.

[175] Switalski, A. (2016). Snowmobile Best Management Practices for Forest Service Travel Planning: A Comprehensive Literature Review and Recommendations for Management.

power and geographic scope of over-snow vehicle activity has changed, and exacerbated, the impacts of over-snow vehicles on the environment, wildlife, and other recreationists.

Given these harmful effects and technological advances, it is crucial that the Forest Service establish strong protections in its final forest plan. As it stands, the draft plan and DEIS fail to adequately consider or provide sufficient protections. The Forest Service identifies areas of suitability for OSV use dependent on ROS allocations.[176] Yet those ROS allocations, and thus areas of suitability, are not ecologically sustainable because they fail to adequately protect wildlife or ensure future OSV designations will adhere to the minimization criteria as we note above. The following sections provide evidence and rationale supporting this fact. The subsequent final forest plan and supporting EIS must better consider and address these harmful environmental consequences.

Impacts to natural resources

Over-snow vehicle use may damage exposed soil and vegetation. Over-snow vehicle use may harm water quality, especially early or late in the winter season when there is a likelihood of inadequate snow levels. Damage from over-snow vehicle use may occur where wind moves the snow and exposes soil and vegetation. Over-snow vehicle use may cause damage to plants important to wildlife. Over-snow vehicle use can compact the snow. Snow compaction may reduce the soil temperature and soil microbial activity, and may slow germination of seeds. Snow compaction may result in wet and soft trails due to slower snow melt, ultimately leading to damage by other users in the spring. Over-snow vehicles that run over or near vegetation may damage trees and shrubs by tearing at the bark, ripping off branches, or topping trees.

Over-snow vehicles are designed to, and do, travel off-trail. Over-snow vehicle use off of trails may disturb soil, create weed seedbeds, and disperse seeds. The greatest vector for the spread of weeds is through motorized vehicles—cars, trucks, All Terrain Vehicles ("ATVs"), and snowmobiles. Fuel leaks and exhaust from over-snow vehicle use may negatively impact soil quality and vegetative health.

Noise & air pollution

Motors from over-snow vehicle use create noise that may disrupt and degrade the naturalness of an area. Noise pollution from snowmobile use can be heard for miles, despoiling the quiet recreation experience often sought by non-motorized winter recreationists. Air pollution and exhaust smell also extend for great distances from snowmobile use, detracting from the experience of non-motorized recreationists and negatively impacting wildlife and wildlife habitat. Over-snow vehicle use may diminish opportunities for solitude and primitive recreation. Over-snow vehicle use may reduce the likelihood that Congress will eventually designate such areas as Wilderness. Noise from over-snow vehicles may also harass wildlife and disrupt wildlife habitat.

Impacts to wildlife, generally

Over-snow vehicle use can have adverse impacts on wildlife including grizzly bears, Canada lynx, wolverine, mountain goats, elk, and other ungulates. The presence and noise from over-snow vehicle use may increase stress to wildlife in the winter. Wildlife tend to be more vulnerable in the winter. Over-snow vehicle use may cause both a physiological and behavioral

[176] Draft Plan, p. 76, Table 17.

response in wildlife. Over-snow vehicle use may facilitate competition among species. Over-snow vehicle use may cause displacement and avoidance of wildlife. Over-snow vehicle use may reduce the amount of available habitat because species avoid motorized vehicles. Harmful impacts from winter motorized use can be significant, especially where specific routes cut through wildlife habitat.

Grizzly Bear

With grizzly bears returning to the Nez-Clear National Forest, as we note in these comments, it is imperative the Forest Service include plan components that will protect denning habitat in order to ensure bear populations can thrive, and to prevent harassment and significant disruption of grizzly bear habitat.

Winter motorized travel adversely impacts grizzly bears. Grizzly bears generally select den sites one to two kilometers from human activity. Human disturbance within one kilometer of a den site has a significant risk of causing abandonment, especially early in the denning season. Vehicles operated within approximately 3,300 feet of denned bears have caused elevated heart rates compared to undisturbed conditions. Grizzly bears den in relatively high elevation areas with more stable snow conditions and steep slopes. Snowmobiles can easily access remote snow-covered sites and therefore pose a potential for disturbance to grizzly bears. Grizzly bear denning habitat often overlaps with winter motorized recreation areas, making grizzlies susceptible to disturbance from over-snow vehicles.[177]

The greatest potential for disturbance from snowmobiles to grizzly bears is during den emergence when bears are still confined to the den vicinity. The mean week of grizzly bear den emergence is from the third week in March to the fourth week in May.[178] Snow conditions may allow snowmobiling to continue well past April 1, especially in higher elevations. It is important to provide secure habitat when grizzly bears are emerging from dens so bears are able to fully use available resources.[179]

Female grizzlies with cubs have high energetic needs. Grizzly bear cubs have limited mobility for several weeks after leaving the den. Grizzly females and cubs remain in the den site area for several weeks after emergence from dens. Disturbance levels that cause a female to prematurely leave the den in spring or move from the den area can impair the fitness of a female grizzly and safety of her cubs.[180] Snowmobiles may also disturb or displace grizzlies where roads occur in or near grizzly bear preferred spring habitat and the roads are available for over-snow vehicle use

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[177] J.D.C. Linnell *et al.*, How vulnerable are denning bears to disturbance? 28 Wildlife Society Bulletin 2 (2000).
[178] M. Haroldson and F.T. van Manen, Estimating Number of Females with Cubs, *in* Yellowstone grizzly bear investigation: annual report of the Interagency Grizzy Bear Study Team (F.T. van Manen *et al.*, eds. 2014).
[179] USDA Forest Service, Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (2006), page 7.
[180] USDI, Fish and Wildlife Service, Endangered Species Act Section 7 Consultation Supplement to the Biological Opinion (2010) on the Effects of the 2009 Revision of the Beaverhead-Deerlodge National Forest Land and Resource Management Plan on Grizzly Bears (2013).

after April 1. In general, grizzlies avoid roads[181] and select den sites one to two kilometers from human activity.[182] A comprehensive review found human disturbance within one kilometer of a den site has a significant risk of causing abandonment, especially early in the denning season.[183]

Possible effects from snowmobiles to grizzly bears include den abandonment, loss of young, increased energetic costs while bears are in dens or displaced away from suitable habitat if outside dens, learned displacement from suitable habitat resulting from exposure to disturbance, and death. Additional effects include waking from deep sleep, progressing through increased heart rate, body warming, and movement within the den. Minor physiological changes like frequent waking or small increases in body temperature may have a cumulative effect on energy use and consequent weight loss of denning bears.

Snowmobile use may also result in direct mortality to grizzly bear if an avalanche is triggered on a slope where bears are hibernating. [184] Grizzly bears typically den in relatively high elevation areas with more stable snow conditions and steep slopes.[185]

Canada Lynx

In 2000, the FWS listed Canada lynx as threatened with extinction under the ESA in part of its range. 65 Fed. Reg. 16052 (March 24, 2000). It identified the inadequacy of existing regulatory mechanisms, specifically the lack of guidance for conservation of lynx and lynx habitat in Forest Plans and Bureau of Land Management Resource Management Plans as the primary threat to the species. *Id.* at 16052-16086. FWS published a clarification of findings in 2003, determining that threatened species designation was appropriate for the lynx. 68 Fed. Reg. 40076 (July 3, 2003). The primary factor driving lynx behavior and distribution is the distribution of snowshoe hare, their primary prey.

Lynx in the contiguous United States may exist as several smaller, effectively isolated populations. Metapopulation stability depends on habitat quality and successful dispersal between isolated habitat patches. The likelihood of subpopulation persistence declines with increasing fragmentation and isolation. Maintaining habitats to provide for dispersal movements and interchange among individuals and subpopulations may be the most important provision for maintenance of population viability in the Lynx Conservation Assessment and Strategy (LCAS).[186]

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[181] R.D. Mace *et al.*, Relationships Among Grizzly Bears, Roads and Habitat in the Swan Mountains, MT, 33 Journal of Applied Ecology (1996).
[182] Linnell (2000).
[183] *Id.*
[184] G.V. Hilderbrand *et al.*, A Denning Brown Bear, Ursus arctos, Sow and Two Cubs Killed in an Avalanche on the Kenai Peninsula, Alaska, 114 Canadian Field-Naturalist 3 (2000).
[185] *Id.*
[186] Interagency Lynx Biology Team (ILBT), Canada lynx conservation assessment and strategy (3d ed. 2013), Forest Service Publication R1-13-19. The LCAS continues to fulfill important roles in promoting conservation of the species on federal lands like the Payette National Forest. *Id.* at 4.

Snowmobiles may directly affect Canada lynx during winter months. During winter months, Canada lynx are especially vulnerable due to physiological responses like increased heart rate and elevated stress level.[187] Noise from snowmobiles disturbs the ability of lynx to hunt. Noise from snowmobiles increases stress to lynx. Studies on other large mammals that reside in lynx habitat indicate that snowmobiles elicit an even higher stress response than off road vehicles.[188] Snowmobiles may disturb den sites during a time when lynx are rearing young.[189]

Snowmobiles may also displace lynx and disrupt otherwise quiet winter habitat by facilitating human access into historically remote winter forest landscapes, increasing lynx interactions with humans, and increasing hunting, trapping, and poaching mortality.[190] This in turn may result in direct collisions, death, habitat fragmentation, and potential population declines.[191] Snowmobiles may disrupt otherwise quiet winter habitat by facilitating human access into historically remote winter forest landscapes. Snowmobiles may disrupt otherwise quiet winter habitat by increasing lynx interactions with humans. Snowmobiles may disrupt otherwise quiet winter habitat by increasing hunting, trapping, and poaching mortality.

Wolverine

In 2013 the FWS proposed to list the distinct population segment of the North American wolverine as threatened under the ESA. 78 Fed. Reg. 7864 (Feb. 4, 2013). After a district court vacated the FWS's 2014 withdrawal of its proposal, in 2016 the FWS reopened the public comment period on its proposal to list the distinct population segment of wolverine occurring in the contiguous United States as threatened under the ESA. 81 Fed. Reg. 71670 (Oct. 18, 2016). Factors affecting the wolverine's continued existence include projected decrease and fragmentation of wolverine habitat and range due to climate change, trapping, lack of regulatory mechanisms to address the threats to wolverine habitat from climate change, and loss of genetic diversity due to small population size.

Wolverine may be sensitive to disturbance from motorized winter recreation activities, and may alter their behavior in response to motorized winter recreation activities. Wolverine may avoid areas where motorized winter recreation activities occur. Disturbance from foot and snowmobile traffic have been purported to cause maternal female wolverine to abandon natal dens and relocate kits to maternal dens. 78 Fed. Reg. 7878 (Feb. 4, 2013).

Snowmobile use commonly overlaps with wolverine denning habitat.[192] Dispersed recreational activities like motorized winter recreation have the potential to negatively impact wolverine by

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[187] W.L. Gaines *et al.*, Assessing the cumulative effects of linear recreation routes on wildlife habitats on the Okanogan and Wenatchee National Forests (2003), Gen. Tech. Rep. PNW-GTR-586, *available at* http://www.fs.fed.us/pnw/pubs/gtr586.pdf (last accessed August 22, 2017), pages 5-6.
[188] S. Creel *et al.*, Snowmobile Activity and Glucocorticoid Stress Responses in Wolves and Elk, 16 Conservation Biology 809, 812 (2002).
[189] J.J. Claar *et al.*, Carnivores, *in* Effects of recreation on Rocky Mountain wildlife: a review for Montana (G. Joslin and H. Youmans, cords., 1999).
[190] Gaines (2003) at 11. *See also* 2008 Main Salmon BA at 7.
[191] Gaines (2003) at 11-12.
[192] Switalski (2016) at 15; Copeland (2009).

disrupting natal denning areas.[193] Wolverines have one of the lowest successful reproductive rates known to mammals, and this is hypothesized as linked to winter energy constraints. Female wolverines select and enter dens and give birth in February to mid-March[194] and the overlap of winter recreation with this energetically taxing period is highly concerning. Any disturbance during this important winter period can negatively affect productivity and other vital rates.[195]

Researchers have reported that female wolverines may be sensitive to human disturbance in the vicinity of natal and maternal dens, and disturbance from foot and snowmobile traffic has been purported to cause maternal females to abandon or move dens.[196] One study found that females tended to avoid areas with heli-skiing and backcountry skiing areas.[197] Another study found that motorized recreation occurred at higher intensity across a larger footprint than non-motorized recreation in most wolverine home ranges.[198] Female wolverines exhibited stronger avoidance of off-road motorized recreation and experienced higher indirect habitat loss than male wolverines.[199] High-cirque snowmobile use, especially cross-country use and "high marking," may present a substantial threat to wolverines and their habitat.

These behavioral changes can negatively affect individuals' physiological stress levels and reproductive capacity in several ways, as evidenced in numerous studies on different species.[200] It may reduce the amount of time and thus ability of female wolverines to hunt or to utilize food caches. This would result in significant additive energetic effects, reducing foraging success for adult females already stressed by the demands of bearing and raising a litter. In addition, this could reduce kit survival rates by increasing the potential for predation and exposure to cold temperatures. These results indicate that winter recreation may impact wolverines in as yet unknown ways.

As snowmobiling and backcountry skiing continue to grow in popularity and as snowpack continues to decline due to climate change, there is increasing concern that wolverine denning habitat may become limiting. Recent warming has already led to substantial reductions in spring snow cover in the mountains of western North America.[201] Numerous recent and sophisticated

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[193] *See, e.g.*, Inman *et al.* (2008); J. Krebs *et al.*, Multiscale habitat use by wolverines in British Columbia, Canada, 71 Journal of Wildlife Management 2180 (2007); E.C. Lofroth and J. Krebs, The Abundance and Distribution of Wolverines in British Columbia, Canada, 71 Journal of Wildlife Management 2159 (2007); L.F. Ruggiero *et al.*, Wolverine conservation and management, 71 Journal of Wildlife Management 2145 (2007).
[194] Magoun, A.J. *et al.* (2017). Detecting Snow at the Den-Site Scale in Wolverine Denning Habitat, 41 Wildlife Society Bulletin 381.
[195] R. May *et al.*, Impact of infrastructure on habitat selection of wolverines *Gulo gulo*, 12 Wildlife Biology 285 (2006); Krebs (2007).
[196] S. Myrberget, The breeding den of the wolverine, 21 Fauna 108 (1968); Inman *et al.* (2008); Copeland (2009).
[197] Krebs (2007).
[198] Heinemeyer, *et al.* (2019). Wolverines in winter: indirect habitat loss and functional responses to backcountry recreation.
[199] *Id.*
[200] S.J. Creel *et al.*, Snowmobile activity and glucocorticoid stress responses in wolves and elk, 16 Conservation Biology 809 (2002).
[201] P. Mote *et al.*, Declining mountain snowpack in western North America, 86 Bulletin of the

studies support the conclusion that climate changes caused by global climate change are likely to negatively affect wolverine habitat.[202] Protection of denning habitat may be critical for the persistence of the species.

An additional concern related to snowmobile use is that motorized access leads to increased trapping pressure (direct or indirect capture) for some furbearers that prefer more mesic habitat conditions generally found at higher elevations or in riparian habitats, such as marten, fisher, lynx, and wolverine. Trapping season for these species is limited to the winter months, and most trappers prefer the relatively easy access to suitable habitat provided by snowmobiles. Wolverine populations in small, isolated mountain ranges can be very susceptible to trapping pressure.[203] Trapping pressure for these species is dramatically reduced if there is less snowmobile access.

