OBJECTOR'S NOTICE OF OBJECTION, STATEMENT OF ISSUES AND LAWS, AND REQUESTED REMEDIES

NOTICE OF OBJECTION

June 23, 2025

Shaun McKinney, Forest Supervisor,
Wallowa-Whitman National Forest
Attn: Objections,
1550 Dewey Ave.,
Baker City, OR 97814

RE: Blue Mountains Biodiversity Project's objection to the Wallowa-Whitman National Forest Morgan Nesbit Forest Resiliency Project Draft Decision Notice and final Environmental Assessment and Finding of No Significant Impact

Submitted via email to: objections-pnw-wallowa-whitman@usda.gov
A physical copy was submitted via USPS certified mail to the address above on 06/23/25

Dear Objection Reviewing Officer,

Blue Mountains Biodiversity Project (BMBP) hereby formally submits the following objections to the Wallowa-Whitman National Forest's Morgan Nesbit Forest Resiliency Project (Morgan Nesbit) Environmental Assessment and Finding of No Significant Impact and Draft Decision Notice. BMBP has secured the right to submit objections and thereby participate in the pre-decisional administrative review process for this project. BMBP has submitted timely written scoping comments regarding this project and extensive comments on the Draft Environmental Assessment, including field survey sheets and photographs from our surveying the affected area for weeks over two summers.

Decision Document

Morgan Nesbit Forest Resiliency Project Environmental Assessment and Finding of No Significant Impact and the Draft Decision Notice

Date Decision published

May 7th, 2025

The legal objection notice was published on May 7th, 2025, starting the 45-day submission timeline the following day. 36 C.F.R. § 218.6(b) This timeline has the 45-day objection period ending on Saturday, June 21st. Because that is a weekend, the legal submission date for objections get extended to the next Federal working day, making objections due on Monday, June 23rd before midnight PST. 36 C.F.R. § 218.6(a). These comments were submitted on June 23rd, 2025 for a timely submission, and therefore must be considered.

This submission was complicated by the fact that the Morgan Nesbit project webpage was not updated to reflect an email submission was requested by the Forest Service. It seems that some commenters and potential objectors were notified that submission was requested via email to objections-pnw-wallowa-whitman@usda.gov, however, that information cannot be found anywhere on the project webpage (https://www.fs.usda.gov/r06/wallowa-whitman/projects/58961). This is a hindrance to public participation in the objection process. Due to this mistake, the Forest Service should consider extending the objection timeline to ensure that all potential objections submissions are submitted.

Responsible Official

Brian Anderson, District Ranger, Eagle Cap and Wallowa Valley Ranger District, Wallowa-Whitman National Forest

Description of the Project

The Wallowa-Whitman National Forest Service has selected in its entirety the Proposed Alternative with some changes following the 2023 scoping period, including the following proposed management actions. Therefore, this objection focuses on the Proposed Alternative, as specified in the Draft Decision Notice. The Proposed Alternative includes:

Commercial logging:

* a total of 11,613 acres of commercial thinning, with 10,254 acres on slopes <30% and 1,359 acres on slopes >30%
*a total of 1,522 acres of commercial logging with patch cuts, with 1,305 acres of slopes <30% and 217 acres on slopes >30%
*a total of 445 acres of Irregular Shelterwood (clearcutting) with 431 acres on slopes < 30% and 14 acres on slopes >30%
*15 total acres in RHCA Category 1, 43 acres in RHCA Category 2, and 179 acres in RHCA Category 4—all on slopes <30%
*with a total of 13,893 acres of commercial "thinning" (logging) in Table 1 of the Draft Decision Notice

Noncommercial Thinning:

*a total of 2,693 acres of noncommercial thinning, with 1,599 acres of noncommercial thinning and 1,094 acres of hand thinning
*a total of 383 acres of noncommercial thinning in RHCAs, with 19 acres of mechanical non-commercial thinning and 364 acres of hand thinning
*Shaded fuel breaks with noncommercial thinning at a total acreage of 4,049 acres, with 2,317 acres of mechanical non-commercial thinning and 1,732 acres of hand thinning
*Shaded fuel breaks in RHCAs, with a total of 599 acres of noncommercial thinning, with 76 acres of mechanical noncommercial thinning and 523 acres of hand thinning
*With a total of 7,669 acres of noncommercial thinning in Table 1

Other management:

*a total of 264 acres of Aspen Enhancement conifer thinning, girdling, and topping
*a total of 129 acres of Meadow Enhancement of hand felling of conifers and leaving in place or placed in the floodplain or added to the creek or smaller trees may be burned outside the meadow, except for Englemann spruce, which would not be felled (see the final EA, p.16)

Transportation:

*18 miles of Temporary Road Construction
*367 miles of Road Maintenance
*17.4 miles of Road Decommissioning
*3.4 miles of Road Storage

Culverts:

*16 culverts replaced
*18 culverts removed

The Draft Decision Notice also includes further detailed descriptions of the selected Proposed Alternative, which can also be found on pages 10-18 of the Morgan Nesbit final Environmental Assessment.

General Location:

The project area is approximately 86,500 acres, located about 20 miles southeast of Joseph, Oregon, in Wallowa County. Administratively, a little over 48,500 acres lie within the Wallowa Valley Ranger District and 38,000 acres within the Hells Canyon National Recreation Area. Watersheds: Upper Big Sheep Creek (27,304 acres), Upper Imnaha River (26i,304 acres), and Middle Imnaha River (31,906 acres).

Appellant's Interests

Blue Mountains Biodiversity Project has a specific interest in this decision, which has been expressed through participation throughout the NEPA process. BMBP supporters visit much of the affected area for hiking; camping; fishing; relaxing; bird, wildlife, and wild flower viewing; photography; hunting; and more. The value of the activities engaged in by BMBP volunteers, supporters, and staff would be damaged by the implementation of this project.

BMBP is a non-profit organization that works to protect Eastern Oregon National Forests and the Southeast Washington part of the Umatilla National Forest. Staff, volunteers, and supporters of BMBP live in various communities surrounding the Wallowa-Whitman National Forest and use and enjoy the Forest extensively for camping; hiking; drinking water; hunting; fishing; general aesthetic enjoyment; gatherings; viewing flora and fauna; gathering forest products; and other purposes.

Request for meeting

BMBP requests a meeting with the Forest Service to discuss matters in this objection and seek resolution of concerns through negotiation before the Wallowa-Whitman Forest Service makes a final decision on the Morgan Nesbit Forest Resiliency Project (aka Morgan Nesbit project).

Specific issues addressed in this objection

National Environmental Policy Act (NEPA) violations, including: proposing management actions inconsistent with achieving the stated purpose and need for the project; failure to provide an adequate range of alternatives; failure to adequately analyze direct, indirect, and cumulative effects of the project and the proposed Forest Plan amendment; failure to disclose scientific controversy; inaccurate use of the science; and the need for an Environmental Impact Statement for the Morgan Nesbit project.

Violations of the National Forest Management Act (NFMA) and the Wallowa-Whitman National Forest Plan, including failure to provide for population viability for multiple Management Indicator species and other wildlife species and other violations of the Wallowa-Whitman Forest Plan.

Potential violations of the Wallowa-Whitman National Forest Plan include potential violations of management area guidance and Forest Plan standards, including INFISH/PACFISH requirements; potential violations of Management Areas guidance for Wildlife Connectivity Corridors; visual corridors; and Old Growth Management Areas; Potential Wilderness Areas, and violations of Forest Plan standards for elk and deer winter range; snag density and abundance; road density; and detrimental impacts to soils. We also object to the commercial logging or road building or road re-opening in Undeveloped lands.

Endangered Species Act violations include contributing to a trend toward federal uplisting for the following species: recovering Sensitive/Threatened Gray wolf; Threatened-listed Canada lynx; Threatened Wolverine; potential Sensitive Pacific fisher; Threatened Bull trout and Mid-Columbia Steelhead trout, as well as potential recovery of Chinook salmon; Sensitive Columbia Spotted frog and Rocky Mountain tailed frog; Sensitive Redband trout; and Threatened Whitebark pine and various Sensitive-listed plants known to be or suspected to be within the project area.

Clean Water Act violations include failure to demonstrate that the proposed actions will not further impair or retard water quality recovery for the downstream Imnaha River, and for streams on the 303(d) list for water quality impairment (e.g. for stream temperature, excess sediment, insufficient aquatic macroinvertebrates or pollution) or with TMDLs and water quality management plans that may be violated.

We also express concerns regarding “temporary” road construction and closed road re-opening, and cumulative impacts to climate stability.

BMBP objects to the Morgan Nesbit Project for the following reasons:

I. The Morgan Nesbit project violates the National Environmental Policy Act

The Morgan Nesbit project violates the National Environmental Policy Act in the following ways: inconsistency with the stated "purpose and need" of the project; failure to provide an adequate range of alternatives; failure to adequately analyze direct, indirect, and cumulative effects of the project; failure to take the requisite "hard look" at project impacts required by NEPA; failure to disclose scientific controversy; inaccurate use of the science; and the need for the Morgan Nesbit project to be addressed with an Environmental Impact Statement.

Inconsistency with the stated purpose and need of the project

The Morgan Nesbit project is not consistent with all the purpose and need goals as expressed in the Environmental Impact Assessment. The project includes the following statements that constitute the purpose and need for the Morgan Nesbit project on the final Environmental Assessment page 3 which are so specific as to the proposed management actions as to exclude any other alternatives or other specific management actions that could meet the broader purpose and needs. I am thus quoting below the broader purpose and needs that could be met in more ecologically protective ways. See the final EA listing of all the specifics management actions preferred by the Forest Service on p. 3 incorporated as part of the purpose and needs. This is by definition construing the purpose and need so narrowly as to preclude other options to achieve the broader goals, such as not doing the same or similar management of timber sales over and over even as the logging, roading, and biomass reduction actually reduces forest resiliency and could lead to more intense fires as the outcome.

"The purpose and needs for the project are:

3. There is a need to modify forest composition and structure altered by historic fire suppression and past management activities....

4. There is a need to reduce the risk of landscape stand replacing fire and provide safer, more effective fire management options....

5. There is a need to restore watershed function and processes by reducing negative impacts of road networks and conifer encroachment on riparian, aquatic, and upland habitats....

6. There is a need to provide wood fiber and forest products to support economic well being of local and regional communities....

7. There is a need to implement adaptation strategies that address disturbance vulnerability to sustain ecosystem functions and services into the future...."
(Final Environmental Assessment, p. 3)

There are many alternative and effective ways to meet these broader needs and overall purpose that would be more protective of ecological processes and forest resilience that are expressed in our EA comments. Our following comments are explicit in how some

of the proposed management actions are inconsistent with the stated purpose and needs above. Our comments also show how an overly narrow purpose and need exclude other alternatives and public recommendations for types of management and values of non-management:

"Re: the Purpose and Need statement for the Morgan Nesbit Forest Resiliency Project:

Departure from resilient forest conditions and structure, including forest density, species composition, down wood levels, and habitat quality and integrity are virtually all consequences of human management. These destructive forms of management include degradation from rampant extensive and intensive logging; removal of large and old trees; selective removal of timber industry preferred trees (i.e. Ponderosa pine and Western larch) and subsequent selective removal of tree species from denser remaining forest (i.e. Grand fir and Douglas fir); extensive road construction; wildfire suppression; livestock grazing causing long term riparian damage; firewood cutting and hazard tree felling. Global warming is also human caused and aggravated by failure to respond appropriately, resulting in increased fire intensity, unprecedented heat waves, prolonged drought, and more severe storms. The Forest Service uses their own mismanagement as rationales for yet more extensive and intensive logging, more road building and re-opening, more removal of down wood, more tree species conversion, more fragmentation of habitat, and continued livestock grazing in riparian areas—as if the causes of imbalances could be used to remedy the problems.

The first listed need for management states: "There is a need to modify forest composition and structure altered by historic fire suppression and past forest management activities...." This need will not be met by continuing to engage in wild fire suppression directly and indirectly through logging and "fuel" breaks and by repeating "past management activities" such as high intensity logging, mature forest cover reduction, logging in old growth stands, and removing historically dominant tree species (such as Grand fir, Douglas fir, and Engelmann spruce) in moist mixed conifer forest—all of which are planned for the Morgan Nesbit timber sale "project". Thus, the proposed alternative would not be consistent with the stated purpose and most of the needs.

For instance, currently planned biomass "fuel" reduction and high intensity logging on a landscape scale will likely intensify fire due to more open conditions with more exposure to sun and heat waves due to lack of cooling shade, removal of mature and large trees that are the most fire resistant, increased wind speeds through open stands that spread fire more quickly, and removal of existing and future large down wood and forest litter that retains moisture in soils. These conclusions are based on best available current science that the Forest Service often ignores. For instance, see the science findings and citations in the book Smokescreen, Debunking Wildfire Myths to Save Our Forests and Our Climate by Chad T. Hanson, a research ecologist. Thus, the proposed alternative management plans are inconsistent with the stated purpose and need "to reduce the risk of landscape level stand replacing fires" since the "fuel" breaks and high intensity logging would instead increase the potential for landscape level high severity fires, and could actually increase the risk for firefighters.

The third need listed "is a need to restore watershed functions and processes by: ... (b) Restoring vegetation conditions and improving ecological function of riparian areas...", although commercial logging is planned in all categories of streams, including major creeks, within science based riparian buffers. Yet logging within Riparian Habitat Conservation Areas (RHCAs) would be likely to reduce slope stability in drainages, remove plants and down wood that retain moisture through "fuel" reduction and the use of heavy equipment, remove tree shading to maintain cool micro-climate conditions and remove future large logs for pool formation, as well as deposit excess sediment in streams that is detrimental to fish species. Commercial logging and biomass "fuel" reduction, along with heavy equipment use would be inconsistent with this need included in the Purpose and Need.

The fifth need "is a need to implement adaptation strategies that address climate change vulnerability to sustain ecosystem functions and services into the future by: (a) increasing landscape resiliency to future climate conditions and extreme disturbance events such as fires, insect outbreaks, and flooding." Yet planned high intensity logging and even moderate and low intensity logging remove needed forest cover, especially as mature trees and some large trees would be removed (as with hazard trees and proposed killing of large Grand fir and Douglas fir by girdling and topping.) Retaining mature and large trees is critical to maximize long-term forest carbon sequestration and storage for up to centuries. Without preserving the forest carbon sink in its entirety as part of the forest ecosystem, this need will not be achieved. Landscape scale, high and moderate intensity logging would not "sustain ecosystem functions and services into the future by (a) increasing landscape resiliency to future climate conditions and extreme disturbance events such as fires, insect outbreaks, and flooding" since logging reduces long-term carbon sequestration and storage. Reduced carbon sequestration and storage increase climate change intensified fire, insect outbreaks, heat waves, droughts, and flooding from more severe storms. Thus, high and moderate intensity logging and extensive biomass reduction "fuel" breaks are not consistent with this stated need as part of the Purpose and Need.

As for the "need to provide wood fiber and forest products" through "sawtimber" logging, the timber industry is no longer a major part of Oregon's economy at only about 3% of Oregon's economy. There has been about a century of over-logging of large and mature trees. Now the timber sales are on a landscape scale, with increasing high intensity logging, and at an unsustainable short timber sale rotation of only 30 years or less. As discussed above, high intensity commercial logging often results in more intense wildfire and significant cumulative loss of carbon sequestration and carbon storage, which contributes to intensified climate change effects. This is a vicious circle of increasing the problems through lack of adaptive management—learning from mistakes rather than repeating them. Further, restoration should not be driven and funded by timber sales in a perpetual cycle of damage." (BMBP EA comments, pp. 2-3, also summarized by the Forest Service response to comments A1.C4.P2 (p. 57) A1.C5.P3; A1.C6.P3.). However the responses to our comments generally miss the point of our comments' reasoning and ignore the scientific basis for many of our perspectives, so we quote our original comments, instead of the Forest Service summaries of our comments that have the same page (P) numbers as our comments.