The best available science reveals that motorized winter recreation poses a threat to wolverine persistence and recovery, in addition to the threats posed by climate change. The cumulative effect of climate change and motorized winter recreation on wolverine is significant. As wolverines lose habitat to the effects of climate change, wolverine and motorized winter recreationists will be forced to share smaller and smaller habitat patches.[204] Decreasing areas with sufficient snow will amplify the effect of motorized winter recreation on wolverine due to the fact that motorized winter recreation will be concentrated in smaller areas on the Nez Perce Clearwater National Forest. Designated wilderness areas may not necessarily provide for all of the wolverine's life history requirements.

Mountain Goats

Idaho Fish and Game manages three mountain goat population management units (PMUs) in the planning area, including the Black Snow, Lochsa-Selway, and Lower Salmon PMUs. The state agency found that while the mountain goat population on the western side of the Black Snow PMU is considered stable, the most recent Idaho Fish and Game survey (2018) revealed a significant drop of about 85 percent in population numbers since 2010 on eastern side of the PMU, indicating a population decline. IDFG counted 56 mountain goats in the eastern portion of

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American Meteorological Society 1 (2005); G.T. Pederson *et al.*, A century of climate and ecosystem change in Western Montana: what do temperature trends portend? 96 Climatic Change (2010).

[202] Magoun (2017); P. Gonzales *et al.*, Wolverines and Climate Change, Unpublished report (2008); J.F. Brodie and E. Post, Nonlinear responses of wolverine populations to declining winter snowpack, 52 Population Ecology 279 (2010); J.P. Copeland *et al.*, The bioclimatic envelope of the wolverine (Gulo gulo): do climate constraints limit its geographic distribution? 88 Canadian Journal of Zoology 233 (2010); K.S. McKelvey *et al.*, Climate change predicted to shift wolverine distributions, connectivity, and dispersal corridors. 21 Ecological Applications 2882 (2011); S. Peacock, Projected 21st century climate change for wolverine habitats within the contiguous United States. Environmental Research Letters (2011); K.M. Johnston *et al.*, Projected range shifting by montane mammals under climate change: implications for Cascadia's National Parks, 3 Ecosphere 11 (2012).

[203] J.R. Squires *et al.*, Sources and patterns of wolverine mortality in western Montana, 71 Journal of Wildlife Management 2213 (2007).

[204] Heinemeyer (2019).

the PMU in 2010 (Hickey 2020). Only 7 mountain goats were counted during a 2017 survey in the eastern portion of the PMU. The mountain goat population in the Lochsa Selway PMU is also considered declining. The latest population survey occurred in 2014. This PMU was last surveyed in 1996. The latest survey encompassed the southern half of the PMU and revealed a significant drop of about 88 percent in population numbers since 1996. Mountain goat hunting has been closed in this PMU since 1983 due to concerns about population declines.

Despite the introduction of 70 goats into the Lower Salmon PMU over the last 55 years from the Black Snow and Seven Devils PMUs, mountain goat hunting has been closed here since 1983 due to declining population numbers. The northern portion of this PMU has not been surveyed since 1993, but a 2003 survey of the southern portion of the PMU revealed a significant drop of about 91 percent in population numbers since 1990 (IDFG 2019). In summary, Idaho Fish and Game has determined that populations in all three PMUs are declining.

The significance of the threat of over-snow vehicle use to mountain goats is severe. Specifically, with regard to the eastern portion of the Black Snow PMU, the Forest Service states that "[t]here is some concern about unauthorized snowmobile use in the Black Snow PMU, but this is unstudied,"(Fox et al. 1989). Winter is a critical seasonal time period for mountain goat survival. Goats experience significant nutritional deprivation during the winter . Deep snow reduces the availability of food and increases energy expenditures (Dailey and Hobbs 1989). To conserve energy, mountain goats try to limit their movements to small winter ranges (Keim 2004, Schoen and Kirkoff 1982, Smith 1982). Displacement due to over-snow vehicle use and helicopter-supported backcountry skiing operations will cause mountain goats to expend critical energy reserves. There is a limited amount of winter range in the Great Burn Roadless Area, which comprises the eastern portion of the Black Snow PMU. Illegal over-snow vehicle use regularly occurs near Blacklead Mountain and Williams Peak where a significant portion of the winter range occurs. In 2010, Idaho Fish and Game counted 56 mountain goats in this area (Hickey 2020). In 2017, only 6 goats were counted. The IDFG (2018) reported that during the latest survey "extensive tracks from illegal snowmobiles and snow bikes were observed all over the mountain goat winter range." The best professional judgement of biologists is that the observed declines are likely a result of illegal OSV use.

Available scientific information clearly indicates that the mountain goat population in the planning area is declining. Most nannies do not produce their first kid until age 4 or 5, and recruitment rates are low (IDFG 2019). These biological realities make it difficult to grow mountain goat herds whose populations have been suppressed. Achieving mountain goat population objectives requires stringent management approaches. In addition to limiting or restricting harvest where numbers are below objective, it is important for managers of mountain goat habitat to limit stressors. Over-snow vehicle use in mountain goat winter ranges can result in expenditure of critical energy reserves, trigger avalanches that bury goats, and indirect habitat loss. Because populations in all three PMUs are declining and in the professional judgement of agency biologists, over-snow vehicle use is likely contributing to these declines.

In preparation for comments on the Draft Forest Plan, The Wilderness Society commissioned a literature review, *Impacts of Human Recreational Land Use on Mountain Goats (Oreamnos Americanus)*. This document is attached, and we incorporate by reference their comments pertaining to mountain goats submitted jointly with other conservation organizations. The findings and conclusions in The Wilderness Society comments support the fact that the Forest

Service must include plan components that protect mountain goats from OSV use and deem mountain goat habitat as unsuitable for winter motorized ROS allocations.

Monitoring

The Forest Service must create and carry out a strategy for monitoring the impacts of off-road vehicle use on Forest Service-administered lands, and make the monitoring results available to the public, including recommendations for amendments or rescissions of off-road vehicle designations. The strategy must include indicators that trigger action under Section 9 of the Executive Order.[205] If applicable, the strategy must also include monitoring, trigger points, and actions related to the impacts that result from cross-country driving for dispersed camping.

As it stands, the Draft Plan includes some monitoring protocols specific to motorized use that we support, and which need supplementing to better address the pervasive problem of unauthorized motorized use, and to determine if motorized designations are conflicting with the Planning Rule's sustainability and diversity requirements, as well as to evaluate the effects from allowing motorized recreation in recommended wilderness and inventoried roadless areas for certain alternatives. We urge the Forest Service to revise its monitoring plan and strategy to include more focus on enforcement, including compliance with Motor Vehicle Use Maps and Over Snow Vehicle Use Maps as measured by citations, instances of vandalism or other signs of non-compliance (e.g. signs shot, gates damaged or bypassed, presence of unauthorized roads/trails, etc.), and documented instances of illegal OSV use found by cooperating agencies or citizen groups.

Recommendations

In addition to correcting the deficiencies we note above, several additions and changes to the Draft Plan are necessary to ensure compliance with the forest planning rule. Below is a list of our proposed changes. We also incorporate by reference the recommended plan component provided in comments from the Winter Wildlands Alliance specific to OSV management (attached), in addition to those we propose below.

I. Desired Conditions (REC-DC)

The Draft Plan desired conditions does not adequately address the impact of motorized recreation, or ensure it will meet the forest planning rule requirements for sustainability or diversity of species. Further, the Draft Plan desired conditions need revising to clarify and improve those specific to the ROS. We suggest adding the following new desired conditions or changing those proposed to reflect the following desired conditions:

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[205] Section 9 requires that when the agency determines that the use of off road vehicles will cause or is causing considerable adverse effects on the soil, vegetation, wildlife, wildlife habitat or cultural or historic resources of particular areas or trails of the public lands, it must immediately close such areas or trails to the type of off road vehicle causing such effects, until such time as he determines that such adverse effects have been eliminated and that measures have been implemented to prevent future recurrence.

- Proper management of motorized recreation ensures the use does not impair ecological, cultural, or other resources. Management of motorized recreation minimizes conflicts among other recreational uses; minimizes damage to soil, watershed, vegetation, and other national forest resources; and minimizes harassment of wildlife and disruption of wildlife habitat.
- The primitive ROS class provides recreation opportunities in unroaded and nonmotorized settings, including recommended wilderness areas. Unmodified natural and natural-appearing settings dominate the physical environment.
- The semi-primitive non-motorized ROS class provides for non-motorized recreation opportunities in unroaded and nonmotorized settings. A natural-appearing setting dominates the physical environment, with only subtle or minor evidence of human-caused modifications.
- The design, management and maintenance of the designated motorized system of roads, trails and areas provides landscape and aquatic connectivity necessary for the recovery and viability of fish and wildlife species.
- The design, management and maintenance of the designated motorized system of roads, trails and areas is climate resilient and able to withstand variable storm events and wide fluctuations in precipitation.
- Infrastructure and development related to sustainable recreation reflects long term funding expectations.

II. Objectives (REC-O)

The Draft Plan lacks specific objectives that will ensure achieving or maintaining the desired ROS settings. We recommend adding the following objective:

- Within 10 years, all motorized roads and trails within primitive and semi-primitive nonmotorized ROS classes will be decommissioned or converted to non-motorized trails.

III. Standards

The draft plan lacks strong standards that will ensure meeting the Forest Service proposed desired conditions or those we list above. The one standard specific to the ROS appears to focus just on facilities and trails, and references a "trail management plan."[206] We recommend more protective standards for primitive and sem-primitive non-motorized ROS classes, but should the Forest Service seek to retain its standard, the final plan should include a revised version that reads:

- FW-STD-REC-01 - "Recreational uses shall be consistent with the recreation opportunity spectrum class designations and specialized plans (e.g., wilderness, recreation corridor, river management, scenic byway, and travel management plans).

However, we urge the agency include the following standards that are necessary to provide for sustainable recreation:

- Motorized uses are prohibited in primitive recreation opportunity spectrum settings.

[206] Draft Plan, p. 74 (FW-STD-REC-01).

- Motorized uses are prohibited in desired semi-primitive nonmotorized recreation opportunity spectrum settings, except as necessary for emergency access.
- Motorized use designations will minimize conflicts among recreational uses; minimize damage to soil, watershed, vegetation, and other national forest resources; and minimize harassment of wildlife and disruption of wildlife habitat.
- No new roads and motorized trails or areas shall be constructed or designated in desired primitive recreation opportunity spectrum settings.
- No new roads and motorized trails or areas shall be constructed or designated in desired semi-primitive nonmotorized recreation opportunity spectrum settings, except for necessary emergency access.
- Any temporary project-level roads or motorized trail construction in desired semi-primitive nonmotorized settings must be rehabilitated within two years of project completion.
- No management decision will authorize cross-country motorized travel. (If the Forest Service fails to consider or adopt this standard, we urge the agency adopt the following direction):
  - Management decisions authorizing cross-country motorized travel will be done sparingly, and must ensure the protection of soil, water and species of conservation concern.

IV. Guidelines

In order to achieve the desired conditions and objectives, the Forest Service should adopt the following guidelines:

- ROS allocations do not equate to motorized designations, and implementation-level travel planning is necessary to designate motorized use in areas with motorized settings.
- Trails should be designed, constructed, rerouted, decommissioned, or maintained using current best practices to promote sustainable design while providing desired recreation opportunities and protecting the values of other resources.
- Trails should not be used for management activities that may negatively impact the trail, such as for landings, skid trails or firelines. Impacts to system trails should be avoided and mitigated upon project completion if unavoidable.
- Existing trail segments found to adversely impact natural or cultural resources should be evaluated to address such impacts. Use alternative designs, reroutes, mitigations, or decommissioning of the trail to eliminate, minimize, or resolve adverse impacts.
- Project-level analysis should identify and remove unauthorized trails.

INVASIVE SPECIES

The DEIS explains, “An invasive weed is a plant species that is nonnative to an ecosystem and that, upon its introduction there, causes or is likely to cause economic or environmental harm or harm to human health.” The DFP definition extends that definition to “invasive species.”

The problem

The DEIS outlines impacts of invasive species and how they spread:

> Invasive weeds present one of the most immediate and disruptive threats to ecosystem function and integrity nationally, regionally, and on the Nez Perce-Clearwater. Invasive weed infestations are difficult to manage and can substantially change biological diversity by affecting the amount and distribution of native plants and animals. They can also have negative effects on forest regeneration, wildlife and livestock forage, native plants associated with tribal rights, landscape and soil productivity, fire cycles, nutrient cycling, riparian and hydrologic function, water quality, and human recreational activities (U.S. Department of Agriculture, Forest Service and U.S. Department of the Interior, Bureau of Land Management, 2000).
>
> Invasive species can have a major impact on at-risk species on the Nez Perce-Clearwater. In general, increased ground disturbance corresponds with increased weed spread. Roads, trails, livestock, and canopy reduction can provide ideal pathways for the introduction of exotic and non-native species. Introduced, invasive plant species can displace at-risk species through competitive displacement, especially in the grassland and rocky guilds.
>
> Competition from invasive, non-native species and noxious weeds can result in the loss of habitat, loss of native pollinators, and decreased rare plant species viability.
>
> Roads and trails for recreational use can contribute to the spread of noxious weeds.
>
> Invasive weeds often adapt to habitats where they are not native, and they lack the natural controls, such as predatory insects and disease, that may have evolved within their native ranges. As a result, they tend to spread aggressively and reduce overall native community diversity and generally disrupt the natural processes of the environment. They displace native plants, reduce forage for some animal species, degrade natural communities, change hydrology, change microclimatic features, increase soil erosion, alter wildfire intensity and frequency, and cost land management agencies and governments millions of dollars in treatments and fire suppression.

The DEIS explains "the mechanism for the transport of weed seed is termed a 'vector.' Vectors for weed spread include equipment, vehicles, animals, people, wind, and water. Vectors associated with, or resulting from, future management activities on the Nez Perce-Clearwater may affect various resources by aiding in the spread of weeds."

Also, "There are also impacts to plants associated with wildfire suppression activities, such as …the increased potential for the spread of noxious weeds." (DEIS).

USDA Forest Service, 2015a explains how noxious weeds' adverse impacts on soil has cascading effects to other aspects of the forest ecosystem:

> Infestations of weeds can have wide-ranging effects. They can impact soil properties such as erosion rate, soil chemistry, organic matter content, and water infiltration. Noxious weed invasions can alter native plant communities and nutrient cycles, reduce wildlife and livestock forage, modify fire regimes, alter the effects of flood events, and influence other disturbance processes (S-16). As a result, values such as soil productivity, wildlife habitat, watershed stability, and water quality often deteriorate.

In revising the forest plan of the Custer-Gallatin National Forest, the Soil Report discloses significant soil impacts from noxious weed species:

> Another source of soil disturbance prevalent on certain areas of the Custer Gallatin is infestation of lands by noxious weed species. **Weed seed** when it becomes prevalent in surface soil horizons **becomes a biological factor of the soil** that has the potential to **reduce land productivity** and restrict management options. Strong correlations have been found on the Custer Gallatin, especially on certain soil-landscape types, between past soil disturbance and the occurrence of noxious weeds. These **infection sites then become source areas for the spread of noxious weeds** into adjacent, non-disturbed areas. Noxious weed spread can follow disturbance since weeds have opportunistic traits and can exploit disturbed soil conditions (Williamson and Harrisburg 2002; Norton et al. 2007; James et al. 2010) typical of many pioneer species. The expansion of weed infestations into new areas can **alter nutrient regimes and organic carbon levels in the soil** which shifts the competitive balance on a site away from desired native species (Wolf and Klironomos 2005; Steinlein 2013). Management options and **growth potential** are both **reduced** when weed infestations exceed thresholds where restoration becomes difficult, creating new novel plant assemblages (Seastedt et al. 2008). Once a noxious weed becomes a co-dominant species on a site, whether in a grassland area or as a forest understory plant, **changes to the soil and reduced site potential are consistent with the concept of "permanently degraded**" as used in the National Environmental Policy Act (1970) and the National Forest management Act (1976). (Emphases added.)

And the impacts are likely to worsen with the changing climate. The DEIS states, "Changing climate is likely to increase the risks of and extent of invasive species. …Both herbicide use and costs are expected to increase as temperatures and carbon dioxide levels rise (Hatfield et al., 2014)."

The Forest Service's management regime is most of the problem. The spread of noxious weeds is exacerbated by every action that disturbs soil or otherwise upsets the balance of native vegetation.

For example, cattle are effective agents in dispersing exotic species and may disperse more than an order of magnitude more seeds than elk and deer per animal (Bartuszevige and Endress, 2008). Admissions of the culpability of management from the DEIS include:

> <u>Disturbance</u> is widely recognized as a primary influence on plant community composition and is frequently implicated in the spread of invasive weeds (Hobbs & Humphries, 1995). Disturbance is defined as "any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment" (Pickett and White 1985). Parks et al (2005) examined the patterns of invasive plant diversity in northwest mountain ecoregions and found an overwhelming importance of disturbance in facilitating the establishment of non-native plants.
>
> Buckley et al (2003) found that features common in logged areas such as skid trails and haul roads are likely to support populations of nonnative plants. Their research also suggests that haul roads, skid trails and main forest routes serve as primary conduits for entry of introduced species into the interior of managed stands. At regional or landscape scales, composition and abundance of nonnative invasive plants tend to be lower in protected or undeveloped areas than in human-dominated landscapes or landscapes

> fragmented by human use (Barton & Crispin, 2003). Though, natural disturbance can be a major contributor to increases in invasive species abundance, most of today's weed problems arise from past and present human activities (Hobbs & Humphries, 1995).
>
> Slash pile burning is prone to invasion by nonnative species.
>
> New infestations along roads and trails on National Forest System lands and on other land ownerships are occurring. In some areas, expansion is outpacing containment and control efforts (Dohman, 2006). Various methods of dispersal have led to the establishment of invasive weed infestations, which are particularly likely to occur after ground disturbances such as timber harvest, prescribed burning, and wildland fire events. These types of ground-disturbing events have provided favorable conditions for invasive weed establishment by clearing vegetation or exposing mineral soils. Roads, trails, and rivers have been identified as the primary conduits or vectors for invasive plant establishment and spread (ICBEMP, 1997). In addition, the failure to integrate prevention and early detection in past project development and implementation has allowed invasive weeds to spread. Managers face a continued threat from potential new invasive species. The use of recreational vehicles and watercraft, riding and pack stock, livestock grazing, and fire suppression may exacerbate the spread of potential new invasive weed species.

And there's also collateral damage in the management response to invasive species: "Impacts from management activities include herbicide spraying and mechanical ground disturbance to control noxious weeds once they gain a foothold." Another possible form of collateral damage is the potential use of domestic sheep or goats to treat weeds. The DEIS recognizes the conflict that domestic sheep (and goats) present to bighorn sheep. Yet, the DFP proposes management approaches in Appendix 4 that would conflict with bighorn sheep.

Trends and rate of invasive species spread under current direction

Despite the longstanding threats and known adverse impacts of invasive species, there is little to nothing in the DEIS that discloses any trends or changes in rate of spread.

The DEIS lacks analysis of the effectiveness of the current forestwide noxious weed treatment programs. The DEIS doesn't include any monitoring data forthcoming from the implementation of the weed management programs. The DFP states, "An adaptive management strategy emphasizes the learning process." The DFP explains the necessity of integrating feedback from monitoring as part of adaptive management:

> Effective land and resource management plan monitoring and evaluation fosters adaptive management and more informed decisions. It helps identify the need to adjust desired conditions, goals, objectives, standards and guidelines as conditions change. **Monitoring and evaluation** helps forests, grasslands, the agency and the public determine how a land and resource management plan is being implemented, whether plan implementation is achieving desired outcomes, and whether assumptions made in the planning process are valid. (Emphasis added.)

The DEIS discloses, "The existing inventory of invasive weeds on the Nez Perce-Clearwater is generally thought to be depictive of weed status, but not considered to be a complete picture. Many areas of the Nez Perce- Clearwater have not yet been inventoried for invasive species infestations."

The DEIS does claim: "Invasive weed inventories for the Nez Perce-Clearwater record eighty different invasive weed species, occupying approximately 425,080 acres within or adjacent to the Nez Perce-Clearwater (Forest Service database Oct, 2012)." The DEIS doesn't include the complete reference for this 2012 cite. It also claims, "As of 2012, managers estimated approximately 500,000 acres within the Nez Perce-Clearwater to be 'weed free.'"

Is there no more recent data on forestwide weed occurrence than from 2012?

The DEIS claims, "Invasive weed infestations have been reduced significantly by …integrated weed management techniques." Yet no data is cited to support that statement. Project design criteria may mitigate the spread of weeds, but overall reduction is a different matter.

The current forest plans contain little direction to inventory weeds. In both cases, in regards to livestock grazing. From the Clearwater forest plan, Range Objective 7(C) is: "Inventory, map, and complete an activity schedule for significant noxious weed plant communities during the first planning period, (ten years)." In the Nez Perce forest plan, "Noxious weed control will be emphasized in grazing." Also a Standard reads:

> Implement a weed control program to confine present infestations and prevent establishment of new areas of noxious weeds. The Forest will favor biological control for noxious weeds that have effective host insects. Where biological control is not effective, a combination of hand grubbing and spot application of herbicides will be used. This program will be coordinated with county, state, and other federal agencies. All NEPA requirements will be completed prior to using any herbicides.

No data from either Forest's weed monitoring is disclosed or discussed in this DEIS.

Furthermore, there is no evidence that control is effectively addressing the problem.

The DEIS claims, regarding the DFP: "All habitat guilds, particularly the grassland guild, are expected to benefit from the reduction of invasive species. Such reduction would contribute to stabilize at-risk plant populations on the Nez Perce-Clearwater." There is no basis in the DEIS for that rather optimistic assessment.

The DEIS presents the Forest Service's large toolbox of existing administrative response mechanisms to deal with invasive species:

> The Nez Perce-Clearwater collaborates with other agencies, land owners and interested groups to manage invasive weeds through cooperative weed management areas. The cooperative weed management areas coordinate to determine weed management priorities, field inventories, and treatment strategies. Joint inventory and treatment information is currently stored in Forest Service data bases. Existing inventory and treatment data are stored in the Natural Resource Manager's Threatened, Endangered, and Sensitive Plants and Invasive Species database. This database is continually updated. The Nez Perce-Clearwater and cooperative weed management areas partners rely heavily on the official Idaho Noxious Weed List, which is periodically updated by the Idaho State Department of Agriculture.
>
> Invasive weed management activities on the Nez Perce-Clearwater are currently guided by conditions and constraints of specific Environmental Impact Statements or Environmental Assessments for management and treatment of weeds and the use of herbicides. In addition,

weed management priorities, objectives, and activities on the Nez Perce-Clearwater are coordinated and collaborated through participation in several organized Cooperative Weed Management Areas.

In addition to the existing forest plans, current management direction for invasive weeds is found in the following environmental assessments and environmental impact statements:

• 1986 Nez Perce National Forest Noxious Weed Treatment Environmental Assessment

• 2009 Nez Perce National Forest Noxious Weed Treatment Biological Opinion

• 1998 Frank Church River of No Return Wilderness Noxious Weed Treatment Environmental Impact Statement

• 2007 Frank Church River of No Return Wilderness Noxious Weed Treatment Supplemental

Environmental Impact Statement and accompanying 2009 Biological Opinion

• 2009 Selway-Bitterroot Wilderness Noxious Weed Treatment Environmental Impact Statement and accompanying Biological Opinion

• 2005 North Fork Clearwater Ranger District Noxious Weed Treatment Environmental Assessment and accompanying Biological Opinion

• 2000 Palouse Ranger District Noxious Weed Control Environmental Assessment and accompanying Biological Opinion

• 2007 Lochsa and Powell Ranger Districts Invasive Weeds Environmental Assessment and accompanying Biological Opinion

• 2018 Gospel Hump Wilderness Invasive Plant Management Project, Environmental Assessment and accompanying Biological Assessment

The ineffectiveness of these existing invasive weed control programs is perhaps best summed up in this DEIS conclusion: "An **aggressive** integrated pest management approach **must be implemented** in order to keep invasive species from expanding beyond existing infestation levels." (Emphases added.)

DFP plan elements

The DFP includes several plan elements which address somewhat the invasive species problem. But given the scale and difficulty in reversing the spread, we don't see much chance they will do much good. Partly this is because many of these plan elements are indistinguishable from current NPCNF policies such as project design criteria. There's no "aggressive approach" called for by the DEIS.

Some plan elements may make a difference in specific locations over a short time frame, but it's hard to believe the DFP's land-disturbing management regime won't eventually overwhelm even the best efforts.

"The 2012 Planning Rule identifies invasive weeds as a 'stressor' to natural processes and requires the responsible official to consider stressors when developing plan components for integrated resource management to provide for ecosystem services and multiple uses in the plan area § 219.10." (DFP.)

The Goal FW-GL-INV-01 states, "The Nez Perce-Clearwater actively participates in Cooperative Weed Management Areas, which are used to determine weed treatment priorities, projects, budgets, and annual programs. Public awareness is promoted using various forms of outreach through the Cooperative Weed Management Areas." Where does the Forest Service document these "weed treatment priorities, projects, budgets, and annual programs"? Are they announced or displayed on the Forest website?

The Goal FW-GL-WTR-01 states, "The Nez Perce-Clearwater works with appropriate agencies to control the expansion of aquatic invasive species." This is no different than current policy.

With FW-DC-INV-01, the Forest Service desires that "Invasive weeds comprise less than five percent of the plant species composition across the Nez Perce-Clearwater" and that "No new invasive weed species become established in any of the plant communities on the Nez Perce-Clearwater." This implies the Forest Service will be doing comprehensive monitoring. What are the metrics for measuring "plant species composition", and over what expanse of geography will the Forest Service measure it on the ground?

Still, how the Forest Service expects to meet this Desired Condition in the context of increasing resource extraction is a mystery, because most of the management actions proposed in the DFP will work against it.

With FW-DC-INV-02 the Forest Service wishes that "Aquatic ecosystems are free of invasive species." What purpose this serves is uncertain. Total eradication is not realistic. Information from Table 7 of the DEIS indicates the cat is already long gone from the bag:

Table 7. Noxious weeds occurring within riparian areas on the Nez Perce-Clearwater.

Scientific name	**Common name**
Iris pseudacorus	Yellow flag iris
Polygonum cuspidatum	Japanese knotweed
Phalaris arundinacea	reed canarygrass
Polygonum sachalinense	Giant knotweed
Lepidium latifolium	Perennial pepperweed
Polygonum bohemicum	bohemian knotweed

And what distinctive purpose does FW-DC-INV-02 serve in addition to FW-DC-INV-01?

FW-DC-ELK-01 states in part, "Elk habitat quality is not degraded by invasive species." This is an example of how desired conditions can be little but wishful thinking.

The objective of FW-OBJ-INV-01 is to "Treat 6,000 acres annually to contain or reduce non-native invasive plant density, infestation area, or occurrence. Greatest attention will be given to early detection and rapid response to new invaders. Protection or enhancement for other resource concerns will be considered when developing invasive weed treatment priorities." How many acres has the NPCNF treated annually, over the past 10 years?

Please cite the data from monitoring of efforts on the NPCNF used to contain[207] or reduce invasive plant density, infestation area, or occurrence. We want the public to be able to understand how effective spending the money to treat 6,000 acres could be—and how long any benefits last.

The objective of MA1-OBJ-ELK-01 is to "Treat 500 acres of invasive weeds in elk habitat every 5 years." That's an average of 100 acres/year. How many acres of elk habitat are now infested? And how many acres of elk habitat has the NPCNF treated over the past 10 years? And please cite the data from monitoring such efforts, to help the public understand how effective this Objective could be—and how long any benefits last.

The Guideline FW-GDL-INV-01 requires, "To reduce the probability of establishment or expansion of invasive weeds, management activities prone to significant soil disturbance or exposure should be planned and implemented with design features to address the potential spread of invasive weeds." Isn't this current policy—which hasn't worked? Please cite the data from monitoring of efforts on the NPCNF to validate the use of "design features to address the potential spread of invasive weeds." We want to understand how effective these design features have been—and how long any benefits last.

FW-GDL-INV-02 states: "To prevent the introduction of non-native species, equipment operated by Forest Service employees and agency-authorized personnel that comes in contact with a water body should be inspected and cleaned for aquatic invasive species prior to use in a water body or when moving between subbasins (HUC08) **during non-emergency operation**, including pumps used to draft water from water bodies, water tenders, and helicopter buckets." (Emphasis added.) Does this mean that, during a wildfire, inspection and cleaning for aquatic invasive species is not going to happen?

The Guideline FW-GDL-INV-03 requires, "When rehabilitating areas burned by wildfire and affected by wildfire suppression, measures should address invasive weed management as part of post-fire habitat restoration." This is too vague. What is meant by "measures should address"?

And isn't this current policy?

The Guideline FW-GDL-FIRE-02 requires, "To prevent expansion of invasive weeds, planned ignitions in areas highly susceptible to weed invasion should be planned and implemented with design features to address the spread of invasive weeds." This means in every "treatment" unit including slash burning? Please cite the data from monitoring of efforts on the NPCNF to validate the use of those "design features to address the spread of invasive weeds." We want to understand how effective these design features have been and how long any benefits last.

The DEIS anticipates that, "The risk of livestock spreading weed seed can be reduced by permittees voluntarily implementing weed management measures, pulling small weed infestations encountered on their allotment, and reporting larger infestations to their allotment administrator." What incentives exist for permittees to pull weeds?

Conclusion

The inability of the Forest Service to contain, control, or eradicate invasive species to the degree that they don't have the significant environmental impacts as disclosed in the DEIS, combined

[207] "Contain" is not defined.

with the unproven effectiveness of the proposed DFP Plan Elements, leaves the DFP's desired conditions for vegetative **resilience** (and thus DCs for most other resources) unattainable. Ecological sustainability, a central tenet of the 2012 Planning Rule, will remain merely good intention.

The Natural Range of Variability (NRV) of invasive species is zero. Compare this with the fact that the most recent inventory in 2012 indicates 80 different invasive weed species occupy about 425,080 acres within or adjacent to the NPCNF. And the DEIS admits that is likely an underestimate. None of the modeling for wildlife habitat or forest cover composition considers this disparity in NRV, which is a failure of analysis in the context of all the ecological damage caused by invasive species.

The DEIS/DFP does not analyze a single alternative that includes the only strategy likely to significantly reduce noxious weed impacts—that being reduce the overall active management footprint and genuinely restore the Forest by vastly reducing the road system and refraining from large-scale land disturbing actions.