Logging and "fuel" reduction do not necessarily reduce higher intensity wild fire and insect outbreaks. In fact, logging and associated biomass reduction tend to remove mature and large trees, especially comprehensively when the logging is of high intensity, which is most of the planned logging. Mature and large trees become more fire resistant as they grow bigger and older, with thick, fire-resistant bark and high live crowns. Planned high intensity logging would likely increase the intensity and spread of wildfire, by leaving much flammable slash, increasing wind speeds through the stands, and removing canopy shading that helps retain moisture in the stand, also from reduction of large down wood.

As for insect and disease outbreaks, these spread more quickly through homogenized stands of smaller trees and less diversity of tree species, which spreads insects and disease based on particular tree species. So it the stands are only one or two tree species in composition, defoliating insects and mistletoe may spread more extensively.

The proposed heavy intensity logging and "fuel" (biomass) reduction leaves a situation that increases fire intensity and spread, making it more difficult and riskier for firefighters. Some biomass reduction can take place along major access roads by just non-commercial thinning up to 9" dbh and using prescribed burning for dry forest types, rather than commercial logging and down wood removal. Minimizing biomass reduction is especially important for moist mixed conifer, which retains more moisture with shading higher canopy cover and down wood. Most of the sale units are in moist mixed conifer. (BMBP EA comments on p. 19, 2nd, 3rd, and 4th paragraphs)

See our additional comments under "Failure to Disclose Scientific Controversy" below regarding the basis for the inconsistency of proposed management actions with the stated purpose and need for the Morgan Nesbit timber sale "project".

The need for action should be based on current habitat conditions within the project area, which we field-surveyed and documented in our survey sheets, incorporating our field survey sheets and photographs of conditions on the ground over weeks of two summers as part of our comments and for this objection. The Forest Service already has our survey sheet copies and we will copy and mail some of the photo displays we prepared for this objection.

Resolution

BMBP has commented on its objection to the Wallowa-Whitman National Forest's Morgan Nesbit project in our EA comments (see quotes and citations above.) More of our comments on this objection include:

We request that, to be consistent with the purpose and need for the project, conditions on the ground, and restoration goals, that the Forest Service:

*The scale and intensity of commercial logging should have required an Environmental Impact Statement (EIS), especially as this project area is a critical wildlife corridor for many Management Indicator species (MIS) and Threatened-listed and Sensitive wildlife species. All never logged sale units should not be commercially logged, including many

never logged sale units adjacent to the Eagle Cap Wilderness Area, which provide wildlife security habitat and suitable and extensive enough foraging and reproductive habitat to support rare and declining wildlife species, such as Threatened Wolverine, Threatened Canada lynx, Sensitive Pacific fisher, Vulnerable-ranked MIS Pacific marten, recovering Threatened/Sensitive Gray wolf, and far ranging native ungulates, including MIS Rocky Mountain elk, moose, and Big Horn sheep.

*Reduce the scale and intensity of planned logging overall to reduce logging of mature trees (e.g. 15" dbh to 21" dbh) that would otherwise be next in line to become future large trees and restore large and old trees to the landscape, which are more resilient to fire and are needed for many associated wildlife species.

*Reduce the logging impacts to forest resiliency and structure and to maintain heterogeneous conditions and greater biodiversity. Decrease the number of commercial logging sale units by dropping commercial logging in moist mixed conifer, Lodgepole pine forest, and in old growth and Late and Old Structure forest. See our survey sheets for guidance as to the best wildlife habitat in sale units, according to our characterization of conditions and our recommendations to drop or modify sale units.

*Specifically, drop all 1,522 acres of patch cuts and all 445 acres of "Irregular Shelterwood" clearcutting, as the highest intensity logging, that would decimate suitable habitat for Vulnerable ranked MIS Pacific marten, MIS Rocky Mountain elk, MIS American goshawk, and wildlife security habitat for Gray wolves, Threatened Wolverine, Threatened Canada lynx, and potential Sensitive Pacific fisher.

*Drop all 1,590 acres of planned steep slope logging > 30% slope, which retains more wildlife security for elk and predators (e.g. Wolverine, Canada lynx, Pacific fisher, Pacific marten, and recovering Gray wolves.) Steep slope logging also threatens water quality downhill from logging on steep slopes due to sediment channelization that can reach drainage streams and loss of irreplaceable ash soils, which are critical for moisture retention in the context of climate change droughts, heat waves, and more intense wild fires.

*Drop all 237 acres of planned commercial logging in Riparian Habitat Conservation Areas (RHCAs) to protect water retention, cool water temperatures, no excessive sedimentation of streams, and riparian plant cover instead of ground disturbance and invasive exotic plants to support the habitat requirements for recovery of Threatened Bull trout and Chinook salmon, Threatened Mid-Columbia Steelhead trout, Sensitive Columbia spotted frogs and Rocky Mountain tailed frogs, as well as potential Sensitive mollusks and Sensitive riparian plants.

*Restrict conifer thinning to 15" dbh or less in aspen stands and meadows needing restoration, while retaining all conifers to stabilize the banks of streams and provide for shading. Any conifer trees felled should be left on the ground to provide floodplain roughness and as barriers to cattle grazing aspen sprouts.

*Drop all commercial logging in all moist mixed conifer old growth forest and in all Late and Old Structure (LOS) forest except for noncommercial-size thinning up to 9" dbh, allowing for prescribed burning in dry forest types, including LOS.

* Increase basal area retention in remaining sale units and leave more retention patches of diverse tree species and density within sale units for greater variability across the landscape. Drop "Irregular Shelterwood" clearcutting and patch cuts. Don't go below the Lower Management level for dry forest types, and allow basal area retention to go over 80 square feet of basal area as a minimum in dry forest to go over 100 square feet of basal area in moist mixed conifer and where there are large or old trees.

*Drop sale units that are most used by wildlife, including species dependent on large trees and large or abundant snags such as MIS primary cavity excavators and for wildlife needing greater levels of security cover, such as Northern goshawk, Rocky Mt. elk, Mule deer, and Gray wolves.

*Dop all 18 miles of "temporary" road construction. We support the 17.4 miles of road decommissioning. We also support planned culvert replacement and removal.

* We are largely not opposed to the Forest Service reducing small tree density in even-aged Ponderosa pine and Western larch plantations up to 9-15" dbh, including small openings allowing for natural tree species diversity seeding in. (See our survey sheets.)

*Otherwise, prepare an Environmental Impact Statement with a full range of alternatives and detailed, in-depth analysis of environmental effects analysis, eliminating the inconsistency of proposed management actions with the stated purpose and need for the Morgan Nesbit project.

Failure to provide an adequate range of alternatives

The Morgan Nesbit Environmental Assessment has an inadequate range of alternatives. Our EA comments were clear in recommending more viable action alternatives for a range of alternatives in an Environmental Impact Statement to address public concerns.

Environmental Assessments also have often incorporated more than one action alternative in order to respond to public scoping comments. It seems like this process of completely separating any or most of the analysis with science citation support, specialist critiques of the proposed actions, and disclosure of negative and significant environmental impacts makes a farce of the Environmental Assessment. (BMBP EA comments, p. 1, par. 2)

There is no analysis in the BE of the benefits to TESC wildlife species from the No Action alternative. Without any analysis of the ecological benefits of the No Action alternative, the No Action alternative loses its usefulness for an unbiased comparison between the effects of existing conditions versus the effects of the proposed actions in alternative 2. (BMBP EA comments, p.9, par. 4)

Environmental Impacts of the No Action Alternative:

The Forest Service portrays the effects of No Action without specific reference to the diverse habitats, abundance and location of habitat types, any population status for specific wildlife species, and no mention of ecological benefits of timber sale management not occurring. As usual with "No Action" outcome descriptions, most of the potential effects dwell on negative effects of wildfire without going into the benefits of wildfire to the ecosystem and the native wildlife and plant species that evolved with wild fire in the Blue Mountains forests. The Forest Service systematically uses wild fire as a boogey man to stoke public fears of fire and to ensure the public will acquiesce to widespread and high intensity logging. This is a very biased and deficient No Action effects analysis. (BMBP EA comments, p. 28, par. 4)

The No Action alternative and the proposed Alternative 2:

We support Alternative 1, No Action, as we see no compelling need for the Morgan Nesbit timber sale. Mitigation and conservation measures, as well as Project Design Criteria hardly ever prevent or significantly reduce negative environmental impacts to wildlife from an implemented timber sale in my 33 years of monitoring and field surveying proposed timber sales in the Blue Mountains National Forests. The overall trend of Forest Service timber sales in the region is cumulative, increasing ecological destruction and further declines in wildlife species populations contributing to the Sixth Mass Extinction and to extreme climate change effects that could overwhelm the viability of up to 10-50% of all wildlife species by the end of the century. (BMBP EA comment, p. 8, last par.)

If there was a full range of alternatives, responding to significant public concerns regarding the Morgan Nesbit proposed actions, then we might have been able to support an action alternative or a modified action alternative. We have suggested many remedies to address public concerns throughout our EA comments while still meeting the stated broader purpose and need. See our suggested remedies under "Inconsistency with the Purpose and Need" above, and more specific remedies throughout our objection, which were mostly suggested in our EA comments, but not used by the Forest Service to structure more action alternatives.

These are some of the reasons we consider the Environmental Assessment to be deficient compared to its National Environmental Policy Act intentions and purposes for the EA. There are many of our following comments that support our position that the EA is deficient and that there are potential significant negative effects for various resources (life sources), especially related to wildlife abundance and species viability, riparian ecological processes and functions, and soil fertility, integrity, and productivity. Due to the EA's deficiencies and potential significant negative environmental effects of the proposed Morgan Nesbit timber sale, we request the preparation of an Environmental Impact Statement for the Morgan Nesbit project to provide a full range of alternatives and the requisite detailed, in-depth environmental effects analysis. The EIS has to have the required 45-day comment period and the following 45-day objection period based on the Draft Record of Decision, which should include related negotiations with the Forest Service. (BMBP EA comments, p. 1 last par. through p. 2, first par.)

Resolution

BMBP has commented on its objection to the Wallowa-Whitman Forest Service's inadequate range of alternatives in the Morgan Nesbit Environmental Assessment and requested a broader range of alternatives in our comments. See our comments quoted and cited above. There are also two other BMBP EA comments requesting an EIS based on potential significant impacts to TESC wildlife species, which can be found under the Endangered Species Act section below.

To remedy this problem, the Forest Service would either have to reissue a new Environmental Impact Statement offering a full range of alternatives as required by NEPA for public review and comment, with a new objection process based on the EIS or better meet our concerns expressed under Inconsistency with Purpose and Need above and in our other remedies suggested in each section of our objection. For instance:

*Reduce the overall scale of commercial size logging (of mature trees 15-21" dbh).

*Modify proposed logging intensity to maintain more forest structure for wildlife and soil nutrient cycling. Drop all "Irregular Shelterwood" clearcutting and patch cuts.

*Retain far more mature trees 15" dbh and greater, regardless of species, to retain needed future large structure, which is at a great deficit in the project area compared to historic conditions.

*Change more sale units to only non-commercial-size thinning instead of commercial logging, or to no thinning, throughout the sale unit, especially those sale units with suitable habitat density and canopy closure for Management Indicator species Pileated woodpecker; American marten; elk (and deer) thermal and hiding cover; primary cavity excavators; and Northern goshawk.

*Drop logging of suitable or active Pileated woodpecker and American marten habitat, which are indicated on our survey sheets by high old growth mixed conifer counts per acre; large live, snag, and log tree structure; fresh and recent Pileated foraging sign; and for marten, abundant down wood, large snags, and/or the presence of large enough root wad burrows for marten.

*Drop any sale units or parts of sale units that have never been logged.

*Drop commercial-size logging and all heavy equipment use within the RHCA buffers. Don't girdle or fell large trees 21" dbh or greater to allow for future large snag and log recruitment. Woodpeckers are much more likely to use naturally developed snags than artificially made snags.

*Drop all "temporary" road construction and greatly reduce the re-opening of currently closed roads. Especially don't reconstruct or re-open roads already grown over or roads that were closed for ecological protection reasons, including roads within riparian buffers or that are hydrologically connected to streams.

*See recommendations on our survey sheets, as well as wildlife species sign mentioned, old growth counts, and forest type, for specific sale units or parts of sale units we want modified or dropped.

Failure to adequately analyze direct, indirect, and cumulative effects

The Morgan Nesbit Environmental Assessment demonstrates failure to adequately analyze environmental effects of the project throughout the document, including omissions of negative effects such as the following addressed in our comments:

Inadequate Direct and Indirect Effects Analysis:

The following comments on effects analysis delete parts of the analysis that were improved in the final EA or by changing language from our original comments in brackets, so that these comments are still relevant to the final EA:

The ... Environmental Assessment for the Morgan Nesbit Forest Resiliency Project (aka the Morgan Nesbit sale) is about the most analysis deficient Environmental Assessment I have ever read [over 33 years of monitoring proposed timber sales] with... summaries of the environmental effects analysis from the specialist reports [only in the final EA as short summaries, which mostly omit the declining status of Management Indicator species, such as Pacific marten being Vulnerable ranked in Oregon, and American goshawk declining and disappearing across the country, as well as not disclosing the many wildlife species with similar habitat needs represented by Management Indicator species]. This outsourcing of [most] of the analysis into the separate reports leaves the EA turning into a simplified public relations document...biases the EA toward predetermined logging and other management plans. The EA is composed of the purpose and need for the timber sale "project", the proposed action management actions with no other action alternative, disclosure of the separate specialist reports, and otherwise mostly summaries of relevant laws and executive orders, public concerns under "Finding of No Significant Impacts" without the specialists' associated [more detailed] analysis for these issues of public concern, various tables of project design criteria intended to ensure that there are no significant impacts (although PDCs are not always completely effective or implemented), planned monitoring, and revised Morgan Nesbit timber sale "project" maps. (BMBP EA comments, p. 1, par. 1, amended)

This is a huge departure from the original purpose of Environmental Assessments, which has long incorporated environmental effects analysis for each resource or forest value issue so the public can judge for themselves the merits or flaws in the analysis. The EA analysis of environmental effects is intended to inform public comments [which are no longer possible to submit after the final EA]. Environmental Assessments also have often incorporated more than one action alternative in order to respond to public scoping comments. It seems like this process of separating...most of the analysis with science citation support, specialist critiques of the proposed actions, and disclosure of negative and significant environmental impacts makes a farce of the Environmental Assessment. (BMBP EA comments, p. 1, par. 2)

This process also does not reduce the number of pages needed for the EA plus all the reports based on the recently established page limit for the EA, which apparently could be expanded sufficiently to include more detailed, in-depth analysis upon request or at least the usual summaries of the Specialist reports [which were only provided in the FEA after the comment period.] Outsourcing all or almost all or the analysis to the specialist reports has the effect of making it more difficult to comment on the whole proposed project as it takes more time to read all the separate reports and the EA rather than just an EA with the key analysis for each issue incorporated. Often there are references to specialist reports that do not seem to exist or were not accessible. The separation of the specialist analysis from the EA through multiple reports also makes it more difficult to obtain the reports for people who don't have regular or easy access to the internet, which is common in rural areas of eastern Oregon. (BMBP EA comments, p. 1, 3rd par., amended for the FEA changes)

There is no in-depth, detailed effects analysis in the Wildlife Biological Evaluation for individual TESC (Threatened, Endangered, Sensitive, and Candidate for uplisting) wildlife species analysis for TESC species inhabiting the Morgan Nesbit project area or who are suspected to be using the area. These include Threatened-listed Wolverine, potential Threatened Canada lynx, and Gray wolves, whose TESC status shifts depending on location and fluctuations of the population. Sensitive wildlife species that are known or suspected to be within the Morgan Nesbit project area include: Lewis' woodpecker; White-headed woodpecker; Columbia Spotted frog; Rocky Mountain tailed frog; Pacific fisher; Bighorn sheep; three species of bats: Fringed myotis, Pallid bat, Spotted bat, and Townsend's Big-Eared bat; seven mollusk species; seven butterfly species; and three Bumblebees; and five additional bird species with Peregrine falcon and Bald eagle most likely to be negatively affected by proposed management actions in the Morgan Nesbit project area. (BMBP EA comment, p. 9, 1st par.)