The DEIS displays its fanatical active management bias in downplaying the benefits of unmanaged or protected areas such as roadless areas:

> While alternatives with higher acreage in roadless areas of this category would allow fewer, more restricted activities that may affect species of concern, they provide a more limited opportunity to respond to threats such as fire and **provide less access to manage weeds**. There is also a reduced opportunity for documentation of occurrence and protection through plan components. (Emphasis added.)

It's wacky that the agency sees roads as a benefit regarding spread of noxious weeds, rather than the obviously huge part of the problem.

The financial costs of noxious weeds are another part of this elephant in the room. The agency does not account for the economic impacts of increased weed treatments, nor of the loss of ecosystem services attributed to noxious weeds being cultivated by management activities.

The Forest Service's approach to invasive species is a classic case of treating the symptoms while not addressing the cause.

Works cited in Invasive Species

Bartuszevige, A. M. and Endress, B. A. 2008. Do ungulates facilitate native and exotic plant spread? Seed dispersal by cattle, elk and deer in northeastern Oregon. Journal of Arid Environments, 72: 904-913.

USDA Forest Service, 2015a. Deer Creek Soil Resource Report. Prepared by: Chandra Neils, Forest Soil Scientist for: Bonners Ferry Ranger District, Idaho Panhandle National Forests, August 2015.

LIVESTOCK GRAZING

Our past comments addressed this issue (blue text, below). Unfortunately, our recommendation to close vacant allotments was rejected. This is a simple move and should have been included in at least one alternative.

Regarding grazing and measurable conditions and standards, each grazing allotment needs an updated grazing plan particular to that area. However, that has not occurred nor is it likely to occur. Therefore, in this plan revision, appropriate and measureable standards, including stubble heights for riparian vegetation and standards to protect critical habitat to protect threatened and endangered species., need to be established to maintain healthy and desirable range conditions using the best available science. Clearly defined desirable grazing conditions need to be set, along with concrete, quantitative measurable standards for them. Monitoring of grazing allotments appears inconsistent, and a standard of measuring and assessing set desired conditions needs to be created to establish and maintain healthy ecosystems, and species diversity.

According to section 6.8.3 of the Assessment:

> In general, the Forests do not have large grazing programs. The Nez Perce National Forest program consists of cattle, horse, and sheep allotments. The cattle grazing program averaged approximately 16,665 head months from 2009 to 2011. The sheep grazing program was 1,239 head months in 2011, and horses averaged approximately 127 head months. The Clearwater National Forest program consists solely of cattle allotments, with approximately 5,366 head months of authorized grazing from 2009 to 2011. These numbers are all down, except for horses, from the numbers reported in the 2004 Social Assessment, which reported numbers for 2002–2004. During that period, the Nez Perce National Forest, had 20,000 authorized head months for cattle and 10,000 for sheep, and the Clearwater National Forest had approximately 6,000 head months of cattle grazing.

Given the small amount of grazing on the two national forests, coupled with inconsistent monitoring, a lack of measurable grazing standards, and outdated grazing plans, the United States Forest Service does not appear capable, funded enough, or have enough staff to accurately monitor livestock grazing to ensure the health of our National Forests. Thus, at the very least, we recommend that all vacant allotments be closed for future grazing use to avoid future problems and nay allotments that become vacant, also be closed.

According to section 7.2.2.2 of the Assessment:

> The Nez Perce National Forest has one domestic sheep allotment, the Allison-Berg Allotment. In 2009, the term grazing permit to Carlson Company was modified due to potential conflicts between domestic sheep grazing and native bighorn sheep. The permit modification states that domestic sheep grazing will not be authorized until an appropriate analysis of the law (the National Forest Management Act [NFMA] and National Environmental Policy Act [NEPA]) examines this potential conflict.

It is also recommended that domestic sheep grazing not be allowed on national forests, given that wild bighorn rams can wander up to 30 miles and potentially interact with domestic sheep, spreading lethal disease to bighorn sheep.

Economics--Section 6.9 of the Forest Assessment states that livestock grazing accounts for 90 related jobs and a labor income of $1.3 million in the Nez Perce and Clearwater National Forests. Table 6-40 from the forest assessment demonstrates this:

Table 6-40. Current Nez Perce and Clearwater National Forests–related job contributions to the analysis area economy, by resource area

Resource Area	Employment (jobs)[a]	Labor Income (Thousands of 2010 Dollars)[b]
Recreation (non-local)	83	$1,765
Wildlife and fish (non-local)	15	$343
Grazing	90	$1,383
Timber	324	$13,239
Minerals	0	$0
Payments to states/counties	121	$4,330
FS expenditures	531	$19,446
Total	1,164	$40,506

[a] Employment: The total full-and part-time wage, salaried, and self-employed jobs in the region.
[b] Labor income: Includes the wages, salaries, and benefits of workers who are paid by employers and income paid to proprietors.

Livestock grazing does not appear economically viable, given that in the year 2010 it only accounted for %0.9 of total county labor income across the five counties associated with the Nez Perce-Clearwater National Forests (Clearwater, Idaho, Latah, Lewis, and Nez Perce). Table 6-23 demonstrates this. Further, it is not clear to what degree the information in the assessment reflects all "wildland" grazing and not just grazing on the two national forests. Thus, it may be even less important than reported.

Table 6-23. Comparison of wildland dependency (percent of total county labor income derived from wildland-based industries) for the Nez Perce–Clearwater National Forests analysis area for 2000 and 2010

Year	County	Percent Primary					Total Primary	Secondary	Total
		Grazing	Timber	Mining	Govt.	Rec.			
2000	Clearwater	0.3%	29.8%	0.0%	6.6%	3.0%	39.7%	20.1%	59.8%
	Idaho	2.0%	17.7%	3.7%	5.9%	6.6%	35.8%	20.5%	56.3%
	Latah	0.2%	7.1%	0.9%	0.8%	0.2%	9.1%	5.6%	14.7%
	Lewis	0.6%	16.6%	0.0%	1.3%	0.2%	18.6%	12.2%	30.8%
	Nez Perce	0.1%	19.8%	0.4%	0.2%	0.1%	20.5%	27.4%	47.9%
2010	Clearwater	0.2%	10.0%	0.3%	12.8%	1.7%	25.0%	6.4%	31.4%
	Idaho	0.3%	5.9%	2.5%	9.6%	6.0%	24.3%	6.9%	31.1%
	Latah	0.1%	4.3%	0.2%	1.4%	0.0%	6.0%	2.8%	8.9%
	Lewis	0.2%	12.1%	0.4%	2.5%	0.0%	15.2%	10.1%	25.3%
	Nez Perce	0.1%	10.3%	0.5%	0.3%	0.0%	11.3%	9.7%	20.9%

Note: Government (Govt.) includes the labor income associated with employment by federal wildland management agencies.

Grazing domestic cattle and sheep has been the leading cause of watershed, stream and grassland degradation and in some cases, outright destruction (Belsky et al. 1999, Fleischner 1994, Donahue 1999). Livestock grazing occurs on 70 percent of the public lands the western United States, making it the most widespread form of land utilization in western North America. Some ecologists consider it "the most insidious and pervasive threat" to grassland biodiversity (Noss and Cooperrider 1994).

Grazing adversely affects native reptiles, mammals and songbirds, especially those that nest or forage on or near the ground (Finch et al. 1997), and may alter bird community composition (Schulz and Leininger 1991). Grazing also affects some species of small mammals, reptiles and amphibians by altering habitat or insect prey base (Kie et al. 1991). Selective grazing or "highgrading" by stock of the most nutritious plants results in loss of forage for native species, and ultimately decreases the abundance and diversity of native herbivores (Donahue 1999). Carnivore numbers inevitably decline as prey availability decreases (Brown 1992; Mech 1995) and also are often eliminated by the government at the request of the livestock industry (Robinson 2008).

Belsky and Gelbard, 2000 is a literature review of livestock as contributing to noxious weed spread.

Belsky et al., 1999 is a literature review of peer-reviewed studies concerning effects of livestock grazing on water resources:

> Livestock grazing was found to negatively affect water quality and seasonal quantity, stream channel morphology, hydrology, riparian zone soils, instream and streambank vegetation, and aquatic and riparian wildlife… through direct impacts of cattle on riparian areas and aquatic habitats, as well as indirect and cumulative effects from disturbance and impairment to the watershed uplands and drainage network. An extensive body of scientific literature has developed concerning the harmful effects of domestic livestock grazing on western public lands, on the environmental effects of deforestation, and climate change stress on ecosystems and ecosystem processes.

Belsky and Blumenthal, 1997 investigate impacts livestock grazing causes to stand dynamics and soils of upland forests of the Interior West. This is not analyzed and disclosed in the DEIS.

Scientific studies have found significant reductions in runoff and sediment yield related to livestock grazing changes (Lusby, 1979).

The most immediate progress in healing damaged riparian areas is made under rest from livestock grazing (Platts, 1991), and studies of larger-sized livestock exclosures confirm that exclusion promotes more rapid recovery of damaged riparian areas (Duff, 1977; Belsky et al., 1999).

The Assessment (7.0) states, "Livestock grazing is permitted on designated grazing allotments within the Forests. Active grazing allotments occupy 474,709 acres within the Nez Perce National Forest (21.3% of NFS lands) and 132,533 acres within the Clearwater National Forest (7.8% of NFS lands)." So it is reasonable to assume that livestock grazing has affected over a half-million acres of the NPCNF. The DEIS discloses, "Over 15 percent of each grazing allotment on the Nez Perce-Clearwater is identified as within riparian management zones, with several allotments containing 20 to 27 percent riparian management zones."

Also in Assessment (7.0):

> Specific information regarding range conditions within the plan area is limited. Intensive collection of vegetation plot data occurred in 2005 for the Island Ecosystem Analysis at the Watershed Scale (USDA Forest Service 2008b) area, located between the Salmon and Snake rivers. Analysis of these data, which may typify range conditions in the Salmon River canyons, determined that approximately 52% of sampled areas retain high native species integrity. However, a significant portion of the assessment area is highly

> susceptible to invasive weeds, and a high risk of continued weed expansion exists. Vegetation plots showed grassland integrity to be low (approximately 25% of samples). Low-integrity grasslands and the presence of invasive species suggest that the grasslands are in very poor to perhaps fair condition and in an early or very early ecological condition. (*Id.*)
>
> Potential resource impacts from livestock grazing are more frequently encountered in riparian areas. Instream habitat condition data were also collected in 2005 for the Island EAWS area. Sampling included a variety of parameters used to determine if streams met the Forest Plan Standards (as amended by PACFISH). Several reaches of Deer Creek, Johnson Creek, Joe Creek, Christie Creek, and Sherwin Creek were determined to exceed the standards for width/depth ratio, percent cobble embeddedness, percent fines, and bank stability. These streams do not meet the PACFISH Grazing Management standards (USDA Forest Service 2005) and were also determined to be Functioning at Risk with Static Trend by an interdisciplinary team conducting Proper Functioning Condition (PFC) assessments. (*Id.*)
>
> In some grazing allotments, perennial grassland vegetation has declined as annual grasses, such as cheatgrass, have expanded. More recently, exotic annual grasses are being replaced by even more aggressive invasive weeds. This decline in vegetation, from native perennial grasses to exotic annual grasses to invasive weeds, has resulted in the significant decline of livestock-usable forage; in some areas, usable forage has dropped from roughly 250 to 100 to 25 pounds per acre. Some weed-infested areas no longer produce adequate usable forage to be considered "capable" for livestock grazing. Table 7-3 provides an example from the Christie/Sherwin Allotment analysis, illustrating the decline in animal unit months (AUMs) that has been caused by site conversion to "weedy" species. (*Id.*)

Alteration of fire regimes at a regional scale by cheatgrass has been quantified. (Balch et al., 2013; Bradley, et al., 2018.) The interactions between the invasive grass cheatgrass and fire regimes is a positive feedback system which has led to very extensive infestation in the western US. Wildfire and this flammable grass feed off each other. The plant grows well in areas that have been disturbed, so fire generally results in more cheatgrass, which results in more fire, which again results in more cheatgrass. Livestock grazing corresponds with increased cheatgrass occurrence and prevalence regardless of variation in climate, topography, or community composition (Williamson et al., 2019).

The Rim Country 4FRI Draft EIS, U.S. Forest Service R-3, states:

> Cheatgrass invasion of ponderosa pine systems after restoration-based treatments is a burgeoning issue of significant concern (Keeley and McGinnis 2007, McGlone et al. 2009a and b). **Widespread invasion of cheatgrass often shifts invaded ecosystems into irreversible alternate stable states where cheatgrass-mediated fire intervals exclude native understory plants** (Brandt and Rickard 1994, D'Antonio and Vitousek 1992, Brooks et al. 2004). (Emphasis added.)

The DEIS states:

> Invasive species represent the primary threat to grassland communities. These habitats are naturally open, relatively warm and dry, and generally with abundant open soils. These factors combine to give such sites a high risk of weed infestation. Currently, weeds

> displace desirable native species in grassland habitats over a substantial area of the Nez Perce-Clearwater. Grazing by both livestock and wildlife can help maintain grasslands in some instances but both can result in localized harm, alteration of habitats, and soil disturbances readily invaded by weeds. Recreational activities can also degrade these habitats through soil damage and user created trails through sensitive areas. Decades of fire suppression has encouraged the encroachment of trees into grasslands and species conversion has promoted a decline of open pine savannas that are often adjacent to grasslands.
>
> The introduction of invasive weeds has highly altered grassland steppe communities within the South Fork Clearwater Subbasin. Annual grasses and other invasive weeds are well established at low elevations. Fire behavior and soil productivity may change in response to these altered plant communities (U.S. Department of Agriculture, Forest Service Nez Perce National Forest, 1998).

The DEIS doesn't quantitatively estimate soil damage due to livestock grazing. The DEIS doesn't quantitatively estimate riparian habitat damage due to livestock grazing. It doesn't analyze or disclose the interaction between upland vegetation changes due to livestock grazing, fire behavior, and forest composition. The DEIS doesn't analyze or disclose the expected annual infrastructure maintenance and installation costs paid for by taxpayers for the benefit of livestock grazing.

In southwestern ponderosa pine forests, past grazing reduced grass and sedge abundance, allowed dense recruitment of seedling pines, and altered fire regimes (Belsky and Blumenthal 1997). One of the most significant changes was the reduction of fine herbaceous fuels that sustain frequent low intensity fires essential for old growth ponderosa pine forests (Covington 2003). Inappropriate grazing results in significant successional changes in vegetation. For example, grazing is the leading cause of the disturbance that caused the regional shift of perennial bunch grasses and open stands of sagebrush to dense sagebrush and harmful exotics such as cheatgrass (*Bromus tectorum*) and medusahead (*Taeniatherum caput-medusae*) (Noss and Cooperrider 1994, Donahue 1999).

The desired condition of xeric grassland communities includes "Biological soil crusts are found on almost all soil types but are more commonly found in arid areas where plant cover is low and plants are more widely spaced. Bare ground is present because of the warm dry nature of these sites but at low amounts." (DEIS.) In mesic grassland communities the desired conditions includes "Biological soil crusts are found on almost all soil types while these moister habitats generally support more lichens and mosses than other types of crusts." (DEIS.)