There is no sufficient detailed analysis for Sensitive Pacific fisher, even though there is suitable habitat in the project area and adjacent to it. There have been sightings in the Wallowa Mountains nearby since reintroduction of Pacific fishers in 1960 and 1961 there. Canada lynx have been detected on the Wallowa-Whitman National Forest and also did not receive sufficient detailed analysis as to where they were located on the Wallowa-Whitman National Forest and their potential to use the Morgan Nesbit. Are there Canada lynx in Hells Canyon or in the Eagle Cap Wilderness Area? Where does potential habitat for Pacific fisher and lynx exist in the Morgan Nesbit habitat? We assume that old growth moist mixed conifer habitat would be suitable habitat for Pacific fisher and that Lodgepole pine stands with Snowshoe hares would be good winter foraging habitat, both of which exist in the Morgan Nesbit project area. The Wildlife Biological Evaluation and the Wildlife Report do not answer these basic questions that would usually be part of the detailed analysis in an Environmental Assessment, the Biological Evaluation, and any Wildlife Report. The adjacent Eagle Cap Wilderness Area proximity greatly increases the potential for Canada lynx and Pacific fisher to be using the Morgan Nesbit project area. (BMBP EA comments, p. 9, 3rd par.)

It can't be demonstrated that: "The proposed action alternative (preferred) would have 'No Impact' or 'No Effect' on PETS [TESC] lacking potential distribution of suitable

habitats within the analysis area" when there is no sufficient detailed, in-depth analysis for each PETS (or TESC) wildlife species. (BMBP comment, p. 10, par. 5)

There is no detailed effects analysis for either the wolf pack or the wolverines documented in the area—with one named Stormy and another one sighted after a wildfire. Table 3 does not provide sufficient in-depth analysis for Threatened and Sensitive species.

For instance, there is no detail about the Imnaha wolf pack use of the area, as a special status species with a recovery plan and stakeholder groups to determine Oregon's wolf management. Why isn't it disclosed in the EA or Wildlife BE whether there are wolf dens or rendezvous sites within the project area? Where were the wolverines sighted? There's no analysis to answer these basic questions. (BMBP EA comments, p. 10, par.s 6 and 7)

The analysis in the Wildlife BE seems very disorganized, with very disparate wildlife species lumped together that have distinct habitat requirements that are not the same as the other species' habitat needs. It's confusing, with skipping from one species to the next. Whether it is intentional or not, of just rushed, this generalized analysis seems geared toward avoiding in-depth, detailed analysis for each species at risk from proposed management actions. (BMBP EA comment, p. 11, 3rd full par.)

Table 3, which gives only short summaries of potential effects to TESC wildlife species, fails to disclose the status of the species on the Wallowa-Whitman National Forest and in the project area and what the site-specific management impacts would be for each species and what level of risk they would have. There's also no discussion of how to mitigate the potential negative effects of proposed management for TESC wildlife species. (BMBP EA comment, p. 17, par. 2)

Inadequate Cumulative Effects Analysis:

First, it is noticeable that nowhere in the EA and the Wildlife Biological Evaluation, including this table of effects determinations, does the analysis disclose the current status of these TESC (or PETS) species on the Wallowa-Whitman National Forest and within the Morgan Nesbit project area. Also there is no detailed analysis disclosing and considering the trends for any of the TESC species populations in the region and in Oregon. By contrast, the Wildlife Report includes the current status of Management Indicator species and information on whether their populations are stable, increasing, or declining. So again, the analysis for TESC species is deficient in not disclosing species-specific population status in Oregon, the Wallowa-Whitman National Forest, and the Morgan Nesbit project area. The EA and the Wildlife BE also are deficient by not divulging any trends for TESC species populations for species that are known or suspected to be in the Morgan Nesbit project area or within the Wallowa-Whitman National Forest. (BMBP EA comments, p. 15, 1st full par.)

Stating that "none of these impacts rise to the level of significance" does not make it true, as there is no detailed species-specific in-depth analysis that confirms the negative

effects would not be significant. Threatened and Sensitive listed wildlife species are most at risk to significant negative effects of the proposed action alternative, since these species are already in decline. There are also Management Indicator species already in decline, including Sensitive Lewis' woodpecker, Sensitive White-headed woodpecker, and Vulnerable ranked Pacific marten, as well as Three-toed woodpecker. The proposed alternative could contribute to uplisting of Threatened Wolverine and the MIS and Sensitive wildlife species listed above. (BMBP EA, p. 19, par. 2)

This is inadequate cumulative effects analysis at the Forest scale without considering all the other effects to marten across the Wallowa-Whitman National Forest. See Wildlife Report, p. 77. (BMBP EA comment, p. 38, 4th par.)

Resolution:

These are such glaring omissions for a Biological Evaluation that we find it necessary for the Forest Service to prepare an Environmental Impact Statement with in-depth, detailed analysis and a full range of alternatives for this highly controversial timber sale that could have significant negative impacts to an array of Threatened and Sensitive wildlife species, as well as Management Indicator species. (BMBP EA comments, p. 15, 1st full par.)

An EIS needs to be prepared for the Morgan Nesbit project due to inadequate direct, indirect, and cumulative effects analysis and omissions in the effects analysis that are fatally flawed since they apply to potential significant environmental negative effects, including, for example, the potential loss of viability for Management Indicator species Pacific marten in the Morgan Nesbit project area which is currently a stronghold for marten, and unanalyzed potential significant loss of suitable habitat for TESC (PETS) Threatened Wolverine, potential Sensitive Pacific fisher, Threatened Canada lynx, and recovering Threatened/Sensitive Gray wolf that could contribute to their up-listing and/or extirpation in the project area.

Alternatively, the Morgan Nesbit timber sale must be revised significantly to better protect the viability and suitable habitat for Management Indicator wildlife species and TESC wildlife species, as well as Threatened Whitebark pine, by:

*dropping all commercial logging and road construction or re-opening in all the never logged undeveloped lands, including the never logged sale units adjacent to the Eagle Cap Wilderness Area; dropping all Irregular Shelterwood clearcutting and patch cuts (mini-clearcuts) in marten habitat, which would also benefit MIS Primary Cavity Excavators and Rocky Mountain elk;

*dropping all girdling and topping of live Grand fir and Douglas fir for PCEs, Sensitive Pacific fisher who den in large old firs, and future sustained abundance of large Grand fir and Douglas fir snags and logs for MIS Pileated woodpecker foraging and for long term recruitment of large snags for Pileated nest holes and subsequent marten denning;

*dropping all good security habitat for MIS Rocky Mountain elk;

*and dropping all “temporary” roads and most re-opening of closed roads due to the need for disturbance-affected MIS wildlife to have security habitat within the project area, for MIS Rocky Mountain elk, MIS Pacific marten, and TESC predators such as Gray wolves, Wolverine, Pacific fisher, and Canada lynx that are more readily poached from roads and increased ATV access.

*All known occupied Pacific marten habitat needs to be dropped from commercial logging and biomass reduction, including loss of abundant and large snags, loss of mature tree canopy closure (which also benefits MIS Pileated woodpecker and American goshawk) and loss of abundant elevated and down wood for marten subnivean winter foraging.

Inaccurate use of the science

There is analysis not reflecting the full range of best available science or using science inaccurately. An example of failure to use best available science and inaccurately using science from our comments regarding marten viability:

How are viability probabilities derived? This Wales 2011a analysis is confusing. Why would the high suitability marten class in Table 16 include the most open landscape and the highest road density? (BMBP EA comment, par. 3)

We remain concerned that the existing source habitat for marten is only small percentages of the overall watershed “potential” (currently unsuitable) habitat. See Table 17 on Wildlife Report p.71. How was the historical median of source habitat determined? What evidence supported the historical median for source habitat? How was over 40% of the historical median determined to be the goal for marten source habitat acreage? Why are the steps of this methodology not disclosed? How is the current watershed index derived?

Planned logging has long [been] geared toward converting tree species composition to “early seral” tree species, which is completely contrary to retaining and increasing source habitat for marten. So planned timber sales can’t be expected to grow into marten source habitat for many decades, likely later than the next timber sales in the area, resulting in a cumulative loss of marten source habitat.

The FEA Response to comments apparently did not respond to these comments (above).

How do the planned wildlife connectivity corridors overlap with marten source and secondary habitat? Are the two habitat types connected to each other?
(BMBP EA comments p. 35, par.s 5, 6, and 7)

The FEA Response to comments reiterates how parts of the Wildlife Connectivity corridors would be logged, but did not specify how much suitable and occupied marten habitat is outside or within the Wildlife Connectivity corridor, and whether the overlapping marten habitat inside and outside of the Wildlife Connectivity corridors are

source and secondary habitat. Further, there is no response as to where suitable source and secondary marten habitat are located (hopefully mapped) and whether the two habitat types connect with each other. See the Forest Service response at L29.A1.C66. P34, on pages 104-105.

Resolution

BMBP has commented on its objection to inaccurate use of the science in the Morgan Nesbit project analysis. See our comment citations and quotations in the paragraphs above.

In order for the Morgan Nesbit project to comply with NEPA, the Forest Service needs to incorporate the requisite best available science and use the science accurately regarding the management effects to MIS marten suitable habitat with professional integrity in analysis in an EIS available for public comment for the Morgan Nesbit project, to better and more accurately inform public comments, agency review, and decision-making.

Failure to Disclose Scientific Controversy

The Morgan Nesbit project violates NEPA by failing to disclose significant scientific controversy over the efficacy and ecological soundness of managing to reduce the severity of wildfire (essentially acting to further suppress wildfire) as a natural disturbance and implementing heavy commercial logging under the guise of "restoration." This failure to disclose significant scientific controversy leads to consequent suppression of scientific evidence and perspectives supporting other management, or non-management, as opposed to the Forest Service's proposed action alternatives, in the Morgan Nesbit EA.

Examples of our comments regarding Morgan Nesbit EA failure to disclose scientific controversy include the following:

For instance, currently planned biomass "fuel" reduction and high intensity logging on a landscape scale will likely intensify fire due to more open conditions with more exposure to sun and heat waves due to lack of cooling shade, removal of mature and large trees that are the most fire resistant, increased wind speeds through open stands that spread fire more quickly, and removal of existing and future large down wood and forest litter that retains moisture in soils. These conclusions are based on best available current science that the Forest Service often ignores. For instance, see the science findings and citations in the book Smokescreen, Debunking Wildfire Myths to Save Our Forests and Our Climate by Chad T. Hanson, a research ecologist. (BMBP comments, p. 2, 2nd to last par.)

The Historical Range of Variability concept (HRV) was intended as guidance for comparison with historical reference conditions pre-European colonization, not as a mandate or rationale for timber sales, which is largely how the Forest Service uses HRV. HRV analysis has been fatally biased by inaccurate post-colonization photos after heavy logging as examples of baseline pre-colonization conditions. An example of this is 1927

photos after heavy logging [used by the Malheur NF staff] and an infamous Montana photo alleged to be a historically open Ponderosa pine stand, yet it includes a carriage of pioneers driving through the stand and if looked at closely, stumps are evident. Pioneer accounts were often selectively chosen from low elevation, open old growth Ponderosa pine routes that were easier to navigate with wagon trains and there has also been selectively not disclosing, for instance, Fremont's diary disclosures of many almost impassable dense forest areas that had never been logged but had to have trees felled to enable passage by wagon trains. The Forest Service also chronically fails to disclose the scientific controversy over the Forest Service use of HRV, as in the silviculture report.

There is also often no disclosure of scientific controversy over fire regimes and fire condition classes, as in the silviculture analysis. The Smokey the Bear mythology propaganda of "fires destroy the forest" can still be found in Forest Service District offices in eastern Oregon, as if the science contradicting this perspective does not exist. (BMBP EA comments, p. 3, 2nd to last and last par.)

These are critical failures to disclose and consider scientific controversy. Forest Service manipulation of HRV and Fire Regimes and Condition Class form the basis of the Forest Service's controlling public relations narrative, which is biased toward heavy logging. The agency's use of HRV and Fire Regimes and Condition Class are based on outdated Forest Plans and outdated silvicultural forestry training. Disclosure of scientific controversy (including among Forest Service scientists) is important for choosing management options that reflect adaptive management and more ecologically protective methods for problem solving, such as for fire risk reduction and for retaining biodiversity by not logging to convert tree species to timber industry preferred tree species, ignoring the benefits of moist mixed conifer for maintaining moisture retention, wildlife diversity, and critical sanctuaries for wildlife migrating to more suitable habitat under extreme climate change.

Resolution:

Blue Mountains Biodiversity Project has commented on the Forest Service's failure to disclose scientific controversy in the Morgan Nesbit EA. See our comments quoted and cited in the paragraph above.

* To resolve this objection, the Forest Service must thoroughly disclose existing scientific controversy over agency assumptions and management plans in an EIS available for public review and comment. The Forest Service needs to use the full spectrum of best available science reflected in the controversy to guide management plans and to provide for a broader selection of action alternatives and changes in management direction.

II. The Morgan Nesbit project violates the National Forest Management Act

The Morgan Nesbit project violates the National Forest Management Act in the following ways: failure to ensure the viability of Management Indicator species and associated wildlife species with similar habitat requirements; potential violation of

management guidelines for Wildlife Connectivity Corridors, Old Growth Management Areas, and Potential Wilderness Areas. The Forest Service is in potential violation of Forest Plan standards and guidelines for: Riparian Habitat Conservation Area (RHCA) protection; and for snag density, road density, and down wood requirements and for protection of soils through proposed management actions. The Forest Plan requires adherence to INFISH and PACFISH no logging buffer requirements, including moving toward attainment of Riparian Management Objectives in forest areas, and protection of large live trees 21" dbh and bigger from being killed (including topping and girdling), felled, or removed under the Eastside Screens requirements, except for certified hazard trees.

Failure to ensure the viability of Management Indicator Species (MIS)

Our comments noted many areas of analysis in which the Morgan Nesbit EA failed to demonstrate that the viability of Management Indicator (MIS) would be ensured with project implementation. Species of concern for protection of viability included the following Management Indicator species: Pileated woodpecker, Pacific marten, Primary Cavity Excavators, American goshawk; Redband trout; and Rocky Mountain elk.

The Forest Service has legal responsibilities to protect the viability of Management Indicator species, but not to move forest structure toward a theoretical Historic Range of Variability (HRV) through high intensity commercial logging as an over-riding goal. It's not appropriate or legally justifiable to keep reducing Management Indicator species' suitable habitat (e.g. Pacific marten) in timber sale 'project' after timber sale 'project', even after that species is ranked as vulnerable in Oregon by the U.S. Fish and Wildlife Service. The Pacific marten has suitable and occupied habitat acreage that would be reduced the by multiple management actions proposed for the Morgan Nesbit project. The EA did not include adequate cumulative effects analysis as to all these reductions of suitable habitat for Management Indicator species across the Forest. It is not justifiable to plan for continued impacts and cumulative potential loss of species viability for a Management Indicator species (e.g. Pileated woodpecker) based on "long-term" theoretical re-growth of suitable habitat eventually, as the species' viability may be lost before the habitat can grow back—especially given likely planned similar timber sales in the same area in the future, and the 100+ years suitable large and old habitat structure would take to re-develop.

Examples of how our comments express these concerns regarding the failure to ensure the viability of Management Indicator and other species:

There's so much loss of Late Old Structure (LOS) forest habitat already compared to historical abundance of LOS that there is no credible excuse to log within some of the last LOS remaining outside of Wilderness Areas and Inventoried Roadless Areas. Old growth and large tree structure is at a severe deficit compared to historic conditions due to about a century of logging in the Blue Mountains. Continued logging of LOS would likely contribute to uplisting of large and old tree structure—associated wildlife species, including MIS Pacific marten, Pileated woodpecker, and American goshawk. (BMBP comments, p. 37, 4th full par.)

Regarding Pacific marten:

"Martens mostly occupy areas of higher elevation above 5,000 ft. to tree line; however, they are also found at elevations down to at least 4,000 ft. on north to easterly facing slopes where there is deeper snow accumulation (USDA 2014). This includes a majority of the forested habitat within the Morgan Nesbit project area."

"Management that prioritizes the retention of large forested patches of cool moist, cool very moist, cold dry, and cold moist above 5,000 ft. to tree line as well as from 5,000 ft. down to 4,000 ft. on north to easterly facing slopes, where deeper snow accumulation is higher, is likely to promote habitat in areas that are suitable for marten." (Wildlife Report, p. 28)

Yet these conditions for marten would not be retained with the proposed action alternative due to planned mostly high intensity logging to only about 40 square feet of basal area retention, patch cuts up to 5 acres of openings within other commercial logging, and expansive "Shaded fuel breaks" opening up forest stands, as well logging associated biomass reduction and prescribed burning eliminating abundant logs needed by marten for winter subnivean foraging. These effects of eliminating suitability of marten habitat would be significant since most of the commercial logging sale units are within suitable marten habitat. See our field survey sheets and sample photographs of suitable habitat for marten, with denser forest, high canopy closure, abundant down and elevated logs, and large old growth snags for denning—especially where there are Pileated nest holes, which are used by marten for denning. Apparently, the Morgan Nesbit project area is a stronghold for Vulnerable-ranked marten, as apparently many marten sightings have been detected by trail cameras. (BMBP EA comments, pp. 21-22—last 3 par.s of p. 21 and 1st par. of p. 22)

The expansive fragmentation and loss of forest cover from proposed mostly high and moderate intensity logging would eliminate most of the suitable marten habitat outside of the planned wildlife connectivity corridors in the moist mixed conifer and cold forest stands. Science quoted or summarized in the Wildlife Report regarding marten habitat requirements support this assertion:

"Martens may become absent from an area when greater than 25 percent of the landscape (3.5 square miles) is non-forested, even with connectivity corridors present (Hargis et al. 1999). As such, forested patches with fewer large openings are more suited to support marten (Penninger and Keown 2011a)." Wildlife Specialist Report at 28. "[T]hey are more likely to establish their home ranges in areas with greater than 70 percent suitable habitat (Dumyahn et al. 20007)." *Id.* The large scale of the planned high and moderate intensity commercial logging outside the wildlife connectivity corridors could cause enough fragmentation and loss of suitable habitat that the resident marten would no longer have a home range in the Morgan Nesbit area since there would likely be less than 70% suitable marten habitat remaining.

"In addition to forest cover, road density can also impact landscape-level habitat suitability (Chapin et al. 1998, Wisdom et al. 2000). For example, road densities that

were greater than 1.75 miles per square mile in forested areas increased trapping pressure (Wisdom et al 2000). Optimum marten habitat is characterized by road densities less than 1.0 mile per square mile... (Vasquez and Spicer 2005).” (Wildlife Report, last par., p. 28) (BMBP EA comments, p. 22, par.s 3, 4, and 5, not including a * remedy.)

It’s important to keep in mind that the Pacific marten is a Management Indicator species, representing the habitat needs for many other wildlife species. Under the National Forest Management Act, the Forest Service is required to provide sufficiently abundant suitable habitat to ensure the viability of Management Indicator species. Following are habitat requirements that support marten viability based on the science:

“Martens select home ranges with larger forested patches, fewer large openings, increased stand complexity, diverse understory community, and abundant snags and down logs (Chapin et al. 1998, Wisdom et al. 2000, Bull and Heater 2001, Vasquez and Spicer 2005, Zielinski 2014, Moriarty et al. 2016)....Marten disproportionately selected habitat patches that were unharvested and comprised of late-successional stands within their home ranges (Bull and Heater 2001, Vasquez and Spicer 2005, Farnell et al. 2020)....it is recommended that land managers provide patches of uncut forest greater than 247 acres to maximize core area and minimize edge effect...thus increasing the carrying capacity of the landscape (Povtin et al. 2000, Wisdom et al. 2000, Wales 2011a). To provide suitable marten habitat, the distance between habitat patches should be less than 0.6 miles...(Vasquez and Spicer 2005).” (Wildlife Report, p. 29, 2nd par.)

Further: “Microenvironments, such as resting and denning sites, are critically important to marten because they provide thermal cover, access to subnivean habitat (i.e., sites under snow), as well as protection from predators and inclement weather (Bull and Heater 2000, Delheimer et al. 2023).” (Wildlife Report, p. 30)

The proposed alternative would not retain enough suitable high-quality habitat outside of the wildlife connectivity corridors, given all the habitat features needed, including high canopy closure, abundant down and elevated logs, abundant snags and large snags for denning—especially with Pileated woodpecker nest holes for denning—in large blocks not far from each other. Marten also select for never logged and late successional stands. The easiest way to provide all these features is to not log suitable marten habitat.

DecAID 2023 science findings support retaining much more down wood for marten and retaining more snags than would be left after high intensity logging (the majority of the commercial sale units) and most moderate intensity logging. 50% of the marten population was found to use 8 snags per acre over 10” dbh and four snags per acre over 20” dbh, with denning snags at least 30.7” dbh to 32.4” dbh—in Eastside Mixed Conifer habitat. (See Wildlife Report, p. 31, 2nd par.)

Re: Figure 3 on Wildlife Report, p. 33, the map shows that American martens have lost much of their historical range in the U.S., which is likely due primarily to logging and forest fragmentation from development. This suggests the need to stop rampant, landscape scale, and high intensity logging, rather than concede the marten’s incremental

extirpation over most of its historical range. (BMBP EA comments on p. 23 except for the partial resolution remedies and the last par. on p. 23)

Martens are among "the most sensitive species to changes in their habitat making them particularly susceptible to habitat fragmentation and climate change (Hargis et al. 1999, Parks and Bull et al. 1997, Bull and Blumton 1999, Bull and heater 2000, Wisdom et al. 2000, Zielinski et al. 2005, Sullivan et al. 2012, USDA 2014, Moriarty et al. 2016, Sullivan and Sullivan 2021, Slauson et al. 2022)." (Wildlife Report p. 69) (quotation as part of our BMBP EA comments, p. 34, last par.)

How are viability probabilities derived? This Wales 2011a analysis is confusing. Why would the high suitability marten class in Table 16 include the most open landscape and the highest road density?

Previous implemented timber sales in the project area "include Cold Canal Vegetation Management Project, Puderbaugh Vegetation Management Project, Tyee Fuels Reduction Project, Double creek Fire Recovery Project, and several smaller timber stand improvement projects [timber sales]. This analysis indicates that since 2011, source habitat in these three watersheds have decreased by 645 acres while secondary habitat has decreased by 533 acres."

We remain concerned that the existing source habitat for marten is only small percentages of the overall watershed "potential" (currently unsuitable) habitat. See Table 17 on Wildlife Report p.71. How was the historical median of source habitat determined? What evidence supported the historical median for source habitat? How was over 40% of the historical median determined to be the goal for marten source habitat acreage? Why are the steps of this methodology not disclosed? How is the current watershed index derived?

Planned logging has long geared toward converting tree species composition to "early seral" tree species, which is completely contrary to retaining and increasing source habitat for marten. So planned timber sales can't be expected to grow into marten source habitat for many decades, likely later than the next timber sales in the area, resulting in a cumulative loss of marten source habitat.

How do the planned wildlife connectivity corridors overlap with marten source and secondary habitat? Are the two habitat types connected to each other?

The Morgan Nesbit project area is considered a regionally important source habitat for ensuring marten viability, making it all the more important to protect suitable marten habitat from logging and biomass reduction, as well as to avoid fragmentation of marten suitable habitat. (BMBP EA comments above from p. 35)

Even if marten habitat within wildlife connectivity corridors would not be managed (see Table 18, p. 73), the loss of both source and secondary habitat would disconnect and fragment suitable habitat throughout the sale area, with each successive timber sale on short rotations and increasing scale and intensity of logging, more marten habitat is lost, remaining unsuitable for at least decades. There would be no guarantee that the next sale

would not set back these sale units from recovery, as is already proposed for the Morgan Nesbit sale by logging past sale units that were marten habitat again. These repeated cycles of logging cause a net overall cumulative loss of suitable marten habitat over time. These comments reflect the lack of detailed, in-depth cumulative effects analysis regarding the combination of past, ongoing, and foreseeable future management loss of suitable marten habitat.

Since this planned elimination of marten source and secondary habitat would be over one third of existing suitable source and secondary marten habitat, this poses significant impacts to marten viability in the project area. Cumulative negative impacts to Pacific marten across the Wallowa -Whitman National Forest, with all timber sales affecting marten across the Forest, this loss of marten source and secondary habitat could contribute to a trend toward up-listing, since the Pacific marten is already ranked as Vulnerable in Oregon. Under the National Forest Management Act, the Forest Service is required to ensure the viability of Management Indicator species, which includes the Pacific marten for the Wallowa-Whitman National Forest.

There are some disturbing revelations about the process of characterizing marten habitat so that it would look like the Pacific marten would still be viable in the Morgan Nesbit project area:

"As mentioned, the minimum patch size of undisturbed forest used by marten averaged 37 acres (Chapin et al. 1998). Of the source and secondary habitat that is not proposed to be harvested or thinned, 1,193 acres (0.1 percent) of source habitat and 835 acres (0.1 percent) of secondary habitat within these three watersheds would become fragmented from other suitable habitat patches, thus making the patch size less than 37 acres. As such, these fragmented acres would be categorized as potential habitat [currently unsuitable] until connectivity with another suitable habitat patch is reestablished....The suitable habitat that is not being treated [managed] within the connectivity corridors will be considered as the only acres supporting marten viability post-implementation within the Morgan Nesbit project area (Table 19)." (Wildlife Report, p.74) Then the following statement seems to say that less suitable secondary habitat was "acting" as source habitat and "potential" (already logged and unsuitable currently) habitat was "acting as either source or secondary habitat thus mitigating the effects from the proposed treatment." There's something strange or devious about non-suitable habitat "acting " as suitable habitat and secondary habitat "acting" as source reproductive habitat when it is not. Here's the full quote from the Wildlife Report, p. 74: "When developing the Morgan Nesbit Connectivity Corridor , the goal was to include actual source and secondary habitat, secondary habitat acting as source habitat, and potential [currently unsuitable] habitat acting as either source or secondary habitat thus mitigating the effects from the proposed treatment." This sounds like it was actually not mitigation for the loss of marten source and secondary habitat from the proposed management actions, since some of the habitat used for mitigation was not actually either source or secondary habitat. Am I missing something, or is this <u>not</u> actual mitigation for lost marten habitat suitability from acreage in the wildlife connectivity corridors planned?

How is secondary marten habitat deemed to be "acting as source habitat" and unsuitable "potential" habitat being substituted for "either source or secondary habitat" that is suitable marten habitat? This looks like an unscientific maneuver to artificially increase retained suitable source and secondary habitat. This appears to be inaccurate use of the science. (BMBP EA comments, p. 36, last par. to first par. on p. 37)

BMBP EA comments re: Pacific marten on p. 37 below:

This highly questionable and potentially unethical process for substituting one category of habitat for another on paper but not in reality, gives us serious concerns. We are determined to make sure the Morgan Nesbit proposed management does not greatly reduce marten source and secondary habitat and does not threaten viability of Pacific marten in the Morgan Nesbit project area and contribute to a trend toward up-listing the Pacific marten.

"Higher intensity treatments [logging] can substantially reduce vertical complexity that is needed by marten (Hargis et al. 1999, Pearson 1999, Sullivan et al. 2011, Moriarty et al. 2016, Lambert et al. 2017, Wilk and Raphael 2018, Lavoie et al. 2019, Sullivan et al. 2022, Delheimer et al.2023)."(Wildlife Report, p. 75, 1st par.)

"Irregular shelterwood" logging does not benefit marten, as martens will not cross clearcuts or other big openings. Related tree species conversion to the typical Ponderosa pine or Western larch would not benefit marten as they need higher canopy closure from Grand fir and mixed conifer and a good supply of snags and logs, while Lodgepole pines and other mixed conifer species provide abundant elevated and down logs for subnivean foraging. Clearcuts and virtual clearcuts do not "develop into more complex forest with variable tree species composition in both the overstory and understory" as the forest would be mostly even-age and mostly only one or two preferred tree species for logging that were planted. (Wildlife Report, p. 75, par. 1)

Retaining only 50% canopy closure or a minimum of 80 square feet of basal area, as suggested, would only be a starting point for recovery over decades.

"A study in the Lassen National Forest found that martens were 1,200 times less likely to be detected in simplified forest stands compared to structurally complex forest stands during the summer breeding and kit rearing season (USDA 2016)....This is especially true in areas with fuel breaks...where down wood retention is at greatest risk of being below optimum levels for marten and small tree removal is highest is highest (Bull and Blumton 1999, Brown et al. 2003). The size of openings that marten cross within the Rocky Mountains averaged 460 ft. and did not cross openings averaging greater than 1,050 ft (Heinemeyer 2002)." (Wildlife Report, p. 76, 1st par.) "Martens that were recorded using openings were reported as staying within 55 ft. from a forest edge (Cushman et al. 2011)...."Although mechanical thinning can mimic certain aspects of fire disturbance, it is not recommended in higher elevation forests where martens occur (Zielinski 2014, USDA 2016)...several studies recommend avoiding fuel treatments at higher elevation forests (greater than 5,000 ft.) and within marten habitat, given the high potential for habitat degradation and increased habitat fragmentation (Bull and Heater 2000, Zielinski

2014, Moriarty et al. 2016)." (Wildlife Report, p. 76, 1st full par.)
(BMBP EA comments, p. 37, last par through first par. of p. 38)

*Drop all marten source and secondary habitat from any biomass reduction "fuel treatments" or "Shaded fuel breaks" based on the science cited above.

"Changing climatic conditions are likely to increase the frequency and intensity of fire across areas occupied by marten, resulting in diminished habitat abundance and extent (Koehler and Hornocker 1977, Zielinski 2014, DecAID 2023 a/b/c)." (Wildlife Report p. 76, last par.) This is all the more reason to fully protect Pacific marten from logging and biomass reduction to ensure continued viability of Pacific marten as a Management Indicator species.

This is inadequate cumulative effects analysis at the Forest scale without considering all the other effects to marten across the Wallowa-Whitman National Forest. See Wildlife Report, p. 77. (BMBP EA comment, p. 38, 4th par.)

See our additional comments supporting our objection re: the need to maintain the viability of multiple MIS species under NFMA:

Resolution

BMBP has commented on its objection to the Forest Service's failure to demonstrate that they would provide for viability of Management Indicator and other species in the Morgan Nesbit project. See our comment citations and sample quotes in the above paragraphs.