Growing recognition of the importance of cryptobiotic crusts to ecosystem processes has led to more concerns about the impacts of nonnative grazers. Cryptobiotic crusts are delicate symbioses of cyanobacteria, lichens, and mosses that form on the soil's surface. These crusts provide important ecological functions, including increasing organic matter and available phosphorus, increased soil stability, and increased water infiltration (Fleischner 1994). On most semiarid lands, a single footprint will virtually stop nitrogen fixation by cryptobiotic crusts and increase wind and water erosion (Fleischner 1994; Davidson et al. 1996; Donahue 1999).

Microbiotic crusts are key protective components of soil surfaces, in not only arid systems but also in forest understories, acting to stabilize soil surfaces, slow runoff, prevent soil erosion and rilling, exclude weeds and fix nitrogen. Trampling by livestock destroys these vital and protective crusts, exposes soils to erosion and accelerates desertification processes. (Anderson et al., 1981; Johansen, 1993; Beymer and Klopatek, 1992; Belnap, 1995.) Burning destroys crusts, as will logging, skidding, bulldozing roads and vegetation clearing that exposes mosses to direct sun.

From the DEIS:

> Natural grasslands and persistent shrublands were exploited heavily after European settlement by unregulated livestock grazing. These uses could have affected species composition and condition that may persist today. Intensive sheep grazing probably reduced the amount of shrub dominated habitats, which may take decades to recover. Grazing intensities today are much less than they were historically and have less impacts. Natural grasslands and persistent shrublands were exploited heavily after European settlement by unregulated livestock grazing. These uses could have affected species composition and condition that may persist today. Intensive sheep grazing probably reduced the amount of shrub dominated habitats, which may take decades to recover. Grazing intensities today are much less than they were historically and have less impacts.

O'Brien et al., 2003 found that four indicators were useful for describing the range condition and functionality of rangelands at many scales. The indicators include presence or absence of noxious weeds, percent ground cover, plant species composition, and percent shrub cover.

The DEIS states, "Grazing by domestic livestock has been a legitimate use of public lands since the inception of the National Forest System and has become an import (sic) part of the culture of the rural west of the United States."

"Important part of the culture of the rural west"? Of all the resource issues analyzed in the entire DEIS, livestock grazing is perhaps the one most dominated by subjective values such as these. Yet livestock grazing on national forests is not a value held by most Americans. It's a carryover of the mythology from the historical expansion of the American empire. While embracing the aura of this cowboy culture, the Forest Service fails to also acknowledge the darker side that played out on the Western U.S., including appropriation of indigenous peoples' traditional territories, cultural and virtual genocide, and an undertone of racism. And this "important culture" costs the American taxpayers dearly.

The costs of public lands grazing surpasses the revenue brought in by the paltry per month currently collected by the federal government. So who pays the price? Glaser et al., 2015 find the cost to U.S. taxpayers was more than $1 billion from 2005-2015. Appropriations for BLM and Forest Service grazing programs have exceeded grazing receipts by at least $120 million annually since 2002, according to the study.

This federal subsidy goes well beyond the direct costs and fees. There are vast indirect costs of grazing on public lands, including government killing of native carnivores and other wildlife. The DEIS doesn't analyze or disclose the costs and impacts of Wildlife Services destruction of wildlife species at the behest of grazing interests.

Given this livestock-grazing-at-all-costs value system ingrained into the Forest Service itself, we have a hard time taking seriously such statements as: "The additional impacts to livestock management associated with non-Endangered Species Act listed fish redd protection may be significant. Over time, some permittees may elect to vacate their allotments due to the workload and financial impacts associated requirements for riparian management and native fish redd protection.” This section of the DEIS concludes:

> Aggressive management of livestock will be necessary to ensure its activities do not impede the attainment of desired conditions for all resources on the Nez Perce-Clearwater. In time, some grazing permittees may decide to vacate their grazing allotments due to the financial burdens and time commitments associated implementing measures necessary meet desired conditions for other resources.

We would like to believe the Standards and Guidelines in the DFP would be implemented in a genuinely “aggressive” manner for protecting our shared, publicly owned resources. The problem is, plan elements are worded with overly discretionary language and inadequate timelines. And there are the problems of inadequate budgets and inadequate monitoring included in the DFP to hold anyone accountable for caving in to the prevailing good ol’ boy livestock culture that ensnares and hamstrings those in the federal land management agencies.

The DEIS claims, “Each grazing allotment is managed and monitored to ensure the needs of rangeland forage plants and other resources are met.” However, the DEIS fails to cite a single source of forest plan or AMP monitoring to support that statement.

The Clearwater forest plan includes the following among its monitoring and evaluation requirements:

Actions, Effect, or Resources to be Measured .12(K)(4a)	Expected Precision .12(K)(4b)	Expected Reliability .12(K)(4b)	Reporting Time .12(K)(4c
Livestock Forage Available, Range in Good Condition per Established Allotments.	High	High	5 Years

Results forthcoming from this monitoring are not cited, at least explicitly, in the DEIS.

What is missing is monitoring information concerning the following, as mentioned in the DEIS:

> (C)riteria for forage utilization, stream bank disturbance, pasture rotation, and improvement maintenance. Management actions included in the allotment management plan generally originate from desired future conditions, objectives, standards, and guidelines within the forest plan. These management actions are developed to ensure permitted livestock grazing does not result in long-term impacts to rangeland resources, including forage; soils; threatened, endangered and sensitive species; riparian habitat; and water quality.

How livestock grazing alone might have affected plant communities, soil biota, and thus other indicators of natural diversity is apparently not known by the agency who has administered livestock grazing for over a century.

The 2012 Planning Rule guides the development, amendment, and revision of forest plans, with an overarching goal of promoting the ecological integrity and ecological and fiscal sustainability of National Forest lands:

> Plans will guide management of [National Forest System] lands so that they are ecologically sustainable and contribute to social and economic sustainability; consist of ecosystems and watersheds with ecological integrity and diverse plant and animal communities; and have the capacity to provide people and communities with ecosystem

> services and multiple uses that provide a range of social, economic, and ecological benefits for the present and into the future. [36 C.F.R. § 219.1(c).]

To accomplish these ecological integrity and sustainability goals, the rule imposes substantive mandates to establish plan components – including standards and guidelines – that maintain or restore healthy aquatic and terrestrial ecosystems, watersheds, and riparian areas, and air, water, and soil quality. Id. § 219.8(a)(1)-(3); see also id. § 219.9(a) (corresponding substantive requirement to establish plan components that maintain and restore the diversity of plant and animal communities and support the persistence of native species). The components must be designed "to maintain or restore the structure, function, composition, and connectivity" of terrestrial, riparian, and aquatic ecosystems, id. § 219.8(a)(1) & (a)(3)(i); must take into account stressors including natural succession, wildland fire, invasive species, and climate change; and the ability of terrestrial and aquatic ecosystems on the plan area to adapt to change, id. § 219.8(a)(1)(iv); and must implement national best management practices for water quality, id. § 219.8(a)(4). The rule also requires the Forest Service to establish riparian management zones for which plan components "must ensure that no management practices causing detrimental changes in water temperature or chemical composition, blockages of water courses, or deposits of sediment that seriously and adversely affect water conditions or fish habitat shall be permitted." Id. § 219.8(a)(3)(ii)(B). And the Forest Service must "use the best available scientific information" to comply with these substantive mandates. Id. § 219.3.

The Forest Service planning directives provide further clarification. FSH 1909.12 Ch. 20 Section 23.23d – Rangelands, Forage, and Grazing states: "[w]hen developing plan components, the Responsible Official shall take into account range that contributes to local, regional, and national economies in a sustainable manner (§ 219.8(b)(3)) and consider forage, grazing, and rangelands ((§ 219.10 (a)(1)."

"The plan must include plan components, including standards or guidelines, to provide for integrated resource management to provide for ecosystem services and multiple use integrated with other plan components as described in 23.21a.

The Plan should explain how and when suitability of lands for livestock grazing will be determined:

> (v) Suitability of lands. Specific lands within a plan area will be identified as suitable for various multiple uses or activities based on the desired conditions applicable to those lands. The plan will also identify lands within the plan area as not suitable for uses that are not compatible with desired conditions for those lands. (36 CFR 219.7(e)(1)(v)).

For a determination of livestock grazing capability to be legally sufficient it must meet NFMA, NEPA, and the APA by: (1) explaining the method used to change the capability determination from the old Plan; and (2) present information on which the capability determination is based. See W. Watersheds Project v. United States Forest. Serv., CV-05-189-E-BLW (D. ID., Feb. 7, 2006) (Forest Service violated NEPA because it never explained capability criteria or method used to calculate capability); also see *Ecology Center, Inc. v. Austin*, 430 F.3d 1057, 1067 (9th Cir. 2005) (agency must reveal in EIS how it conducted its "hard look," including the data relied upon and how it analyzed data, so the public can make an informed comparison of alternatives).

NEPA imposes procedures designed to force agencies to take a "hard look" at the environmental consequences of a proposed action. Earth Island Institute v. United States, 351 F.3d 1291, 1300

(9th Cir. 2003). The “hard look” requirement is met in this instance when the Forest Service reports a change of capability calculation from the old Plan based on defensible methodology and data. The Forest Service under NEPA must prepare an EIS that would “foster both informed decision-making and informed public participation.” *Native Ecosystems Council v. United States,* 418 F.3d 953, 960 (9th Cir. 2005).

In order for the grazing suitability determination to be lawful it must: (1) demonstrate an informed basis that is available and understandable to the public; (2) present “a rational connection between the facts found and the conclusions made,” Native Ecosystems, 418 F.3d at 961, indeed failing to disclose even what those underlying facts are is a violation of the APA; and (3) meet the requirement of 36 C.F.R. § 219.20 (1982) that the Forest Service determine capability and suitability of lands for grazing, by offering a conclusory determination in fact or disclosure of methods.

The DEIS states:

> An analysis of lands suitable or unsuitable for livestock grazing was completed as part of this forest plan revision. Although an area may be deemed suitable for use by livestock in the revised forest plan, a project-level analysis evaluating the site-specific impacts of the grazing activity is required to authorize and dictate the management of livestock grazing in a specific allotment.

What “analysis … (determining suitability) as part of this forest plan revision” does this refer to? Please cite the document(s). If the Forest Service has simply de facto designated lands in existing allotments as “suitable” and also punts to a subsequent “project-level analysis” as validation, this may not happen during the life of the revised forest plan.[208] Furthermore, none of allotment-specific analyses that have occurred under current forest plan implementation have genuinely examined the lands for suitability, with the possible exception of the 2009 modification of the Allison-Berg Allotment due to potential conflicts with native bighorn sheep.

The DEIS confirms our concern:

> A Forest Service interdisciplinary team of resource specialists has reviewed the current and potential future livestock grazing program on the Nez Perce-Clearwater to determine areas suitable or un-suitable to livestock grazing. Suitability of lands is a determination made regarding the appropriateness of various land within a plan area for various uses or activities based on the desired conditions. Final suitability determinations for specific authorizations, such as livestock grazing, occur at the project or activity level decision making process. Generally, the lands on the Nez Perce-Clearwater are suitable for all uses and management activities appropriate for National Forests, such as outdoor recreation, range, or timber, unless identified as not suitable.

Again, where’s the documentation of this IDT review?

And what criteria are used for “final suitability determinations ...at the project or activity level”?

The DEIS states, under “RANGELAND CONDITIONS”:

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[208] Although the DEIS states, “All allotments within the Nez Perce-Clearwater are scheduled for NEPA analysis and allotment management plan revision within the next 15 years” this is not a standard or requirement, nor is there any accountability for managers who don’t get AMP revisions done in 15 years.]

> Specific information regarding the condition of the non-forest vegetation within the planning area is limited. Sampling and evaluation of grassland vegetation is generally conducted as a component of "range analysis" but range analysis information is relatively sparse on the Nez Perce-Clearwater.

Exactly what we're saying. In one NPCNF assessment area, 2005 data, "Vegetation plots showed grassland integrity to be low at approximately 25 percent of samples. Low integrity grasslands and the presence of invasive species suggest the grasslands to be in very poor to perhaps fair condition and in a very early to early ecological condition." So this is suitable for livestock grazing?

From the same analysis:

> Sampling included a variety of parameters used to determine if streams met the forest plan standards, as amended by PACFISH. Several reaches of Deer Creek, Johnson Creek, Joe Creek, Christie Creek, and Sherwin Creek were determined to exceed the desired conditions for width and depth ratio, percent cobble embeddedness, percent fines, and bank stability. These streams did not meet the PACFISH Grazing Management standards (U.S. Forest Service, 2005) and were also determined to be Functioning at Risk with Static Trend by an interdisciplinary team conducting Properly Functioning Condition assessments.

In regards to another analysis, (2002) the DEIS states, "data on the impacts of grazing in the watershed is limited" and "Professional knowledge of the area suggests that cattle do not have a large impact on vegetation." This is where bolstering of "professional knowledge" with the results of the required allotment area monitoring would be a good idea. It appears the Forest Service doesn't have the expertise or resources, unfortunately.

And yet, under "Methods and Assumptions" the DEIS states, "The following assumptions were used in assessing effects to or resulting from the existing livestock grazing program on the Nez Perce-Clearwater…" The DEIS then makes several statements and assumptions that have no basis in data or inventory information, and merely sanction status quo management in the absence of any evaluation such as the aforementioned 2005 assessment. NEPA is not served when the entire premises of the analysis are highly flawed.

In discussing the impacts of Standard FW- STD-CWN-01, the DEIS admits that "The majority of grazing allotments within the Nez Perce-Clearwater contain Conservation Network Watersheds not meeting aquatic and riparian desired conditions." It goes on to explain that this standard, similar to current INFISH/forest plan direction, "requires permitted grazing activities to be implemented in a manner that supports achievement of riparian desired conditions and does not retard attainment of desired conditions." So where the DEIS admits that "The rate of improvement in the riparian zone may be slower to some degree with the presence of livestock grazing and other multiple uses authorized by the Multiple Use Sustained Yield Act" this is the very definition of "retard" and thus the Forest Service admits it cannot manage grazing consistent with the existing forest plan or the DFP.

Given the significant and widespread damage livestock grazing causes in allotment areas, firm direction for closing allotments should be a feature of all alternatives. Ecological sustainability can be accomplished or facilitated by the reduction or removal of livestock grazing. The suitability of livestock grazing on the Forest requires serious re-evaluation.

The grazing guidelines approved by the Board of Governors of the Society for Conservation Biology urge the agencies to adopt "rangeland conditions [that] will meet or exceed the agency's standard of 'good' with 'stable trends'" (Fleischner et al. 1994). These guidelines state that livestock grazing may be permitted only where, and in such a manner, that it serves positive ecological roles. The Society for Conservation Biology urges agency staff to evaluate the ecological costs and appropriateness of livestock grazing on an ecosystem basis, as well as on the plants and wildlife whose habits are affected. This requires analyzing the ecological dynamics to determine whether, and to what extent, livestock grazing is ecologically justified. For example, livestock grazing may be permitted if it demonstrably helps maintain or improve the health, native biological diversity, and long-term sustainable productivity of this ecosystem.

Otherwise, livestock grazing on public rangelands should be curtailed (Donahue 1999; Fleishner et al. 1994). In the case of the NPCNF, there is no evidence to support ongoing grazing for ecological reasons. In every case, grazing must be compared to no grazing and reduced grazing, and the differential effects of these management schemes must be honestly analyzed and disclosed.