Resolution of this marten viability objection issue would include our following comments suggesting marten viability resolution remedies:

*Drop all suitable marten habitat in the moist mixed conifer and cold forest types from proposed logging and "Shaded fuel breaks", with no new road construction or closed road re-opening. These areas of suitable marten habitat should be in large blocks (with unlogged forest in patches greater than 247 acres) with other blocks within less than 0.6 miles, as recommended by the science studies cited above. (BMBP EA comments on p. 23, 4th to last par.)

*Drop all planned management except potential non-commercial thinning by hand for 3,239 acres of source habitat and for 3,087 acres of marten secondary habitat. "In other words, these treated [managed] habitat patches would no longer be considered supporting marten species viability." (Wildlife Report p. 73, 2nd par.) See Table 18 on p. 73 for the break-down of different management for marten source and secondary habitat. Drop all management in marten source and secondary habitat in RHCAs. Drop all 2,612 acres of commercial logging in marten source habitat and in 2,415 acres of secondary marten habitat. Drop all 314 acres of "fuel" breaks in marten source habitat and all 403 acres of "fuel" breaks in secondary habitat. *Drop the 9,288 acres of commercial logging in "Potential Habitat" that has already been logged and the 1,684 acres of "fuel" breaks in

"Potential Habitat". (BMBP remedy comments, pp. 35-36, last par. on p. 35 to 1st par. of p. 36)

*Drop all the identified 24,158 acres of marten source habitat and the 13,879 acres of secondary habitat from logging, biomass reduction, and road construction within Upper Big Sheep Creek, and the Upper and Middle Imnaha River Watersheds. See Wildlife Report p. 69, last par. (BMBP EA comment, p. 35, 2nd par.) *Drop all suitable marten habitat in the moist mixed conifer and cold forest types from proposed logging and "Shaded fuel breaks", with no new road construction or closed road re-opening. These areas of suitable marten habitat should be in large blocks (with unlogged forest in patches greater than 247 acres) with other blocks within less than 0.6 miles, as recommended by the science studies cited above. (BMBP EA resolution remedy comment, p. 23, 4th to last par.)

*Prioritize providing high quality abundant habitat for the Pacific marten as a Management Indicator species that is also vulnerable to climate change. Drop all commercial logging and biomass reduction, as well as prescribed burning in suitable Pacific marten habitat. See our survey sheets and sample photos, including descriptions of photos, as I will not be able to send all of them to you. Our survey sheets have information as to habitat parameters, such as old growth counts, abundance of logs and snags, high canopy closure, and tree species composition, as well as evidence of historic mixed conifer and plant community indicators. Forest Service data sources from the field should also be helpful for identifying good marten habitat, along with photos of marten taken by trail cameras or from bait station photos. We had a sighting of a marten in a commercial sale unit near Lick Creek. (BMBP EA comment, p. 35, 1st par.)

*Drop all higher intensity logging throughout the Morgan Nesbit sale, which includes all "irregular shelterwood cuts" over 375 acres and drop all of the "group selection harvest" with mini-clearcuts of 2-5 acres planned for 2,300 acres. We are also strongly opposed to any commercial logging in Late Old Structure forest, as is planned within the matrix of "irregular shelterwood cuts". "These newly identified LOS stands are now proposed for commercial thinning using group selection harvest." (Wildlife Report, p. 75) Drop all commercial thinning using "group selection harvest" ["commercial with patch cuts] in LOS, marten habitat, and in general. (BMBP EA partial resolution remedy comments, p. 37, 3rd full par.) Based on the Draft Decision Notice, the Commercial logging with patch cuts (the "group selection harvest") is now at the total acreage of 1,522 acres instead of 2,300 acres.)

American goshawk:

Our comments explain our objection concerns:

Extensive and intensive logging and biomass reduction increasingly incorporated into timber sales not only threatens goshawk nesting success, but also prey availability on a landscape scale.. This reduction in small mammals and bird habitat through decreased snags and down wood not only affects goshawks, but also many other wildlife species dependent on small mammals and birds for prey, including owls; hawks; falcons;

Harriers; Gray wolves; coyotes; foxes; bobcats; marten and Pacific fisher. Therefore it's not sufficient to just protect habitat attributes for prey in nest sites and Post Fledging Areas (PFAs). (BMBP EA comments, p. 23, last par. through 1st par. p. 24)

BMBP EA comments on American goshawk on p. 24, below:

Science studies support the need to retain abundant snags and logs, and down wood and shrubs for birds and mammals that provide prey for goshawks: "A decrease in snags and down wood could negatively affect American goshawk nest success if it results in a substantial reduction in either prey abundance or distribution (Bull and Hohmann 1994, USDI 1998)." And regarding the importance of not logging or implementing biomass reduction in RHCAs: "Within the PFA, small wet meadows and other riparian areas were important in improving hunting success and maintaining a variety of prey (Daw and DeStefano 2001, McGrath et al. 2003)." (Wildlife Report, p. 33, 1st par.)

Extensive logging, biomass reduction, and prescribed burning in moist and wet mixed conifer and cold high elevation forest could cumulatively dry up the wet meadows, tributary streams, seeps, and riparian zones that are critical habitat components, not just for goshawk PFAs, but also for small mammal and bird prey hunting success for the whole range of species dependent on small prey, and on the long-term viability of bird and small mammal abundance.

"Suitable habitats for American goshawks include old forest single- and multi-story stands as well as unmanaged young forest stands in Eastside Mixed Conifer and Montane Mixed Conifer Wildlife Habitat types where significant large diameter green trees, snags, and logs are present. Older stands with larger trees are important for not just nesting sites but winter habitat (Reynolds et al. 1982, Daw and DeStefano 2001, McGrath et al. 2003, Greenwald et al. 2005, DeStefano et al. 2006, USFS wildlife observations)." (Wildlife Report, pp. 33-34)

"Nest stands consist of dense canopy of LOS forest between 29-60 acres in size with average tree DBH of 20-in. or greater (Bulland Hohmann 1994, Daw and DeStefano 2001, USFS wildlife observations). In eastern Oregon and Washington, American goshawk nest stands had an average basal area of 176.9 square ft. per acre...average live stem density of 2,130 trees per acre...and average canopy cover of 53.1 percent...(McGrath et al. 2003)." (Wildlife Report, p. 34, 1st par.)

These goshawk nest stand forest structure studies describe the levels of basal area and numbers of trees per acre are far higher than what is usually retained after commercial logging, since the Forest Service "desired" basal areas and numbers of trees per acre are geared to very open stands with little habitat structure left. This means that cumulatively Northern goshawk will have more trouble finding nesting security habitat over time, which also means that all the wildlife species that need similar habitat and which the MIS goshawk represents will likewise be threatened with cumulative loss of habitat. Now the habitat structure is removed at a landscape scale and on short timber sale rotations and increased intensity of forest cover removal. See Wildlife Report p. 17, par. 1, for the long

list of other wildlife species that need habitat similar to suitable goshawk habitat structure that the MIS goshawk represents.

"Microclimates are believed to be an important forest component for American goshawks possibly due to reduced temperature swings during the heat of summer (Reynolds et al. 1982, Bull and Hohmann 1994, USDI 1998, Penteriani 2002, McGrath et al. 2003, Squires and Kennedy 2006, Klaver et al. 2012, USFS wildlife observations). Microclimates are relatively small geographical areas, from north facing slopes to seeps and spring, where the land-air interface alters the way that organisms interact due to differences in solar radiation, humidity, soil characteristics, soil moisture, and topography (Pincebourde et al. 2016, Zellweger et al. 2019). In turn, this can create areas buffered from temperature swings and drought thus reducing the effects of intense seasonal weather patterns and climate change (Pincebourde et al. 2016, Zellweger et al. 2019). For instance, nest sites are more likely to be found on north to easterly facing slopes (USFS wildlife observation). American goshawks nest sites are often located near the lower one-third of the slope and drainage bottoms where cooler air sinks (McGrath et al. 2003)." (Wildlife Report, p. 34, last par.)

Microclimate areas retaining more moisture and cooler air are critical for wildlife surviving climate change heat waves. Yet commercial logging can destroy cooler, moister microclimate forest, especially if it is high intensity logging. This is why we are opposed to logging in RHCAS, above the riparian zone often on steep slopes, and in higher elevation or on North facing slopes with moist mixed conifer or cold forest that retains deep snow packs longer. Such elimination of cooler, moister microclimate conditions can further move American goshawk toward uplisting, along with marten, Canada lynx, wolverine, and other species.

"Nests are most often built on brooms or other platforms...primarily in western larch, Douglas fir, and to a lesser extent ponderosa pine and grand fir (Reynolds et al. 1982, Bull et al. 1997, McGrath et al. 2003, USFS wildlife observations). Thus a substantial reduction of mistletoe brooms on western larch and Douglas fir could limit future nesting platforms (Pilliod et al. 2006)." (Wildlife Report, p. 34, last par.) We have observed most goshawk nests being in Douglas fir and Western Larch mistletoe platforms.

"Reduction and fragmentation of mature forest may favor red-tailed hawks and great horned owls, increasing the predation rates of American goshawks (USDI 1998). As such, maintaining intact mature and old growth stands within PFAs is important in providing high quality habitat for American goshawks and reducing interspecies competition." (Wildlife Report, p. 35)

"Across the Columbia River Basin, American goshawk habitat was indicated as moderately or strongly declining in 70 percent of the watersheds within its range (Wisdom et al. 2000). Between 2007 and 2021, abundance and trend data indicated that American goshawk populations are continuing to decline across most parts of their range (Figure 5, Fink et al. 2022). Across much of northeastern Oregon and northern Idaho, there were substantial declines in American goshawk abundance with some areas indicating a nearly 60 percent decline (Fink et al. 2022)." (Wildlife Report, p. 36, 1st par.)

The Forest Service has a mandate to protect the viability of Management Indicator species, including American goshawk, under the National Forest Management Act.

Comments supporting our objection to protect goshawk viability on page 38 below:

The methodology used for determining species viability is very opaque. See Wildlife Report p. 79.

Over one-third of total suitable goshawk habitat would be rendered unsuitable with just this one timber sale, which is also true for marten. At this rate, with landscape scale timber sales on short rotations and with high intensity logging, it wouldn't take long to wipe out all the suitable marten and goshawk habitat in the sale area. Many other species would lose suitable habitat, since American goshawk is a Management indicator species to represent other species that have similar habitat needs. If too many wildlife species are extirpated, the forest ecosystem could start breaking down.

*While some goshawk habitat may be protected in the planned wildlife connectivity corridors, we are still opposed to logging of suitable habitat in "fuel" breaks (1,636 acres), 165 acres of commercial logging in RHCAs, and 6,341 acres in "silviculture" logging sale units. Drop all of the planned logging and "fuel" breaks listed above that is located in goshawk habitat. Goshawks are in decline and need to be protected from more habitat loss through logging and biomass removal.

Recommended mitigations are not likely to retain goshawk habitat after it has been logged. Goshawks are sensitive to disturbance and will abandon nests. Complex structure and greater tree density, as well as abundant down wood and variable snags (goshawk habitat features) are not the outcomes of typical logging, and especially not the outcome for high and moderate intensity logging, which is most of the sale unit logging planned.

Resolution

Our comments supporting our objection for the need for further protections for American goshawks are quoted above. Below are our remedies for our objection regarding further protection for suitable goshawk habitat to ensure the species' continued viability:

*Drop all never logged forest and old growth or LOS forest from commercial logging and biomass reduction re: retaining large live trees, abundant large snags and abundant down wood to support viable populations of American goshawks, their prey, and many other wildlife species, such as Management Indicator species, including Pileated woodpecker, American marten, and Primary Cavity Excavators, as well as Sensitive Pacific fisher. (BMBP EA Comments, p. 24, 4th par.)

*Drop cooler and moister microclimates from logging and biomass reduction, such as in moist mixed conifer, in cold forest, on higher elevations and North aspect slopes, and in all RHCAs. (BMBP EA resolution remedy comment, p. 25, 3rd par.)

* The Forest Service needs to stop felling trees with mistletoe brooms, which are important for goshawk nesting and Blue grouse roosting. (BMBP EA remedy comment, p. 25, 5th par.)

*Don't allow logging and biomass reduction to fragment and reduce large blocks of mature and old growth forest stands—in general to benefit many wildlife species, including for American goshawk, wolverine, potential Pacific fisher, Pacific marten, Gray wolf, and many other species. (BMBP EA remedy comment, p. 25, 7th par.)

*While some goshawk habitat may be protected in the planned wildlife connectivity corridors, we are still opposed to logging of suitable habitat in "fuel" breaks (1,636 acres), 165 acres of commercial logging in RHCAs, and 6,341 acres in "silviculture" logging sale units. Drop all of the planned logging and "fuel" breaks listed above that is located in goshawk habitat. Goshawks are in decline and need to be protected from more habitat loss through logging and biomass removal.

Pileated woodpecker:

Our comments explain our objection concerns for better protecting the MIS Pileated woodpecker's viability:

"Pileated woodpecker nesting territory in northeastern Oregon ranges from 320 to 1,236 acres (Bull and Meslow 1997) with an average between 544 to 900 acres depending on the study (Bull 1987, Bull and Holthausen1993). The average territory size (including suitable and less suitable habitat was 3,857 acres while territories that included only suitable habitat averaged 765 acres (Bull et al. 2007)." (Wildlife Report, p. 36). These science findings show that the Forest Plan requirements for Pileated woodpecker are based on outdated science. These include 300 acre Dedicated Old Growth areas for Pileated nesting territory, while nesting territory sizes average 544 to 900 acres and average territory size with all suitable habitat averaged at 765 acres. Designated Replacement Old Growth and Pileated Feeding Areas have often been logged prior to designation, making them mostly or all unsuitable habitat. (BMBP EA comments, p. 25, last par. through first par. on p. 26)

Comments on our objection regarding better protection of the MIS Pileated woodpecker:

"Habitat suitability in northeastern Oregon was reduced in areas that had substantial grand fir harvested (Bull and Holthausen 1993). This is because these harvested units decreased the number of snags and amount of down wood thus negatively impacting prey availability while also limiting potential nest and roost trees or snags (Bull and Holthausen 1993). Foraging stands were 75 percent grand fir (Bull and Holthausen 1993). Half of the foraging area consists of greater than 60 percent canopy closure (Bull and Holthausen 1993)." (Wildlife Report, p. 37, 1st par.)

Yet the Forest Service has long targeted Grand fir for logging as it is not a timber industry preferred tree species, in order to shift tree species composition for future logging. The Forest Service needs to stop eradicating Grand fir dominant mixed conifer forest. While Grand fir is not a good lumber tree, it is a very critical wildlife habitat tree

that produces abundant snags and logs favored by Pileated woodpeckers and Black bears for foraging. Grand fir also retains water under the base of large trunks, which helps small mammals, amphibians, and reptiles survive heat waves and droughts. Grand fir has an unusual ability to survive extended droughts by dropping all its needles to store water in its roots. After only one subsequent we winter, Grand firs can grow needles back into full green crowns. This is an important tree species to retain for wildlife and for carbon sequestration and storage during climate change.

"Outside of the breeding season (between November and February), pileated woodpeckers consume nearly no ants. Instead, pileated woodpeckers consume a large amount of western spruce budworm... (Bull et al. 1992a)." Thus, Pileated woodpeckers are significant foragers for controlling spruce budworm. Forest managers should appreciate the ecological role they play in minimizing the effects of spruce budworm epidemics. Pileated woodpeckers also represent the habitat needs of many other wildlife species as a Management Indicator species. Habitat requirements for Pileated habitat regarding snag density and size can be found in the last par. of Wildlife Report p. 37

Resolution

Our comments above support our objection for better protection of viability for Pileated woodpecker, a Management Indicator species, by retaining more suitable Pileated woodpecker habitat. See our proposed resolution remedies below:

*Protect all suitable Pileated woodpecker habitat by not logging it or removing biomass, including snags and logs. The Pileated woodpecker represents the habitat needs for the many wildlife species dependent on old growth habitat with large snags and logs, and high canopy closure, which include other Primary Cavity Excavators and MIS Pacific marten. (BMBP EA remedy comment, p. 26, 3rd to last par.)

Re: Pileated woodpecker and marten viability:

*Drop commercial logging and prescribed burning in all sale units that incorporate suitable or active habitat for Pileated woodpeckers and American marten, which would be cooler, moister mixed conifer old growth or LOS habitat with 40-60% canopy closure or more, and for marten, abundant down and elevated logs for winter foraging, as well as large snags for both species.

*See our survey sheets for guidance re: fresh Pileated foraging and/or Pileated nest or roost holes in snags and abundant down and elevated logs and large snags for marten. There is also Pileated woodpecker nesting in old growth Ponderosa pine habitat, generally in proximity to old growth Grand fir foraging habitat in riparian corridors.

Primary Cavity Excavators:

Our comments explain our objection regarding MIS Primary Cavity Excavators:

"Down wood provides not just forage for primary and secondary cavity nesters but is an important component of forest ecosystem health because of its role in nutrient cycling,

water retention, soil productivity and immobilization (Johnson and O'Neill 2001, Brown et al. 2003). Both snags and down wood provide habitat for mycorrhizal fungi, invertebrates, reptiles, amphibians, and small mammals.... (Ashley and Robinson 1996; Pilliod and Wind 2008; Sullivan et al. 2011, 2012, 2021; Jordan and Black 2012; Marcot 2017)." (Wildlife Report, p. 41) (BMBP comment, p. 26, quoting the Wildlife Report as expressing our concerns)

"Because primary cavity excavator populations are limited by snag availability (e.g., DBH, height, tree species, etc.), secondary cavity nesters, such as bats and marten who rely on the cavities formed by primary cavity excavators, are also limited (Bull 1986, Wisdom et al. 2000)." (Wildlife Report, p. 41) (BMBP comment, p. 26, quoting the Wildlife Report as expressing our concerns)

Based on DecAID 2023 science, for all Primary Cavity Excavators, the Forest Service is not retaining enough mature trees to provide enough future snags per acre of 11-35" dbh at the abundance level of up to 30 snags per acre that are 10" dbh or greater, including about 8 of those snags per acre being greater than 20" dbh, as well as to recruit down wood ranging from 22 to 33" dbh logs, given the scale of cumulative removal of mature trees from current, past, and proposed timber sales, including the foreseeable outcome of the Morgan Nesbit sale proposed alternative. (BMBP comment, p. 27, par. 1)

Resolution

Our remedies for Primary Cavity Excavators overlap with our objection resolution remedies for Pileated woodpeckers, which are listed above. Additionally:

*More snags and down wood need to be retained for Primary Cavity Excavators. Drop all the best PCE foraging habitat from commercial logging and biomass reduction. Leave far more forest unlogged, for there are far more snags and logs in never logged habitat. Reduce road density so as to retain more snags and logs, since large live trees and snags are felled as hazard trees along road ways and within commercial logging sale units. (BMBP remedy comment, p. 27, par. 2)

*Drop all topping and girdling of large Grand firs, White firs and Douglas firs in order to have longer term availability of large live trees for wildlife species using large live trees for nesting, denning, and foraging, and for long-term recruitment of large snag and log foraging habitat and longer term availability of large snags for nesting. Further, most woodpeckers do not show the same interest in created snags as in naturally decayed snags, which have more insects for foraging and more soft, decayed wood for nesting holes.

Girdling and topping large Douglas fir, White fir, and Grand fir 21" dbh or larger was not disclosed or specified in the Draft Decision Notice. This is a clear discrepancy between the final Environmental Assessment, p. 37, last full par., and the Draft Decision Notice. The Draft Decision implies that no large live firs 21" dbh or larger by saying that "the proposal to remove trees greater than 21 inches DBH was removed from the proposed action due to reversal of the Eastside Screens" (Draft Decision Notice, p. 1),

which is deceptive and misleading to the public if girdling, topping, and felling large live trees is retained in the proposed alternative. Further, the Eastside Screens prohibit killing large live trees equal to or greater than 21" dbh. So all girdling, topping, and felling of large trees (see the following remedy below) should be dropped from the final EA, based on the Draft Decision Notice.

The girdling, topping, and felling of large live trees should not be done under the guise of restoration (see below) or under the guise of large (and old) firs are "competing" with "early seral" large trees such as Ponderosa pine and Western larch, when actually there is an established forest type of mutual Grand fir and Ponderosa pine dominance. Large and old Douglas fir are also co-dominant with Ponderosa pine in an established forest type. Further, Western larch co-exist naturally with both Grand fir and Douglas fir, as they are usually associated with higher elevation sites with more precipitation and snowpack or inhabit riparian corridors.

Large trees, including large live trees, large snags, and large logs are all critical to retain as large structure stores the largest amounts of carbon to retain the forest's natural function as a carbon sink to reduce catastrophic global warming.

*Drop all large tree logging ("thinning") [which was dropped in the Draft Decision Notice] or felling within one site potential tree length of Big Sheep Creek to be left on the ground, as this would reduce existing live large trees >21" dbh that are at a deficit compared to historical conditions and are needed over time into the future for many large tree-associated wildlife species, as live large trees, large snags, and large logs for perching, nesting, and foraging. Large Primary Cavity Excavators that need large trees include MIS Pileated woodpecker, MIS Williamson's sapsucker, MIS Lewis' woodpecker, MIS Northern Flicker, and MIS White-headed woodpecker. Other wildlife species that depend on large live trees, large snags, and/or large snags, include Sensitive Pacific fisher for denning in large live fir trees or large fir snags and large logs for escape runways through the forest; MIS Pacific marten for large snags with Pileated nest holes for denning and large logs for foraging under snow; Great Gray owls that need large broken-top Grand fir snags for nesting into the future and Black bears, who require large soft snags and logs for foraging, as well as large logs for creating denning spaces. (See the final EA, p. 15, last par.)

*Drop all commercial logging and roading in undeveloped lands, including the never logged commercial sale units on the steep slopes off the canyon ridges and adjacent to the Eagle Cap Wilderness. See our survey sheets for commercial sale units that have never been logged in order to drop the commercial logging and road work in those sale units. Never logged forest usually has much more abundant and large snags than logged forest. Never logged forest usually has a higher abundance of snags and more large snags for wildlife due to past and ongoing logging of mature and large trees, preventing mature trees from becoming large and depleting the already low levels of large trees, including large live trees, large snags, and large logs into the future.

*Re: Primary Cavity Excavating woodpecker viability: Protect large snags and groups of snags and significantly reduce snag loss by reducing mature tree logging, especially in

the 15-21" dbh range and by dropping "temporary" road construction and closed road reconstruction to reduce loss of snags through hazard tree felling.

Resolution remedies for Management Indicator species in general:

Re: Northern goshawk and MIS American marten and Pileated woodpecker:

* No commercial-size logging in suitable primary goshawk habitat and PFAs, suitable marten habitat, suitable and active Pileated woodpecker habitat, with no overstory canopy reduction in these areas;

* No log and snag reduction in suitable and active American marten and Pileated woodpecker habitat;

* Drop all commercial-size logging in wildlife connectivity corridors;

* No prescribed burning of suitable habitat for Pileated woodpecker and American marten as the Pileated woodpecker depends on soft snags and logs for foraging that readily burn and the marten require abundant down and elevated logs and large snags with Pileated woodpecker nest holes for denning.

* Drop all commercial logging, noncommercial thinning, and prescribed burning within any undeveloped lands.

*Drop planned "temporary" roads as these often remain on the landscape and increase access for illegal firewood (often large snag) cutting and fur trappers and for disturbance to nesting goshawks, and reduce re-opening of closed roads for the same reasons.

*Drop any commercial logging in known goshawk PFAs (apparently the known goshawk PFAs are being protected in the Wildlife Connectivity corridors, or is there overlap with commercial logging or girdling or topping large firs?), as well as in any other goshawk activity centers (nests and PFAs) discovered.

Re: deer and elk:

* Retain more overall tree density and deer and elk cover—especially by dropping sale units in cool moist and cold dry habitat and in microhabitat patches where greater density would naturally occur, such as at higher elevations, within RHCAs, on North to Northeast aspect slopes or in hollows, and in wildlife connectivity corridors.

*Road density should be reduced to at least the Forest Plan standards and objectives for elk.

Re: Redband trout and Columbia Spotted frog: See recommended remedies below, under Forest Plan violations—INFISH and PACFISH violations, below.

Please see our survey sheet priority drop sale units for these Management Indicator species, plus any additional known suitable habitat for these species in commercial logging sale units.

Other Forest Plan violations

Additional Forest Plan violations in the Morgan Nesbit project include potential violations of Forest Plan standards by further setting back attainment of INFISH/PACFISH Riparian Management Objectives; not adequately protecting the integrity of Wildlife Connectivity corridors, Old Growth Management Areas, and Potential Wilderness Areas. We also object to potentially exceeding Forest Plan limits to detrimental impacts to soils, exceeding road density and snag density Forest Plan standards, and logging and roading in any undeveloped lands of any size.

Violation of the Forest Plan Eastside Screens

PACFISH and INFISH Violations

Our comments on potential Forest Plan violations regarding failure to demonstrate adherence to PACFISH and INFISH no activity logging buffers and Riparian Management Objectives clearly state our concerns. See BMBP comments quoted and cited below:

We are strongly opposed to any commercial logging or tree removal from within RHCAs and heavy equipment use, other than for culvert replacement or installing beaver dam analogues. Heavy equipment use would impede attainment of PACFISH and INFISH Riparian Management Objectives by reducing shading by removing mature trees, reducing logs that retain moisture and slope stability, and increasing wind speeds through the stands, increasing wild fire intensity, as well as from drier micro-climate conditions and highly flammable logging slash. Heavy equipment use also introduces excess sediment into streams and fragments ground cover. Commercial logging and heavy equipment use within RHCAs reduces plant diversity and cool micro-climate habitat conditions. Logging in RHCAs also reduces future recruitment of large tree canopy, snags falling into streams that form pool refugia for fish, and down wood stabilizing slopes or forming debris jams in streams into the future.

The Big Sheep-Grossman Stand:

Drop the Big Sheep-Grossman Stand RHCA commercial logging, which does not "conserve the legacy of old structure overstory trees" but would instead degrade the Late Old Structure (LOS)/old growth habitat values. Don't feel or girdle or top any large trees >/= 21" dbh, including in RHCAs. There is a huge deficit in large tree structure compared to historic conditions. Leave all large live trees to become snags and logs into the future. We are strongly opposed to the planned: "Large trees thinned within one site potential tree length of Big Sheep Creek will be left on the ground to add large woody debris to the floodplain and benefit riparian function and wildlife habitat." This is ridiculous, since large live trees already benefit riparian functions and wildlife habitat and

will over time grow even bigger and provide big snags and bigger large wood would add roughness to the flood plain.

Fish evolved with and have adapted to high severity fire but not with logging. Fish are now known to mostly survive high severity fire, often returning after the fire, whereas logging in RHCAs is clearly detrimental to fish habitat and fish species viability. It's outrageous and unacceptable that the Forest Service would log a Category 1 RHCA adjacent to Big Sheep Creek. This is just a timber grab. The Forest Service is increasingly targeting any forest density and areas with large and mature trees for logging, no matter what the restrictions are in effect under the Forest Plan for RHCAs, MA-15 designated old growth habitat, Wild and Scenic River corridors, etc. (BMBP EA comments, p. 6, 1st, 2nd, and 3rd par.s)

Logging within the RHCA s in drainages of major high quality creeks could be extremely detrimental to water temperature, sediment, and tall tree shading on upper slopes above the drainages, foreseeably causing the high gradient streams within Big Sheep, Grouse, and Gumboot Creek drainages to no longer be suitable for Sensitive Rocky Mountain tailed frogs and for Threatened Bull trout and/or Threatened Mid-Columbia Steelhead trout downstream.

This would potentially cause major degradation of some of the highest quality creeks in the Morgan Nesbit project area, and for what? Ineffective fuel breaks? Unnecessary and destructive commercial logging in RHCAs? (BMBP EA comments, p. 16, 3rd par., last part and 4th par.)

We have no objection to addition of down wood within some streams and floodplains that need it but complex structure being tipped into streams work better for fish habitat with root wads instead of cut logs. Logs with root wads are better for creating sediment traps and debris jams and are more thoroughly anchored into their position. However larger trees >/= 15" dbh should not be used due to the deficit in large trees. Not using large trees would retain them for future large wood recruitment over time. (BMBP EA comments, p. 19, 3rd to last par.)

Extensive logging, biomass reduction, and prescribed burning in moist and wet mixed conifer and cold high elevation forest could cumulatively dry up the wet meadows, tributary streams, seeps, and riparian zones that are critical habitat components, not just for goshawk PFAs, but also for small mammal and bird prey hunting success for the whole range of species dependent on small prey, and on the long-term viability of bird and small mammal abundance. (BMBP EA comment, p. 24, 3rd par.)

We have already commented on the "Shaded fuel breaks" and non-commercial management within RHCAs. RHCAs are naturally more productive due to moister conditions, including significant moisture retention in coarse down wood and leaf litter. Biomass reduction in RHCAs is contrary to retaining riparian moisture and providing suitable microclimate habitat for amphibians, small mammals, and macroinvertebrates. (BMBP EA comment, p. 29, 1st par.)

Re: conducting timber sale logging within RHCAs:

The planned commercial logging within Riparian Habitat Conservation Areas under the proposed alternative violate the Eastside Screens embedded in the Forest Plan: "Eastside Screens have riparian standards for timber sales stating that timber operations will not be planned or located within riparian areas. These riparian standards include specific distance from the edge of the active stream channel for perennial and intermittent streams as well as fish and non-fish bearing streams."(Wildlife Specialist Report, p. 16, 3rd par.) The Forest Service should not be planning to violate Forest Plan standards embedded in the Eastside Screens as part of the proposed alternative. Based on the EA depictions and descriptions of planning timber sale operations within the established RHCA buffer zones, the Forest Service is purposefully planning to allow logging in violation of the Eastside Screens riparian standards, which are legally enforceable. (BMBP comments, p. 20, par. 1)

We are opposed to violations of the Eastside Screens, which are violations of the Forest Plan. Whatever the Forest Service calls the Morgan Nesbit timber sale, such as "Forest Resiliency Project", the proposed action alternative is planning and locating timber operations within riparian areas. (BMBP comment, p. 20, par. 2)

"Riparian areas are often used by species such as marten, thus managers typically overlap connectivity corridors with riparian areas. In addition, several Region 6 sensitive species are reliant on riparian areas such as amphibians, terrestrial mollusks, and waterfowl (see Wildlife Biological Evaluation)." (Wildlife Report, p. 16, 3rd par.) (BMBP comment quoting the Wildlife Report, p.20, 3rd full par.)

Our other RHCA INFISH/PACFISH comments supporting this objection can be found in the Endangered Species Act section below.

Resolution

BMBP has commented on the Morgan Nesbit project's potential violations of INFISH and PACFISH Riparian Management Objectives and RHCA no logging buffers. See our comments cited and quoted above.