There is nothing as far as plan elements to deal with species-specific concerns. So while the DEIS identifies risks from livestock grazing to, e.g. mountain quail,[209] there are no plan elements to specifically address the risk. The DEIS merely claims, "plan components that direct the intensity or utilization of these habitats would mitigate or prevent consequences of this activity in mountain quail habitat – Aquatics plan components should conserve mountain quail habitats. These plan components would address this threat**.**" **No scientific information is presented to support this assumption.**

We only specifically mention the mountain quail here—but the DEIS identifies the threat of livestock grazing to most at-risk species so the Forest Service is obligated to include Standards to protect them. Although we don't necessarily endorse their efficacy, the Northern Rockies Lynx Management Direction (NRLMD) is an example of including Plan Elements for specific wildlife.

And whereas livestock grazing is a stressor to elk and other big game, there's no plan elements to address the impacts. Research has shown that light to moderate grazing reduces rodent densities and diversity, rodents are important prey items for many raptors and meso-predators (see Jones, 2000 and Moser and Witmer).

The Draft EIS for the Helena-Lewis and Clark forest plan revision notes, "The severity of the effects of livestock grazing on aquatic wildlife populations can be expected to increase under warmer climatic conditions with lower summer flows." It also states, "Livestock grazing can greatly impact riparian habitats and at-risk plant habitat."

The DEIS basically says, the Forest Service can adjust of climate change results in worsening allotment conditions: "Additional livestock management may be necessary to avoid riparian use

[209] An interagency team of wildlife biologists from the Idaho Department of Fish and Game, the Nez Perce Tribe, and the Forest Service used the Nature Serve methodology to identify threats to mountain quail in the plan area. Threats identified included livestock grazing… Livestock grazing can degrade riparian and shrubland habitat depending upon the intensity. The degradation or loss of riparian and shrub habitats could be the most impactful to the species in the plan area because of the strong affiliation mountain quail have to these habitats.

levels being reached earlier than anticipated, with potential early removal of livestock from the pasture or allotment."

However there's plenty of evidence that climate change is already significantly affecting the NPCNF. It's even admitted in places in the DEIS:

> Multiple studies have concluded that climate change is occurring in one form or another. A local study by Pedersen et al (2009) examined temperature observations in Montana over the past 100-years. The study found that, on average, very cold temperatures ended 20 days earlier in 2006 than in 1892 and very hot temperatures had a three-fold increase in the number of days and have extended, on average, 24 days longer in the season. **If climatic temperatures significantly increase**, there may be changes in vegetation resulting in a shift from more mesic, moist plant associations to more xeric, dry communities. (Emphasis added.)

"If climatic temperatures significantly increase"?

Gerber, et al., 2013 state, "Livestock producers, which include meat and dairy farming, account for about 15 percent of greenhouse gas emissions around the world. That's more than all the world's exhaust-belching cars, buses, boats, and trains combined." How can an activity that causes so much greenhouse gas emission automatically be considered "suitable" for the NPCNF?

From the perspective of best available science, the USDA published a study titled, "Effects of Drought on Forests and Rangelands in the United States: A Comprehensive Science Synthesis" (Vose et al., 2016) that includes information on the effects of drought on rangelands and adaptive strategies for managing livestock. According to the report, "The most obvious and arguably the single most important strategy for adapting to drought is reduction in stocking rate because plants that have been overgrazed or cropped too frequently are less able to recover after drought (Hart and Carpenter 2005)."

Beschta et al., 2012 suggest that climate change is causing additional stress to already damaged western rangelands, and make management recommendations to address these implications. Among the observations of the Beschta et al., 2012 report:

- In the western U.S., climate change is expected to intensify even if greenhouse gas emissions are dramatically reduced.
- Among the threats facing ecosystems as a result of climate change are invasive species, elevated wildfire occurrence, and declining snowpack.
- Federal land managers have begun to adapt to climate-related impacts, but not the combined effects of climate and hooved mammals, or ungulates.
- Climate impacts are compounded from heavy use by livestock and other grazing ungulates, which cause soil erosion, compaction, and dust generation; stream degradation; higher water temperatures and pollution; loss of habitat for fish, birds and amphibians; and desertification.
- Encroachment of woody shrubs at the expense of native grasses and other plants can occur in grazed areas, affecting pollinators, birds, small mammals and other native wildlife.

• Livestock grazing and trampling degrades soil fertility, stability and hydrology, and makes it vulnerable to wind erosion. This in turn adds sediments, nutrients and pathogens to western streams.

• Water developments and diversion for livestock can reduce streamflows and increase water temperatures, degrading habitat for fish and aquatic invertebrates.

• Grazing and trampling reduces the capacity of soils to sequester carbon, and through various processes contributes to greenhouse warming.

• Domestic livestock now use more than 70 percent of the lands managed by the BLM and Forest Service, and their grazing may be the major factor negatively affecting wildlife in 11 western states. In the West, about 175 taxa of freshwater fish are considered imperiled due to habitat-related causes.

• Removing or significantly reducing grazing is likely to be far more effective, in cost and success, than piecemeal approaches to address some of these concerns in isolation.

From a News Release accompanying the Beschta et al., 2012 report:

> A growing degradation of grazing lands could be mitigated if large areas of Bureau of Land Management and USDA Forest Service lands became free of use by livestock and "feral ungulates" such as wild horses and burros, and high populations of deer and elk were reduced, the group of scientists said.
>
> This would help arrest the decline and speed the recovery of affected ecosystems, they said, and provide a basis for comparative study of grazing impacts under a changing climate. The direct economic and social impacts might also be offset by a higher return on other ecosystem services and land uses, they said, although the report focused on ecology, not economics.
>
> Livestock use affects a far greater proportion of BLM and Forest Service lands than do roads, timber harvest and wildfires combined, the researchers said in their study. But effort to mitigate the pervasive effects of livestock has been comparatively minor, they said, even as climatic impacts intensify.
>
> The advent of climate change has significantly added to historic and contemporary problems that result from cattle and sheep ranching, the report said, which first prompted federal regulations in the 1890s.
>
> Wild horses and burros are also a significant problem, this report suggested, and high numbers of deer and elk occur in portions of the West, partially due to the loss or decline of large predators such as cougars and wolves. Restoring those predators might also be part of a comprehensive recovery plan, the researchers said.
>
> The problems are sufficiently severe, this group of researchers concluded, that **they believe the burden of proof should be shifted. Those using public lands for livestock production should have to justify the continuation of ungulate grazing, they said.**

(Emphasis added.) From the Abstract of Beschta et al 2012:

> Climate change affects public land ecosystems and services throughout the American West and these effects are projected to intensify. Even if greenhouse gas emissions are reduced, adaptation strategies for public lands are needed to reduce anthropogenic stressors of

terrestrial and aquatic ecosystems and to help native species and ecosystems survive in an altered environment. Historical and contemporary livestock production—the most widespread and long-running commercial use of public lands—can alter vegetation, soils, hydrology, and wildlife species composition and abundances in ways that exacerbate the effects of climate change on these resources. Excess abundance of native ungulates (e.g., deer or elk) and feral horses and burros add to these impacts. Although many of these consequences have been studied for decades, the ongoing and impending effects of ungulates in a changing climate require new management strategies for limiting their threats to the long-term supply of ecosystem services on public lands. Removing or reducing livestock across large areas of public land would alleviate a widely recognized and long-term stressor and make these lands less susceptible to the effects of climate change. Where livestock use continues, or where significant densities of wild or feral ungulates occur, management should carefully document the ecological, social, and economic consequences (both costs and benefits) to better ensure management that minimizes ungulate impacts to plant and animal communities, soils, and water resources. Reestablishing apex predators in large, contiguous areas of public land may help mitigate any adverse ecological effects of wild ungulates.

Some other key points Beschta et al. 2012, make include:

- If livestock use on public lands continues at current levels, its interaction with anticipated changes in climate will likely worsen soil erosion, dust generation, and stream pollution. Soils whose moisture retention capacity has been reduced will undergo further drying by warming temperatures and/or drought and become even more susceptible to wind erosion (Sankey and others 2009).
- (I)n 1994 the BLM and FS reported that western riparian areas were in their worst condition in history, and livestock use—typically concentrated in these areas—was the chief cause (BLM and FS 1994).
- Ohmart and Anderson (1986) suggested that livestock grazing may be the major factor negatively affecting wildlife in eleven western states. Such effects will compound the problems of adaptation of these ecosystems to the dynamics of climate change (Joyce and others 2008, 2009). Currently, the widespread and ongoing declines of many North American bird populations that use grassland and grass–shrub habitats affected by grazing are ‘‘on track to become a prominent wildlife conservation crisis of the 21st century’’ (Brennan and Kuvlesky 2005, p. 1)
- Climate change and ungulates, singly and in concert, influence ecosystems at the most fundamental levels by affecting soils and hydrologic processes. These effects, in turn, influence many other ecosystem components and processes—nutrient and energy cycles; reproduction, survival, and abundance of terrestrial and aquatic species; and community structure and composition. Moreover, by altering so many factors crucial to ecosystem functioning, the combined effects of a changing climate and ungulate use can affect biodiversity at scales ranging from species to ecosystems (FS 2007) and limit the capability of large areas to supply ecosystem services (Christensen and others 1996; MEA 2005b).
- The site-specific impacts of livestock use vary as a function of many factors (e.g., livestock species and density, periods of rest or non-use, local plant communities, soil

conditions). Nevertheless, extensive reviews of published research generally indicate that livestock have had numerous and widespread negative effects to western ecosystems (Love 1959; Blackburn 1984; Fleischner 1994; Belsky and others 1999; Kauffman and Pyke 2001; Asner and others 2004; Steinfeld and others 2006; Thornton and Herrero 2010). Moreover, public-land range conditions have generally worsened in recent decades (CWWR 1996, Donahue 2007), perhaps due to the reduced productivity of these lands caused by past grazing in conjunction with a changing climate (FWS 2010, p. 13,941, citing Knick and Hanser 2011).

- Livestock use effects, exacerbated by climate change, often have severe impacts on upland plant communities. For example, … areas severely affected include the northern Great Basin and interior Columbia River Basin (Middleton and Thomas 1997).

- Livestock grazing has numerous consequences for hydrologic processes and water resources. Livestock can have profound effects on soils, including their productivity, infiltration, and water storage, and these properties drive many other ecosystem changes. Soil compaction from livestock has been identified as an extensive problem on public lands (CWWR 1996; FS and BLM 1997). Such compaction is inevitable because the hoof of a 450-kg cow exerts more than five times the pressure of heavy earthmoving machinery (Cowley 2002). Soil compaction significantly reduces infiltration rates and the ability of soils to store water, both of which affect runoff processes (Branson and others 1981; Blackburn 1984). Compaction of wet meadow soils by livestock can significantly decrease soil water storage (Kauffman and others 2004), thus contributing to reduced summer base flows. Concomitantly, decreases in infiltration and soil water storage of compacted soils during periods of high-intensity rainfall contribute to increased surface runoff and soil erosion (Branson and others 1981). These fundamental alterations in hydrologic processes from livestock use are likely to be exacerbated by climate change.

- The combined effects of elevated soil loss and compaction caused by grazing reduce soil productivity, further compromising the capability of grazed areas to support native plant communities (CWWR 1996; FS and BLM 1997). Erosion triggered by livestock use continues to represent a major source of sediment, nutrients, and pathogens in western streams (WSWC 1989; EPA 2009).

- Historical and contemporary effects of livestock grazing and trampling along stream channels can destabilize streambanks, thus contributing to widened and/or incised channels (NRC 2002). Accelerated streambank erosion and channel incision are pervasive on western public lands used by livestock (Fig. 4). Stream incision contributes to desiccation of floodplains and wet meadows, loss of floodwater detention storage, and reductions in baseflow (Ponce and Lindquist 1990; Trimble and Mendel 1995). Grazing and trampling of riparian plant communities also contribute to elevated water temperatures—directly, by reducing stream shading and, indirectly, by damaging streambanks and increasing channel widths (NRC 2002). Livestock use of riparian plant communities can also decrease the availability of food and construction materials for keystone species such as beaver (Castor canadensis).

- Livestock production impacts energy and carbon cycles and globally contributes an estimated 18% to the total anthropogenic greenhouse gas (GHG) emissions (Steinfeld and others 2006). How public-land livestock contribute to these effects has received little study. Nevertheless, livestock grazing and trampling can reduce the capacity of rangeland vegetation and soils to sequester carbon and contribute to the loss of above- and below-ground carbon pools (e.g., Lal 2001b; Bowker and others 2012). Lal (2001a) indicated that heavy grazing over the long-term may have adverse impacts on soil organic carbon content, especially for soils of low inherent fertility. Although Gill (2007) found that grazing over 100 years or longer in subalpine areas on the Wasatch Plateau in central Utah had no significant impacts on total soil carbon, results of the study suggest that ‘‘if temperatures warm and summer precipitation increases as is anticipated, [soils in grazed areas] may become net sources of CO2 to the atmosphere’’ (Gill 2007, p. 88). Furthermore, limited soil aeration in soils compacted by livestock can stimulate production of methane, and emissions of nitrous oxide under shrub canopies may be twice the levels in nearby grasslands (Asner and others 2004). Both of these are potent GHGs.

- Managing livestock on public lands also involves extensive fence systems. Between 1962 and 1997, over 51,000 km of fence were constructed on BLM lands with resident sage-grouse populations (FWS 2010). Such fences can significantly impact this wildlife species. For example, 146 sage-grouse died in less than three years from collisions with fences along a 7.6-km BLM range fence in Wyoming (FWS 2010). Fences can also restrict the movements of wild ungulates and increase the risk of injury and death by entanglement or impalement (Harrington and Conover 2006; FWS 2010). Fences and roads for livestock access can fragment and isolate segments of natural ecological mosaics thus influencing the capability of wildlife to adapt to a changing climate.

- (L)ivestock use (particularly cattle) on these lands exert disturbances without evolutionary parallel (Milchunas and Lauenroth 1993; MEA 2005a). …The combined effects of ungulates (domestic, wild, and feral) and a changing climate present a pervasive set of stressors on public lands, which are significantly different from those encountered during the evolutionary history of the region’s native species. The intersection of these stressors is setting the stage for fundamental and unprecedented changes to forest, arid, and semi-arid landscapes in the western US (Table 1) and increasing the likelihood of alternative states. Thus, public-land management needs to focus on restoring and maintaining structure, function, and integrity of ecosystems to improve their resilience to climate change (Rieman and Isaak 2010).

- Natural floods provide another illustration of how ungulates can alter the ecological role of disturbances. High flows are normally important for maintaining riparian plant communities through the deposition of nutrients, organic matter, and sediment on streambanks and floodplains, and for enhancing habitat diversity of aquatic and riparian ecosystems (CWWR 1996). Ungulate effects on the structure and composition of riparian plant communities (e.g., Platts 1991; Chadde and Kay 1996), however, can drastically alter the outcome of these hydrologic disturbances by diminishing streambank stability and severing linkages between high flows and the maintenance of streamside plant communities. As a result, accelerated erosion of streambanks and floodplains, channel incision, and the occurrence of high instream sediment loads may become increasingly common during periods of high flows (Trimble and Mendel 1995). Similar effects have been found in systems where large predators have been displaced or extirpated (Beschta and Ripple 2012). In general, high levels of ungulate use can essentially uncouple typical ecosystem responses to chronic or acute disturbances, thus greatly limiting the capacity of these systems to provide a full array of ecosystem services during a changing climate.

- (F)ederal grazing fees on BLM and FS lands cover only about one-sixth of the agencies' administration costs (Vincent 2012).

Beschta et al 2012, also discuss restoring ungulate-altered ecosystems at great length. These discussions include the following:

- The ecological effectiveness and low cost of wide-scale reduction in ungulate use for restoring public-land ecosystems, coupled with the scarcity of restoration resources, provide a forceful case for minimizing ungulate impacts. Other conservation measures are unlikely to make as great a contribution to ameliorating landscape-scale effects from climate change or to do so at such a low fiscal cost. As Isaak and others (2012, p. 514) noted with regard to the impacts of climate change on widely-imperiled salmonids: ''…conservation projects are likely to greatly exceed available resources, so strategic prioritization schemes are essential.''
- … (A)ddressing the underlying causes of degradation should be the first priority for effectively restoring altered public-land ecosystems.
- Because livestock use is so widespread on public lands in the American West, management actions directed at ecological restoration (e.g., livestock removal, substantial reductions in numbers or length of season, extended or regular periods of rest) need to be accomplished at landscape scales. Such approaches, often referred to as passive restoration, are generally the most ecologically effective and economically efficient for recovering altered ecosystems because they address the root causes of degradation and allow natural recovery processes to operate (Kauffman and others 1997; Rieman and Isaak 2010). Furthermore, reducing the impact of current stressors is a ''no regrets'' adaptation strategy that could be taken now to help enhance ecosystem resilience to climate change (Joyce and others 2008). This strategy is especially relevant to western ecosystems because removing or significantly reducing the cause of degradation (e.g., excessive ungulate use) is likely to be considerably more effective over the long term, in both costs and approach, than active treatments aimed at specific ecosystem components (e.g., controlling invasive plants) (BLM 2005). Furthermore, the possibility that passive restoration measures may not accomplish all ecological goals is an insufficient reason for not removing or reducing stressors at landscape scales.
- For many areas of the American West, particularly riparian areas and other areas of high biodiversity, significantly reducing or eliminating ungulate stressors should, over time, result in the recovery of self-sustaining and ecologically robust ecosystems (Kauffman and others 1997; Floyd and others 2003; Allington and Valone 2010; Fig. 5). Indeed, various studies and reviews have concluded that the most effective way to restore riparian areas and aquatic systems is to exclude livestock either temporarily (with subsequent changed management) or long-term (e.g., Platts 1991; BLM and FS 1994; Dobkin and others 1998; NRC 2002; Seavy and others 2009: Fleischner 2010). Recovering channel form and riparian soils and vegetation by reducing ungulate impacts is also a viable management tool for increasing summer baseflows (Ponce and Lindquist 1990; Rhodes and others 1994).

- (R)educing ungulate impacts and restoring degraded plant and soil systems may also assist in mitigating any ongoing or future changes in regional energy and carbon cycles that contribute to global climate change. Simply removing livestock can increase soil carbon sequestration since grasslands with the greatest potential for increasing soil carbon storage are those that have been depleted in the past by poor management (Wu and others 2008, citing Jones and Donnelly 2004). Riparian area restoration can also enhance carbon sequestration (Flynn and others 2009).
- While lowering grazing pressure rather than discontinuing use might be effective in some circumstances, public land managers need to rigorously assess whether such use is compatible with the maintenance or recovery of ecosystem attributes such as soils, watershed hydrology, and native plant and animal communities. In such cases, the contemporary status of at least some of the key attributes and their rates of change should be carefully monitored to ascertain whether continued use is consistent with ecological recovery, particularly as the climate shifts (e.g., Karr and Rossano 2001, Karr 2004; LaPaix and others 2009). To the extent possible, assessments of recovering areas should be compared to similar measurements in reference areas (i.e., areas exhibiting high ecological integrity) or areas where ungulate impacts had earlier been removed or minimized (Angermeier and Karr 1994; Dobkin and others 1998). Such comparisons are crucial if scientists and managers are to confirm whether managed systems are attaining restoration goals and to determine needs for intervention, such as reintroducing previously extirpated species.
- … Current livestock or feral ungulate use should continue only where stocking rates, frequency, and timing can be demonstrated, in comparison with landscape-scale reference areas, exclosures, or other appropriate non-use areas, to be compatible with maintaining or recovering key ecological functions and native species complexes. Furthermore, such use should be allowed only when monitoring is adequate to determine the effects of continued grazing in comparison to areas without grazing.
- Where key large predators are absent or unable to attain ecologically functional densities, federal agencies should coordinate with state wildlife agencies in managing wild ungulate populations to prevent excessive effects of these large herbivores on native plant and animal communities.

There is nothing in the DEIS which quantifies the lost ecosystem services of grasslands sequestering carbon—lost because of livestock grazing.

Saunois et al., 2016a note "the recent rapid rise in global methane concentrations is predominantly biogenic—most likely from agriculture—with smaller contributions from fossil fuel use and possibly wetlands. …Methane mitigation offers rapid climate benefits and economic, health and agricultural co-benefits that are highly complementary to CO2 mitigation." (Also see Saunois et al., 2016b; Gerber et al., 2013; the Grist articles "Why isn't the U.S. counting meat producers' climate emissions?" and "Cattle grazing is a climate disaster, and you're paying for it"; and Stanford News article "Methane from food production could be wildcard in combating climate change, Stanford scientist says").

Ripple et al. 2014 provide some data and point out the opportunities available for GHG reductions via change in livestock policy:

· At present non-CO_2 greenhouse gases contribute about a third of total anthropogenic CO_2 equivalent (CO_2e) emissions and 35–45% of climate forcing (the change in radiant energy retained by Earth owing to emissions of long-lived greenhouse gases) resulting from those emissions.

· Methane (CH4) is the most abundant non- CO_2 greenhouse gas and because it has a much shorter atmospheric lifetime (~9 years) than CO_2 it holds the potential for more rapid reductions in radiative forcing than would be possible by controlling emissions of CO_2 alone.

· We focus on ruminants for four reasons. First, ruminant production is the largest source of anthropogenic CH_4 emissions (Fig. 1c) and globally occupies more area than any other land use. Second, the relative neglect of this greenhouse gas source suggests that awareness of its importance is inappropriately low. Third, reductions in ruminant numbers and ruminant meat production would simultaneously benefit global food security, human health and environmental conservation. Finally, with political will, decreases in worldwide ruminant populations could potentially be accomplished quickly and relatively inexpensively.

· Worldwide, the livestock sector is responsible for approximately 14.5% of all anthropogenic greenhouse gas emissions3 (7.1 of 49 Gt $CO_2$2e yr–1). Approximately 44% (3.1 Gt CO_2e yr–1) of the livestock sector's emissions are in the form of CH4 from enteric fermentation, manure and rice feed, with the remaining portions almost equally shared between CO_2 (27%, 2 Gt CO_2e yr–1) from land-use change and fossil fuel use, and nitrous oxide (N_2O) (29%, 2 Gt CO_2e yr–1) from fertilizer applied to feed-crop fields and manure.

· Globally, ruminants contribute 11.6% and cattle 9.4% of all greenhouse gas emissions from anthropogenic sources.

· Lower global ruminant numbers would have simultaneous benefits for other systems and processes. For example, in some grassland and savannah ecosystems, domestic ruminant grazing contributes to land degradation through desertification and reduced soil organic carbon. Ruminant agriculture can also have negative impacts on water quality and availability, hydrology and riparian ecosystems. Ruminant production can erode biodiversity through a wide range of processes such as forest loss and degradation, land-use intensification, exotic plant invasions, soil erosion, persecution of large predators and competition with wildlife for resources.

· Roughly one in eight people in the world are severely malnourished or lack access to food owing to poverty and high food prices. With over 800 million people chronically hungry, we argue that the use of highly productive croplands to produce animal feed is questionable on moral grounds because this contributes to exhausting the world's food supply.

· In developed countries, high levels of meat consumption rates are strongly correlated with rates of diseases such as obesity, diabetes, some common cancers and heart disease. Moreover, reducing meat consumption and increasing the proportion of dietary protein obtained from high-protein plant foods — such as soy, pulses, cereals and tubers — is associated with significant human health benefits.

· The greenhouse gas footprint of consuming ruminant meat is, on average, 19–48 times higher than that of high-protein foods obtained from plants (Fig. 2), when full life cycle analysis including both direct and indirect environmental effects from 'farm to fork' for enteric fermentation, manure, feed, fertilizer, processing, transportation and land-use change are considered.

· In terms of short-term climate change mitigation during the next few decades, if all the land used for ruminant livestock production were instead converted to grow natural vegetation, increased CO_2 sequestration on the order of 30–470% of the greenhouse gas emissions associated with food production could be expected.

· (D)ecreasing ruminants should be considered alongside our grand challenge of significantly reducing the world's reliance on fossil fuel combustion. Only with the recognition of the urgency of this issue and the political will to commit resources to comprehensively mitigate both CO_2 and non-CO_2 greenhouse gas emissions will meaningful progress be made on climate change. For an effective and rapid response, we need to increase awareness among the public and policymakers that what we choose to eat has important consequences for climate change.

To conclude, we point out that the Natural Range of Variability (NRV) of livestock grazing is **zero.** Compare this with the fact that active grazing allotments occupy 21.3% of Nez Perce National Forest and 7.8% of the Clearwater National Forest. And that over 15 percent of each NPCNF grazing allotment is within riparian management zones, with several allotments containing 20 to 27 percent riparian management zones. None of the modeling for wildlife habitat or forest cover composition considers this disparity in NRV, which is a failure of analysis in the context of all the ecological damage livestock grazing has caused.

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FOREST VEGETATION (AND LOGGING)

Some of these concerns will parallel those we have raised in the sections addressing fire, post-fire logging, old growth, diversity, and wildlife species. The assumptions behind the desired conditions, goals, and objectives for forest vegetation are not based upon the best science. Rather, these assumptions reflect a view that maximum meddling will reduce the impacts of past meddling. More accurately, it is an attempt to justify logging not on economic grounds, but on the scientifically insupportable idea that logging is restoration.

The high intensity forest manipulation proposed in the DFP and DEIS will not replicate natural processes like fire. For example, the presence of fire indicates high degrees of ecosystem function. The DEIS notes that Wilderness is closest to meeting the desired conditions. Yet, the DFP/DEIS refuses to allow the natural processes that resulted in that condition the DFP and DEIS deem desirable for roadless areas or other places in the two national forests. Our scoping comments pointed out that a process orientation, not end-point, is a far better way to look at forested vegetation in most instances.

Beschta et al., 1995 state, “Land managers should be managing for the naturally evolving ecosystems, rather than perpetuating artificial ones we have attempted to create.” Any forest condition that is maintained through intense mechanical manipulation is not maintaining ecosystem function. We have attached a folder of historical photos of the Nez Perce and Clearwater National Forests as well as some nearby areas outside of the national forests boundaries. These seem incongruous with the assumptions that the forests are somehow to thick or significantly departed from historical conditions. The upshot of most forest vegetation plan components is to erroneously conflate logged areas with complex early seral forest habitat created by natural processes such as fire and insects. (See, Dellasala et al. 2014a).

Similarly, the huge patch sizes evade NFMA’s restrictions on clearcutting or clearing sizes. Natural events, even stand-replacing fire, doesn’t remove the tree trunks or boles. Yet, the Forest Plan increases current maximum opening size by nearly 10 times! This size seems incongruous with the way the Forest Service has mapped the PVT

As we point out elsewhere in this comment, areas that have had the least amount of “management” appear to resist and recover better from natural disturbances like fire than do areas that have been intensively managed. Yet, the plan components and alternatives all call for increased logging and thinning over the average of the past 20 years.

The PVT concept by Milburn et al. 2015 is apparently an aggregation of forest types into four categories, a coarse approach. It is not basic research about those habitat types in the Rockies or the assumptions made in the DFP/DEIS. Also, identification of the types and then the PVT is somewhat subjective as is the current dominance of stands. Different professionals even with the same protocol will come up with different answers.

The Nez Perce and Clearwater National Forests are composed largely of moist types (such as cedar habitat types) where understory fires are less common and stand replacement fire is the norm. There appears to be a conception that dense stands are not normal and that these stands must have intervention to develop normally and prevent fires. We believe this interpretation is ecologically unsound.

Further, grand fir and Douglas fir are normal stand components of these forests. High stocking rates are quite normal (Haig 1932). The moist forest types of the Nez Perce Clearwater National Forest and the project area are generally competition-based systems that develop after large-scale stand replacing fire. Stand density is usually not the driving factor in the initiation of these large-scale fires that generally occur at intervals of 250-300 years and under drought conditions such as those that occurred in 1910, 1933/1934, and in2015. Intolerant species like western white pine and western larch have an initial advantage in these systems due to fast growth rates that allow them to capture the site and outpace the growth of other more tolerant species like grand fir, Douglas fir and western red cedar.

But white pine and larch are gradually replaced by more tolerant grand fir and western red cedar on more northerly aspects. On southerly aspects Douglas fir has an advantage due to its greater tolerance of drought and intermediate shade tolerance but western larch does well too. The introduction of white pine blister rust changed this dynamic and gave a greater advantage to grand fir and cedar especially on northerly aspects. These species are well adapted to current conditions and, as an added bonus, grand fir trees make excellent wildlife snags due to their softness.

Many of the competing trees would have been present at the time of stand establishment and stands would have changed overtime due to competition, blowdown, and insect and disease attacks. Except for extensive historical (and very recent) logging operations and the introduction of blister rust, this system pretty much operates as it did historically. Overtime, white pine and whitebark pine may make a comeback if the trees develop more resistant mechanisms on its own, but that will take many, many decades if not centuries. Thus, a strategy that relies on propagating white pine (logging and cutting at lower and mid elevations) or whitebark pine (logging and cutting at upper elevations) is unrealistic given current situation with blister rust. The attached comment on the Middle Black DEIS address issues related to forest vegetation, including white pine.

The fact that these systems always had high densities of trees is well documented by Haig (1932) in his description of the white pine type years ago and long before the effects of fire suppression was considered a major issue. He reported, "The extremely rapid decrease in number of trees with increasing age is strikingly apparent. On good sites (site index 60) the total number of trees per acre drops from 4,700 at 20 years to 720 at 80 years, and to 390 at 120 years. The number of trees also decreases rapidly with increase in site index." On excellent sites (Site index 70) Haig found an average of 2,800 trees per acre over a diameter of 0.6 inches in diameter at 20 years of age, on fair sites (site index 50) Haig's tables show approximately 7,800 trees per acre over a diameter of 0.6 inches DBH at age 20 and on poor sites (Site Index 40) he found an 11,500 trees per acre at age 20.

Clearly, the idea of understory encroachment is not an applicable in the moist cedar types. Tree species found here like cedar and grand fir have made very little genetic investment in mechanisms to survive fire. Instead they rely on fast growth or extensive canopies that allow for light capture in densely stocked stands. Dense stocking rates are also the norm on north facing breaklands where relatively moist habitat cedar habitat types still predominate.