To resolve this objection, the Forest Service needs to:

* Drop all planned commercial logging within the RHCAs. (BMBP remedy comment, p. 20)

*Drop all commercial logging, biomass reduction "fuel" breaks, heavy equipment use, and mechanical thinning, and/or any re-opening of closed roads within or adjacent to RHCAS in general and in particular within or adjacent to RHCAs that provide suitable or actively occupied Rocky Mountain tailed frog habitat and/or Columbia spotted frog habitat, as well as within or adjacent to RHCAs with suitable or occupied habitat for Threatened Bull trout, Threatened Mid-Columbia Steelhead trout, Sensitive Redband trout, and potential recovery of Chinook salmon. (BMBP EA comment, p. 16, last par.) See also Endangered Species Act violations and remedies below.

*Drop all commercial logging in RHCAs and drop all "fuel" reduction in RHCAs. RHCAs in general are used as wildlife connectivity corridors, access to water, and hiding cover.

(BMBP remedy comment, p. 8, 3rd bullet point)

Drop all non-commercial thinning in RHCA Categories 1, 2, and 3, or only where small conifers up to 9" dbh are directly competing with riparian hardwoods, where riparian hardwoods would be expected to thrive, such as in low elevation meadows, not topography confined channels at high elevations with topographic shading.

Don't remove any felled trees from within RHCAs, with preferable lopping and scattering, left whole, or masticated, not pile burned or limbed. (BMBP remedy comments, p. 5, par. 5)

Don't allow ignition for prescribed burning within RHCAS, including the Big Sheep-Grossman stand.

Aspen and Meadow Enhancement:

Drop planned girdling and topping of trees >/= 21" dbh (with tree species not specified under Aspen and Meadow Enhancement on p. 16.) Instead, the Forest Service should allow large trees grow bigger, as they would then maximize wildlife value and carbon sequestration and storage potentially over centuries, then let them become snags and logs naturally over time, continuing long-term carbon storage and wildlife habitat structure benefits. In our experience, created snags are not used much by woodpeckers or other cavity excavators.

Limit any conifer thinning in aspen stands and meadows only up to 15" dbh, so as to increase development of large and old trees, which are more fire resistant. (BMBP remedy comments, p. 6, last two par.s)

Reduce conifer thinning in aspen stands to no more than up to 15"dbh and leave conifers up to 15" dbh as snags (girdled) and down wood with no removal of cut trees.

There should only be conifer reduction for meadow enhancement up to 9"-12" dbh, as there need to be replacements for legacy old growth trees in meadows.

(BMBP remedy comments, p. 5, last two RHCA remedy par.s)

Why lop and scatter or burn the felled conifers? These are wet meadows! Why not leave the down wood for moisture retention and down log habitat? All the wood could contribute to flood plain roughness or add wood to the creek to improve aquatic habitat. (BMBP remedy comments, p. 7, 1st par.)

RHCA management:

The current degradation of RHCAs was caused by similar management now proposed for the Morgan Nesbit sale, including logging in RHCAs, potentially re-opening closed roads within RHCAs, and continued livestock grazing damage to streams and riparian conditions. Thus it doesn't make sense to repeat these past management mistakes. We want all of the management in our comments above to be dropped from the Morgan Nesbit RHCAs, including logging, heavy equipment use, biomass reduction, felling large trees, and any re-opening of closed roads. (BMBP EA remedy comments, pp. 11 (last par.) to p.12, 1st par.)

*Drop commercial logging and heavy equipment use within RHCA buffers except for conifer thinning up to 15" dbh for aspen stand recovery, which retains all conifers providing streambank stability and primary shading.

*Drop all re-opening of closed roads and construction of 'temporary' roads within, or adjacent to, RHCAs.

*Drop any planned heavy logging equipment in stream drainage crossings.

Forest Plan Management Area Guidance Violations

Re: Violation of Wildlife Connectivity Corridor Management Goals

We are strongly opposed to commercial logging and excessive "non-commercial" size thinning in wildlife connectivity corridors. We want the Forest Service to drop all commercial logging and limit non-commercial thinning in connectivity corridors, as it defeats the purpose of leaving denser areas to allow for movement of old growth-associated wildlife species, as well as native ungulates using these areas as security cover, and to provide greater habitat security in these areas compared to intensively managed stands outside these corridors.

Our comments regarding violation of wildlife connectivity corridor management intent and goals can be found below.

We do support and appreciate the mapping and planned protection of the wildlife connectivity corridors in the Morgan Nesbit area and beyond. However, the wildlife connectivity corridors seem to be a concession in return for widespread high intensity logging, which is unacceptable. The established wildlife connectivity corridors were in response to a federal advisory and requirement, not just a mitigation for the Morgan Nesbit timber sale, meaning that the wildlife connectivity corridors should be fully protected from logging, roading, and biomass reduction regardless of the outcome of the Morgan Nesbit timber sale. (BMBP EA comment, last part of the last par. of p. 8)

This is an exceptionally long list of Threatened and Sensitive wildlife species for a single proposed timber sale area, indicating that the Morgan Nesbit project area is a major wildlife corridor between the Eagle Cap Wilderness Area and Hells Canyon. Our field surveying of proposed commercial logging sale units also supports this conclusion. (BMBP EA comment, p. 9, 2nd par., in reference to Table 3)

As with Canada lynx and Pacific fisher, wolverine likely use the Morgan Nesbit project area as connective habitat between core habitat in the Eagle Cap Wilderness Area, and for wolverine, also core habitat in the remote large expanses of Hells Canyon. Both of these big wild core habitat areas have little human use compared to the size of these wild lands. (BMBP EA comment, p. 12, last par.)

4,056 acres of so-called "Shaded fuel breaks" are excessive, as this is even larger than a small Categorical Exclusion timber sale, which is usually capped at 3,000 acres. Up to 500 feet of "fuel" breaks on either side of the roads are extremely excessive and put wildlife at great risk of poaching, and loss of otherwise suitable habitat. These "thinned", masticated, and burned "fuel" breaks are contrary to providing prey habitat, more abundant snags, and denser forest habitat in moist mixed conifer forest. If any "fuel" breaks are implemented, they should be a maximum of 50 feet on either side of the road, which is still a waste of funds, wildlife habitat, and recreational values. The implementation of these massive "fuel" breaks contradict the goals of the wildlife connectivity corridors, RHCAs, MA-15 designated old growth, and elk security habitat, all of which the "fuel" breaks would overlap. (BMBP EA comments, p. 13, last par. through 1st par. of p. 14)

While we greatly appreciate the planned extensive wildlife connectivity corridors that will benefit marten and many other species, we are concerned by overlapping "Shaded Fuel Breaks" and commercial logging in RHCAs that would fragment and degrade the quality of this planned security habitat. "For instance, marten are more likely to utilize connectivity corridors that are at least 300 ft. wide within mature stands and at least 600 ft. wide when the corridor is adjacent to openings or areas with low canopy cover (Vasquez and Spicer 2005). Because martens occupy conifer forests with high canopy cover, connectivity corridors should have at least 50 percent canopy cover—though having over 70 percent canopy cover is optimum (Vasquez and Spicer 2005)." (Wildlife Report, p. 28, 2nd full par.) (BMBP EA comment, p. 22, 2nd par.)

The expansive fragmentation and loss of forest cover from proposed mostly high and moderate intensity logging would eliminate most of the suitable marten habitat outside of the planned wildlife connectivity corridors in the moist mixed conifer and cold forest stands. Science quoted or summarized in the Wildlife Report regarding marten habitat requirements support this assertion:

"Martens may become absent from an area when greater than 25 percent of the landscape (3.5 square miles) is non-forested, even with connectivity corridors present (Hargis et al. 1999). As such, forested patches with fewer large openings are more suited to support marten (Penninger and Keown 2011a)...." "[T]hey are more likely to establish their home ranges in areas with greater than 70 percent suitable habitat (Dumyahn et al. 20007)." The large scale of the planned high and moderate intensity commercial logging outside the wildlife connectivity corridors could cause enough fragmentation and loss of suitable habitat that the resident marten would no longer have a home range in the Morgan Nesbit area since there would likely be less than 70% suitable marten habitat remaining. (BMBP EA comments, p. 22, par.s 4 and 5)

We greatly appreciate the planned no management of the 24,662 acres of well-distributed wildlife connectivity corridors, which include steep slopes over major creeks and never logged forest, many of which are not economical or sensible to log. However, there should be no commercial logging within connectivity corridors, especially as extreme climate change will force more wildlife species to migrate to higher elevations or north to cooler, moister suitable habitat. (BMBP EA comments, p. 32, 1st par.)

...."Shaded fuel breaks" should not include any areas of special habitat or protective management areas designated. The 68 acres of non-commercial thinning should only be done if the small trees are excessively dense and right next to a major access road. Drop any management in connectivity corridors that are in late old structure or old growth, in multi-story cold and moist mixed conifer forest, and in high levels of shrub cover. Wildlife species using these habitats do not need humans to increase 'permeability" for old forest dependent species. All connectivity corridors where they overlap water sources and RHCAs should be dropped from any management, as commercial logging, "fuel" reduction, and even non-commercial thinning can be detrimental to rivers, streams, springs, seeps and fens. Wildlife migrating or dispersing through the connectivity corridors need dense hiding cover, thermal cover, and water sources with protective screening from predators.
(BMBP EA comments, p. 32, par. 2)

Just when I'm thinking I'm too cynical, I was astounded by this apparent quid pro quo transactional thinking: "Because there is a large amount of connectivity corridors not being treated [managed], the proposed action alternative includes a larger amount of higher intensity thinning in neighboring areas." (Wildlife Report, p. 58, last par.). This extensive unlogged connectivity corridor is critical since this is a major wildlife corridor for multiple MIS, Threatened, and Sensitive wildlife species to connect core habitat in the Eagle Cap Wilderness Area and Hells Canyon. An extensive unmanaged wildlife corridor is essential also since many wildlife species will be migrating north and to higher elevations for more suitable habitat as the southern and low elevation habitat becomes uninhabitable from extreme heat waves, prolonged droughts, and more intense wildfires. Further, there is no need to include "a larger amount of higher intensity thinning in neighboring areas." High intensity logging will not stop or reduce the intensity of a stand replacement fire—especially after the logging has taken place. Virtual clearcuts dry up microclimate conditions in the stands because so much cooling canopy shading is gone and the most fire resistant mature (and possibly large, as hazard trees) have been removed. When stands are open to that extent, wind speeds increase, spreading the fire quickly. The fire is often fueled by heavy slash in the wake of heavy logging. High intensity logging sacrifices high quality wildlife habitat, long-term carbon sequestration and storage to reduce extreme climate change effects (including more intense fires), and recreational values, such as abundant elk for hunting. (BMBP EA comments, p. 32, 3rd par.)

It's not accurate to assume that the connectivity corridors which are not planned for management will move from marginal to satisfactory cover to reduce proposed management extensive total cover reduction, as many of these corridors were dropped from management previously due to steep slopes with marginal soils that are not likely at

all to grow from assumed marginal canopy to 70% canopy cover. (See last par., p. 62-the first par. of p. 63 of the Wildlife Report) (BMBP EA comment, p. 33, 4th full par.)

Resolution:

BMBP has commented on the potential Forest Plan violation of not following management area intent and goals regarding Wildlife Connectivity Corridors. See our comments cited and quoted above.

Potential resolution remedies:

*Drop all "shaded fuel breaks" planned for within or adjacent to RHCAs, Wildlife Connectivity corridors, MA-15 designated old growth, and elk security corridors or any other special status habitat and sites, such as the Big Sheep-Grossman stand. (BMBP remedy comment, p. 14, 2nd par.)

*Drop all "Shaded fuel breaks" and commercial logging, including in RHCAs, that overlap the planned wildlife connectivity corridors. (BMBP remedy comment, p. 22, par. 3)

*Drop all 153 acres of "fuel" breaks in the wildlife connectivity corridors. Biomass reduction and non-commercial thinning for a "fuel" break completely negates the purpose of connectivity corridors for wildlife migration and dispersal for genetic viability. These "fuel" breaks would put many wildlife species at risk of increased predation, heat waves, poaching, and energy expenditure to escape increased human disturbance. Species affected would include: elk; deer; marten; wolves; possible lynx; potential Pacific fisher; wolverine; and many others, including migrating frogs. (BMBP remedy comment, p. 30, par. 3)

*Drop the 310 acres of commercial logging and the 153 acres of "fuel treatments" within the wildlife connectivity corridors, as these would remove structural complexity, denser forest cover, hiding cover from predators, and ground level shrubs and down wood for prey species. (BMBP remedy comment, p. 38, 2nd to last par.) See also the almost identical remedy comment on p. 32, 1st sentence of par. 2)

*Drop all planned commercial logging and limit non-commercial thinning to only the densest areas (that appear due to wildfire suppression) in mapped or identified wildlife Connectivity Corridors.

Potential violations of Forest Plan standards and guidelines for Old Growth Management Areas and Violations of the Eastside Screens 21" dbh rule to retain and increase live large trees >/= 21" dbh, incorporated in the Forest Plan

Our comments express our objection concerns:

The Forest Service's desire to get rid of live large Grand fir and Douglas fir 21"–30" dbh by girdling or topping (killing) the trees is driven by their intent to engage in tree species conversion to Ponderosa pine and Western larch dominance or the same tree species plantations as the timber industry preferred species. This tree species conversion eliminates most tree species diversity and moister forest type-associated plant and wildlife biodiversity. Essentially the Forest Service homogenizes the forest in size, age, and tree species for easier and standardized log production. This tree species conversion plan has little to do with the stated goals of: reducing competition for limited resources through high intensity logging extraction rather than allowing for snag and log creation and denser forest for associated wildlife; improving forest "health" but really promoting individual tree vigor, as in a tree farm; and "accelerating" the "creation" of large diameter snags, which, by killing scarce large live trees would decrease large snag and log recruitment in the future and further reduce live large trees, losing wildlife habitat structure and eliminating the potential for those large live trees to grow bigger and older, increasing long-term carbon sequestration and storage as well as greater fire resistance as the trees grow larger.

As proposed, the Morgan Nesbit Project will likely violate the Wallowa-Whitman forest plan, as amended by the Eastside Screens. The Eastside Screens require the Forest Service to "[m]aintain all reminant [sic] old and late seral structural live trees ≥21" dbh…." However, the Morgan Nesbit Final EA states that "[s]ome Douglas fir, grand fir, or white fir between 21–30-inches DBH may be girdled or topped to create large snags." FEA at 37. The Forest Service has not explained under what authority it felt it was appropriate or possible to kill large Douglas fir, grand fir, and white fir in order to create large snags in direct contravention of the Eastside Screens' standards. BMBP requests that the Forest Service provide the authority under which it is proposing to kill large trees to create snags.

It's unlikely that girdling or topping (killing) large Grand fir and Douglas fir 21"–30" dbh would meet the court reinstated Eastside Screens 21" dbh limit and since these large trees are not certified hazard trees. The 2021 Region 6 amendment to the Eastside Screens to allow large tree logging at over 21" dbh has been vacated by Judge Aiken, so that the 21" dbh limit is now in effect, and the final decision is highly likely to reinstate the 21" dbh limit to logging large live trees, since logging kills them, as girdling and topping the trees would kill them. Further there are still goals and guidelines in Blue Mountains National Forest plans that state the intention of increasing the abundance of large live trees across the Forests. Girdling and topping live large trees and thereby killing them does not comply with goals and guidelines to increase large and old tree numbers, as well as the Forest Plan 21" dbh legally enforceable standard.
(BMBP EA comments, 2nd to last par. and last par. of p. 14, into the first par. of p. 15)

In response to the last full paragraph of p. 16 of the Wildlife Report: The Region 6 amendment in 2021 to allow logging of large live trees >/=21" dbh across the Blue Mountain National Forests has been vacated by Judge Aiken, so the 21" dbh limit for logging has been reinstated. *GHCC v. Wilkes*, 2024 WL 1344067 (D. Or. Mar. 29, 2024).