What are the percentages in the DCs (Tables, 3, 5, 7, and 9) of various PVT groups or dominance based upon? Why is there not range of alternatives for the desired tree dominant categories in these PVT groups? Why is there not a range of alternatives for the age/size classes? What is clear is that certain native species do better than others, yet the DCs are designed to reduce (log) those trees best suited to current conditions and replace them with trees that are apparently less suited. Similar problems exist with the size class DCs (Tables 4, 6, 8, and 10).[210]

Even when looking at the warm dry PVT, which is not common due to the amount of precipitation here, it is wrong to conclude they did not experience stand-replacing fires, that fire regimes were frequent and nonlethal, that these stands were open and dominated by large well-spaced trees, and that fuel amounts determine fire severity (the false thinning hypothesis that fails to recognize climate as the overwhelming main driver of fire intensity) are not supported by science (see for example Baker and Williams 2015, Williams and Baker 2014, Baker et al. 2007, Pierce et al. 2004, Baker and Ehle 2001, Sherriff et al. 2014 and Kaufmann et al. undated). Even research that has uncritically accepts the questionable ponderosa pine model that may only apply to the Mogollon Rim of AZ and NM, notes the inappropriateness of applying that model to elsewhere (see Schoennagel et al. 2004).

In sum, this extremely prescriptive approach for PVT and dominant stands is at odds with the vague platitudes for protection of wildlife and watersheds. The result is that every alternative has to radical increasing logging to meet these prescribed conditions that were intentionally chosen to deviate from current conditions. This is a very biased, timber-driven plan with other so-called multiple-uses relegated to second-class status.

The DC for aspen is bizarre and it applies across the all the national forest acreage, regardless of management area. Though found here in places like scree slopes, it is not a major component, nor has it ever been, in the Nez Perce and Clearwater National Forests. It isn't even mentioned in the definitive Forest Service publication about Northern Idaho forest habitats (Cooper et al. 1991). Trying to maintain one percent across the two national forests would be 40,000 acres of aspen. What evidence do you have that there were historically 40,000 acres of aspen in these national forests? Does this mean there will be mechanical treatment (non-commercial logging) in Wilderness and roadless areas to propagate aspen? If the Forest Service were really concerned about deciduous vegetation, it would consider alder, willow, or perhaps cottonwood for special treatment, which are more representative of northern Idaho. It would appear the Forest Service is trying to turn the forests of northern Idaho into Utah, Colorado, or northern New Mexico. That makes no ecological sense.

The DFP is not clear as to what is suitable and not suitable for logging as required by NFMA. Our early comments asked, "**How was the suitable base defined? Do you have a map of the suitable base?"** (Emphasis in original). The maps in the appendices suggest that the IRR areas are not suitable, but the Tables 19 through 22 suggest they are. Which, if any, are accurate? What about the differing suitable acres under the same alternative in the DEIS. For example, compare Table 25 and Table 26 in the DEIS. These are not the only tables in conflict about suitability and logging.

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[210] It is not clear whether age class will be used as a surrogate for concepts like old growth forests, which receive little on no protection.

Once that is clarified, the obvious question is how much of the volume in the various alternatives comes from suitable and unsuitable ground? As a follow-up, how much volume is expected to come from the IRAs? Is the acreage on Table 15 accurate? Interestingly, page 3.6.1-18 of the DEIS shows a different acres of the IRR areas than does page 3.5.1-41. How much volume from the uninventoried roadless areas? How much from currently designated old growth stands? How much from stands that meet the initial cut in Green et al? How much that meet the definitions in the two forest plans? How much from later seral forests that don't yet meet the criteria in Green et al. or the forest plans? How much from streams and drainages that do not currently meet forest plan objectives and standards for water quality and fish habitat? These are all important questions in light of the massive increase in logging under most alternatives.

Further, we asked "about mapping, suitability and the volume in the SYL, PWSQ and PTSQ" in a meeting and our earlier comments. The assumptions behind the radical increase in proposed timber sales under every action alternative over the current past average conflict with any notion of sustained yield in terms of water quality, fish habitat, wildlife, or even economics given the increasing mechanization of the timber industry that has decreased the number of jobs in the industry. Indeed, the current objective and standards in the forest plan for water quality and fish habitat are not being met with a lower timber sale volume, even after 33 years.

The DEIS and DFP assume logging is a major if not the major part of the economy in this area. What percentage of the economy in Clearwater and Idaho Counties are due to logging?[211] Don't data from the Idaho Department of Labor suggest it is less than 10% for each of those counties? If the timber industry isn't the current economic driver of those counties, what is? Investment and retirement income of those moving into the area is a likely answer. See http://mountainjournal.org/the-public-land-west-as-harbinger-for-america.

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[211] Latah County has a much smaller percentage than do those other counties.

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WILD AND SCENIC RIVERS

Our previous comments went into detail on Wild and Scenic Rivers. We also incorporate, by reference, the issues and concerns raised in the comments from Idaho Rivers United. In particular, the problems with doing a suitability analysis is well articulated in those comments. Indeed, the Forest Service did draft suitability analyses in legislation EISs on some of the eligible rivers identified in the 1987 plans, recognizing it was the purview of Congress to make the suitability decisions. Pasted below are some excerpts for those earlier comments.

…some streams were left off your preliminary list that belong there. One is Lake Fork, which is considered eligible under the current forest Nez Perce plan. We don't see anything in your website or preliminary list which explains this omission. There are other stream/river segments that have been reduced in length from previous forest plan eligibility determinations. These include the Salmon River, Bear Creek Complex (Paradise, Spruce and Wahoo Creeks are excluded), Moose Creek Complex (Isaac Creek is excluded), and the lower North Fork Clearwater (though the Aquarius RNA above the reservoir).

The following are some other streams, including additional segments of streams that are listed by the Forest Service as preliminarily eligible, warrant consideration for eligibility. There may be others as well that should be considered:

North Fork Drainage

- Meadow Creek (a crucial bull trout stream)
- Skull Creek (a scenic stream partially in an IRA)
- Quartz Creek (a scenic stream partially in an IRA)
- Lake Creek (in an IRA, a stream with a rare population of bull trout who live in Fish Lake and spawn in the creek)
- Little Moose Creek (in an IRA, a scenic stream with important wildlife/recreation values)

- Monroe Creek (in an IRA and a tributary to Cayuse Creek, and important fishery)
- Little Weitas Creek (in an IRA, botanical, wildlife and recreational values)
- Hemlock Creek (in an IRA, a proposed Research Natural Area [RNA] by the Forest Service)
- Larson Creek (in an IRA, important aquatic macro-invertebrates)
- Toboggan Creek (in and IRA, fish and wildlife values, a tributary to Cayuse Creek)
- North Fork Clearwater (the portion in the Aquarius RNA, partly in an IRA)

Clearwater Drainage

- Lolo Creek (crucial steelhead stream with cultural/historic values, only a small segment in the eligible list)
- Eldorado Creek (fish, historic and cultural values)
- West Fork Potlatch (steelhead and recreation)

Lochsa Drainage

- Old Man Creek (only part of the stream is listed as eligible, Wilderness and IRA, historic, fish and cultural values)
- Sherman Creek (in an IRA, historic, recreation and cultural values)
- Boulder Creek (Wilderness and IRA, fish, recreation and wildlife values)
- Lake Creek (Wilderness and IRA, unique bull trout population in Lake Creek and Fish Lake)

Selway Drainage

- O'Hara Creek (only part of the stream is listed as eligible, RNA and IRA, fish and cultural values)
- Glover Creek (in an IRA, wildlife, specifically the unique Selway genotype for the Coeur d'Alene salamander and recreation)
- Meadow Creek Tributaries (those omitted, in an IRA, i.e. Sable, Fivemile and Three Prong Creeks, fish recreation and scenic values)

Salmon River Drainage

- Rhett Creek (in an IRA, fish and wildlife values, specifically fisher)
- Big Mallard (only part of the stream is listed as eligible, in an IRA, scenic, fish and wildlife values)

- Noble (only part of the stream is listed as eligible, in an IRA, scenic, fish and wildlife and values)

1.) Free-flowing rivers--The Act recognizes that some streams or rivers now showing signs of development may still be eligible: "The existence …of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion." Although the term "minor" is subjective, once again FOC believes the policy as stated in the Act requires erring on the side of caution—not simply eliminating streams currently exhibiting impacts. This is especially true for streams that may only have on small structure. Indeed, the Forest Service's own document on the web site notes, "Some existing impoundment or diversion. The existence of low dams, diversions or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance."

For example, the portion of Red Horse Creek in the Meadow Creek Roadless Area (West meadow, erroneously divided from East Meadow Creek) is still free flowing. Indeed, all of the rivers that have been previously affected by suction dredge mining are still free flowing. Crooked River and Crooked Creek are examples. None of the main Crooked River is included.[212] Crooked Creek ahs as one of its tributaries Lake Creek, a river found eligible in the 1987 Nez Perce Forest Plan.

The small private water diversion on Bridge Creek is not enough to affect its free-flowing status. The small diversions for hatcheries (Walton and Yoosa Creeks) do not affect their status as they are at specific points. Indeed, upper Walton Creek is within a Forest Service area recommended for Wilderness in the 1987 Clearwater Forest Plan. The minor diversion is near its mouth, yet the entire stream is considered not free flowing. The same is true for Yoosa Creek.

In sum, it seems entire segments were thrown out for minor developments. Aside from the pool of Dworshak Reservoir on the North Fork—and that is only a small segment)--it is hard to justify any steam on the NPCNF as not free flowing.

1.) Outstandingly remarkable values--We do have some comments on the specifics of this topic. These are listed below.

Fishery--It would seem that most major stream segments on the Nez Perce and Clearwater Forests, especially those at upper elevations, would meet the fishery ORV as described in the materials. These are all appropriate attributes as described. This Clearwater and Salmon River Basins are the best remaining wild fish habitat in the lower 48 states. All streams that are critical habitat for steelhead or bull trout should be included. So should streams with Pacific lamprey or Westslope cutthroat trout.

Wildlife--While the list of species in the discussion on wildlife ORVs is necessarily large, the idea that river dependent species are the only ones that should be included is flawed for at least

[212] The West Fork Crooked River is a scenic and rugged river in an inventoried roadless area (IRA) contiguous to the Gospel Hump Wilderness is correctly included.

two reasons. First, most terrestrial species rely on river environments to survive. Second, the way the agency has determined what is river dependent does not comport with what the agency claims in its site-specific documents. Perhaps the best example is the fisher. Routinely, the Forest Service alleges that PACFISH buffers will protect fisher in NEPA documents for various timber sales and other development proposals. However, the fisher is not listed because it is supposedly not river dependent. Yet, Forest Service policy is forcing the fisher to be such and considering it as such in site-specific NEPA documents. Fisher habitat should be included.

Furthermore, there are species that are river dependent which are not included. Both the Coeur d'Alene and Idaho giant salamanders depend on rivers and streams. There are three unique genotypes of the Coeur d'Alene salamanders, all are found in the Clearwater River Basin. For example, Glover Creek is one of only two known locations for the Selway genotype of these salamanders.

Geology—This section seems quite subjective. The agency seems to be conflating scenery with geology.

Scenery—Ironically, the scenery section is reliant somewhat on recreational guidebooks for river running. Both rapids and still water can be scenic but the emphasis placed upon rapids. The Forest Service's information does suggest that the Wilderness and roadless areas are prime and have some very scenic areas, but this are not necessarily reflected in the list of proposed eligible rivers. For example, Cayuse Creek (eligible for other reasons) does not list scenery even though it is a beautiful stream.

Recreation—This section seems to emphasize very popular sites, which are mainly quite accessible. Some streams that have outstanding opportunities for remove recreation, like Little Weitas Creek, are missed in the list.

History and Botany--The agency does not provide on the website information for these values ORVs like it does the others. This information should be available so the public can comment. We suggest that agency open up another comment period on eligibility once the information is complete.

Aside from the problem of doing suitability analysis in the revision process, the DFP and DEIS make serious errors when analyzing recommending segments as wild, recreational, or scenic. For example, all segments in roadless area should be classified as wild. There is inconsistency on how this is done.

Weitas Creek is classified as scenic even though it goes through a roadless area. The only segment accessed by a road is at the old Weitas Guard Station. That is unlike what is proposed for Cayuse Creek at the landing meadow where the Toboggan Ridge Road crosses Cayuse Creek. Except for that short segment at the landing meadow and one other further along the road where Cayuse Creek crosses the Toboggan Ridge Road, Cayuse Creek is recommended as wild under the action alternatives that include it. Like Weitas Creek, Fish Creek is recommended as scenic, even under the alt. W that recommends the surrounding area as Wilderness. It is contrary to policy to have anything but wild river recommendations Wilderness or recommended Wilderness. Similar problems exist for upper Meadow Creek, Colt Killed Creek and East Fork of Meadow Creek.

We have another question. Have the segments found eligible in the 1987 plans but not in the DFP lost their ORVs? If so, how did that happen? That is particularly pertinent for Lake Creek in the Gospel- Hump Wilderness.

Table 30 in the DFP allows activities that are inconsistent with case law in designated Wild and Scenic River corridors. These include logging and snowmobile and motorized use (presumably, terrestrial) in the wild Salmon River. However, the only exceptions are the road segments at Mackey Bar and Whitewater and boats on the river. Also, no grazing allotments are located in the existing Wild and Scenic Rivers even though it is allowed on Table 30.

MINERALS

The energy and minerals section proposed no withdrawals or segregation from mineral entry. The Forest Service has to concur with leasable minerals. This area is not known for leasable mineral, yet the exploration for those minerals can be very destructive. At a minimum, the roadless areas (including the Gospel Hump) should not be leased. Minerals are a dominant use and the desired conditions reflect a bias to mineral development over any surface resource.

There is no range of alternatives for minerals regarding leasing, which requires Forest Service concurrence. While the current threat is minimal, rather than leaving the two forests open, this is an opportunity to have a range of alternatives regarding areas not open to leasing. The DEIS/DFP should have determined what was suitable and not suitable for this activity.

We can’t tell if the DEIS or DFP intend to address the issue of suction dredge mining. Are the alternatives any different? Does the Forest Service intend to approve more suction dredge mining in additional areas?

ECONOMICS

Section 6 of the National Forest Management Act, as amended, states:

> (k) In developing land management plans pursuant to this Act, the Secretary shall identify lands within the management area which are not suited for timber production, **considering physical, economic, and other pertinent factors to the extent feasible**, as determined by the Secretary, and shall assure that, except for salvage sales or sales necessitated to protect other multiple-use values, no timber harvesting shall occur on such lands for a period of 10 years. Lands once identified as unsuitable for timber production shall continue to be treated for reforestation purposes, particularly with regard to the protection of other multiple-use values. The Secretary shall review his decision to classify these lands as not suited for timber production at least every 10 years and shall return these lands to timber production whenever he determines that conditions have changed so that they have become suitable for timber production.

Emphasis added. The fact that the 2012 Planning Rule, decided not to consider economic factors in the rule itself suggests the Planning Rule is out of compliance with NFMA. Does the Forest Service intend to comply with Section 6 of the National Forest Management Act? In other words, were economic factors considered in the suitability determination? If not, why not?

We also don’t see an economic analysis of the impacts on the treasury or taxpayers from various programs such as range, timber, or recreation. Has such an analysis been made?

Please support your economic analysis. And discuss how permanent or long-lasting these jobs created are. Are you making up for mechanization? Please discuss how mechanization has impacted the logging industry over the decades, because mechanization is the reason for some jobs lost, and it’s not the responsibility of the Forest Service to make up for this loss by cutting more. Finally, please include the economics that recreation brings into these forests.

SPECIAL DESIGNATION

We again reiterate our support for the RNAs that are proposed. The work done by Dr. Fred Rabe in recommending and RNA, Bimerick Meadows, should be analyzed in at least one alternative. The meadows themselves have not been affected by the planting of ponderosa pine as the meadows are free of trees.