Re: Late and Old Structure (LOS) and Old Growth Management Areas (MA15):

"The Forest Plan identifies 20 species as having a strong preference for mature or old growth forest including marten; American goshawks; and pileated, three-toed, and black backed woodpeckers (USDA 1990). MA15s [designated old growth areas] are required to satisfy the management requirements...for pileated woodpeckers, marten, and three-toed woodpeckers while the distribution of old growth helps satisfy the needs of American goshawks and Townsend's warbler (USDA 1990). MA15 may have evidence of human activities but will not 'significantly alter the other characteristics and would be a subordinate factor in a description of such a stand' (USDA 1990). The Forest Plan also states that new road construction will be avoided, and minimal use of heavy equipment will occur to protect snags and down wood (USDA 1990). 'Where the presence of old growth conflicts with visual resource objectives, old growth will have priority' (USDA 1990)."

Therefore, based on the Forest Plan requirements for protective management for designated old growth stands (MA15), the planned overlap of "Shaded fuel breaks" within MA15 old growth stands should not be allowed and would constitute violation of the Forest Plan, since the "fuel" breaks are planned for using heavy equipment for biomass removal and would "significantly alter" the characteristics of the old growth stands, as well as not protecting snags and down wood as part of the old growth forest structure. (BMBP EA comments, p. 20, bottom half of the page)

Both Figures 10 and 11 reflect about a century of logging out large trees >/= 21" dbh through extensive and repeated timber sales in the same areas as prior logging. High-grading removal of large trees and high intensity logging, including clearcutting, has not allowed many mature trees to grow into large and old trees to replace the deficit in large and old tree structure. Loss of historic levels of large and old forest structure has greatly diminished wildlife habitat suitability for species associated with abundant large live trees, snags, and logs, complex tree structure, and denser mature and old forest. This loss of habitat has contributed to the decline of many MIS and TESC wildlife species. The Forest Service needs to stop relentlessly removing mature trees that would otherwise grow into large and old trees for wildlife species, TESC fish species, and for retaining and increasing forest carbon sequestration and storage to reduce catastrophic climate change effects, including wild fire, droughts, heat waves, and severe storms.
(BMBP EA comments, last par. of p. 27 and into the first par. of p. 28)

We are strongly opposed to retaining "large sized dominant trees <u>in lower numbers,</u>" which implies logging or felling large trees as part of the "fuel" breaks, in violation of the re-instated 21" dbh limit for felling live trees >/= 21" dbh that are not certified hazard trees. Large and mature trees are the most fire resistant due to development of thicker bark and higher live crowns. So killing, felling, or logging large trees is contrary to the purpose of "fuel" breaks. The Forest Service needs to allow more mature forest stands grow into late and old structure and old growth for greater fire resistance.

In the Morgan Nesbit sale area, there are already many natural and unnatural fire breaks, including meadows, grasslands, ridgelines, roads, and natural openings.
(BMBP EA comments, p. 29, 2nd par. and first sentence of the 3rd par.)

The EA states that the Morgan Nesbit sale will not cut large trees >/=21" dbh. See Table 4 on EA p. 11. The 21" dbh limit has been reinstated because Judge Aiken vacated the 2021 Region 6 amendment of the Eastside Screens regarding the 21" dbh limit for cutting (or logging) large trees that are not certified hazard trees. Girdling and topping of Grand fir and Douglas fir 21" dbh to 30" dbh is just an underhanded way to get around the 21" dbh limit to execute tree species conversion. (BMBP EA comments, p. 31, 2nd full par. after two * remedy comments)

The Forest Plan also states that new road construction will be avoided, and minimal use of heavy equipment will occur to protect snags and down wood (USDA 1990). 'Where the presence of old growth conflicts with visual resource objectives, old growth will have priority' (USDA 1990)." (BMBP EA comment, p. 20, 5th par., last two sentences)

Resolution:

Our comments above have expressed our objection concerns in detail. Many of our comments also express suggested remedies for partial objection resolutions:

*Drop all girdling or topping of Grand fir, Douglas fir, or any other tree species 21" dbh to 30" dbh or greater as "The Morgan Nesbit proposed action alternative will retain all trees over 21 in. DBH" (Wildlife Report, p. 56, underlining emphasis ours), not kill them, which is not retaining them as live trees. (BMBP remedy comment, p. 31, 3rd remedy comment)

*Drop all "shaded fuel breaks" planned for within or adjacent to RHCAs, Wildlife Connectivity corridors, MA-15 designated old growth, and elk security corridors or any other special status habitat and sites, such as the Big Sheep-Grossman stand.

*Drop the 2,334 acres of mechanical thinning and don't fell, log, girdle, or top any large trees or log any mature trees within the shaded "fuel" breaks.

(BMBP remedy comments, p. 14, 1st and 2nd remedy comments after the first par.)

* We are strongly opposed to violations of the Forest Plan standards for designated old growth stands (MA15). Drop all overlap of "Shaded fuel breaks" proposed with MA15 old growth stands, RHCAs, Wild and Scenic River corridors, and Scenic Byways or other Forest Plan Management Area standards, including visual quality standards.
(BMBP remedy comment, p. 20, last par.)

*Drop the 27.4 acres of "fuel treatments" proposed in three different MA15 Old Growth Preservation areas. See Wildlife Report, p. 100.

*Drop any "temporary" road construction or re-opening of closed roads within MA 15 Old Growth Management Areas. See the BMBP comment on p. 20 quoting the Forest Plan regarding avoiding road construction and only minimal use of heavy equipment to protect snags and down wood above.

*The MA 15 Old Growth Management Areas are also not supposed to be logged, so all commercial logging, road work, and heavy machinery use beyond "minimal use" should be dropped, such as with commercial logging or extensive use of heavy equipment for biomass reduction "fuel" breaks.

Road Concerns regarding miles of "temporary" road construction and re-opening of many miles of currently closed roads potentially violating road density standards:

Our comments regarding impacts to wildlife species sensitive to disturbance explain our position: See also our comments regarding deer and elk security concerns. Temporary" roads and re-opening of currently closed roads also have very long-term loss of soil productivity, up to 70 years or more, and also can channel excess sediment into stream systems to the detriment of aquatic species, especially fish species.

Temporary Road Construction:

*Drop all 18 miles of "temporary" road construction or re-opening of "existing disturbance" or closed roads. "Temporary" roads increase: human disturbance, illegal firewood cutting, non-system ATV routes, access for fur trapping, access for livestock and increased introduction and dispersal of invasive exotic plants. In our experience, "temporary" roads are hardly ever fully decommissioned and are often re-used as "existing disturbance". Thus they become de facto system roads, increasing road density and associated road impacts.

We support decommissioning of 17.4 miles of road decommissioning. We support decommissioning of roads that are: overgrown; redundant; unnecessary; have very little use; or have been closed for elk or other wildlife security habitat, have been causing erosion and sedimentation of streams; and/or are hydrologically connected to riparian areas, as well as user-created roads, roads in Inventoried Roadless Areas and Municipal Watersheds or other undeveloped lands, or are causing other ecological damage or fragmentation of aspen stands, springs, rivers, or other RHCAs. (BMBP comments on p. 7, 2nd and 3rd par.s)

As the Wildlife BE states: "gray wolves are more strongly associated with areas that have lower human presences (1.5 humans or less per square mile) and lower road density (less than 1.35 miles per square mile) (Belongie 2008, ODFW 2019)." (Wildlife BE, p. 24, last par.) So we are strongly opposed to logging or roading in remote areas with few roads that don't have much traffic and never logged areas, which also would benefit potential Canada lynx, Wolverine, potential Pacific fisher, Pacific marten, and Rocky Mountain elk. (BMBP EA comment, last par. p. 12 into 1st par., p. 13) Notably, the Morgan Nesbit project area's extensive road network could be harming all of these wildlife species in the project area, with known Threatened wolverine occupied habitat; Pacific marten documented in the project area through bait stations and trail cameras; Rocky Mountain elk, based on many sightings and elk sign throughout the project area; (as well as many elk hunters); the documented local Gray wolf pack and the likely use of the area—especially in the winter when there's not much human disturbance—by Canada lynx, and Pacific fisher, as well as the Gray wolf pack.

Where were these four road killed wolverines? The Wildlife BE says that "in 2018 there were at least four wolverine mortalities due to vehicle collisions (USDI 2023)." (Wildlife BE p. 29, last par.) See the rest of this paragraph for a list of wildlife species killed by motor vehicles. For instance, "Over the last four years (2019-2022), ODFW reported eleven wolf mortalities from vehicle strikes. On average, ODOT documents more than 6,000 vehicle collisions with deer and elk each year. A recent study estimated that between 89 million and 340 million birds die annually in vehicle collisions on United States roads (USDI 2023)." (Wildlife BE, p. 29, last par.)

Other reasons for not constructing "temporary" roads and not re-opening closed roads, as well as fully decommissioning roads that should be closed, include: "wolverines have been documented as avoiding areas with increased traffic noise and light pollution (Scrafford et al. 2018, Barrueto et al. 2022). Non-system tracks—created when motorized vehicles leave the road prism and results in resource damage—can exacerbate habitat fragmentation, compact soil, and decrease plant biodiversity (Wisdom et al. 2000)...road development and maintenance can compact soils, alter nutrient cycling processes, remove microhabitat, increase erosion, and increase opportunities for dispersed camping in terrestrial mollusk habitat (Jordan and Black 2012, Douglas et al. 2013, Blackburn et al. 2021)." (Wildlife BE, p. 29, 1st full par.) (BMBP EA comments and quotations on p. 13, the 1st and 2nd full par.s)

Resolution

BMBP has commented on our concerns re: 'temporary' road construction and the re-opening of miles of currently closed roads. See our comments cited and quoted above. Many of our suggested resolution remedies are already requested under the heading of other issues, such as ESA—re: Gray wolf, potential Clean Water Act violations, and under NFMA—MIS viability.

*Drop all 18 miles of "temporary" road construction or re-opening of "existing disturbance" or closed roads (BMBP EA comment remedy, p. 7, 2nd par.)

*Drop all construction of "temporary" roads and re-opening of closed roads. (BMBP remedy comment, p. 8, 2nd remedy)

*Reduce road density for Threatened-listed wildlife species, Management Indicator species, and other species viability by not constructing any "temporary" roads (which tend to be re-used or continuously used by the public), not re-opening closed roads, and decommissioning all roads that are: overgrown; redundant; unnecessary; ecologically damaging; hydrologically connected; within RHCAs; little used; and/or fragmenting wildlife connectivity corridors, [in] large blocks of core wildlife security habitat, or [in] any undeveloped lands or never logged forest. (BMBP remedy comment, p. 22, last par.)

*Drop the re-opening of closed roads that were closed for ecological protection reasons, such as hydrological connections, soil erosion, and wildlife disturbance, as well as closed roads that have already grown over, or would require reconstruction.

*Drop re-opening of closed roads and 'temporary' road-building in, or adjacent to RHCAs.

*Drop all 'temporary' road construction.

*Decommission fully all roads within RHCAs except for major roads not causing ecological damage.

*Reduce overall road density to less than Forest Plan standards, based on best available science.

Potential Violation of Snag Density Requirements

Our comments explain our objection regarding potential violation of Forest Plan snag density standards and guidelines, based on the extensive high intensity logging proposed. Our comments highlight our concerns over the elimination of future large snags by logging large hazard trees and by logging too many existing mature trees, reducing future mature and large snag recruitment into the future.

We are concerned that the current deficit in abundant and large snags due primarily to past and ongoing extensive logging of mature trees is being perpetuated, including high intensity logging with very low basal area retention. The proposed alternative would cumulatively reduce existing and future snags significantly, potentially violating the snag density and size requirements.

See below examples of our comments emphasizing the Management Indicator species' habitat requirements for abundant and large snags, including snag density requirements for MIS Primary Cavity Excavating woodpecker species and other MIS dependent on abundant or large snags:

"Martens select home ranges with larger forested patches, fewer large openings, increased stand complexity, diverse understory community, and abundant snags and down logs (Chapin et al. 1998, Wisdom et al. 2000, Bull and Heater 2001, Vasquez and Spicer 2005, Zielinski 2014, Moriarty et al. 2016)....Marten disproportionately selected habitat patches that were unharvested and comprised of late-successional stands within their home ranges (Bull and Heater 2001, Vasquez and Spicer 2005, Farnell et al. 2020)....it is recommended that land managers provide patches of uncut forest greater than 247 acres to maximize core area and minimize edge effect...thus increasing the carrying capacity of the landscape (Povtin et al. 2000, Wisdom et al. 2000, Wales 2011a). To provide suitable marten habitat, the distance between habitat patches should be less than 0.6 miles...(Vasquez and Spicer 2005)." (Wildlife Report, p. 29, 2nd par.) (BMBP EA comment quoting the Wildlife Report)

DecAID 2023 science findings support retaining much more down wood for marten and retaining more snags than would be left after high intensity logging (the majority of the commercial sale units) and most moderate intensity logging. 50% of the marten population was found to use 8 snags per acre over 10"dbh and four snags per acre over 20" dbh, with denning snags at least 30.7" dbh to 32.4" dbh—in Eastside Mixed Conifer

habitat. (See Wildlife Report, p. 31, 2nd par.) (BMBP EA comment quoting the Wildlife Report) (BMBP comments on p. 23)

Science studies support the need to retain abundant snags and logs, and down wood and shrubs for birds and mammals that provide prey for goshawks: "A decrease in snags and down wood could negatively affect American goshawk nest success if it results in a substantial reduction in either prey abundance or distribution (Bull and Hohmann 1994, USDI 1998)." (Wildlife Report, p. 33, 1st par.) (BMBP EA comment with supporting Wildlife Report quotation, p. 23)

"Habitat suitability in northeastern Oregon was reduced in areas that had substantial grand fir harvested (Bull and Holthausen 1993). This is because these harvested units decreased the number of snags and amount of down wood thus negatively impacting prey availability while also limiting potential nest and roost trees or snags (Bull and Holthausen 1993). Foraging stands were 75 percent grand fir (Bull and Holthausen 1993). Half of the foraging area consists of greater than 60 percent canopy closure (Bull and Holthausen 1993)." (Wildlife Report, p. 37, 1st par.) (BMBP EA comment, quoting the Wildlife Report, p. 26 of our comments)

"Because primary cavity excavator populations are limited by snag availability (e.g., DBH, height, tree species, etc.), secondary cavity nesters, such as bats and marten who rely on the cavities formed by primary cavity excavators, are also limited (Bull 1986, Wisdom et al. 2000)." (Wildlife Report, p. 41) (BMBP comment, p. 26, quoting the Wildlife Report as expressing our concerns)

Based on DecAID 2023 science, for all Primary Cavity Excavators, the Forest Service is not retaining enough mature trees to provide enough future snags per acre of 11-35" dbh at the abundance level of up to 30 snags per acre that are 10" dbh or greater, including about 8 of those snags per acre being greater than 20" dbh, as well as to recruit down wood ranging from 22 to 33" dbh logs, given the scale of cumulative removal of mature trees from current, past, and proposed timber sales, including the foreseeable outcome of the Morgan Nesbit sale proposed alternative. (BMBP comment, p. 27, par. 1)

Resolution:

BMBP has commented on our objection that the Morgan Nesbit Project proposed actions could lead to a significant reduction in existing and future snag density and abundance in potential violation of Forest Plan standards. Our remedy comments below are specific to the proposed alternative management actions:

*Prioritize providing high quality abundant habitat for the Pacific marten as a Management Indicator species that is also vulnerable to climate change. Drop all commercial logging and biomass reduction, as well as prescribed burning in suitable Pacific marten habitat. See our survey sheets and sample photos, including descriptions of photos, as I will not be able to send all of them [photos] to you. Our survey sheets have information as to habitat parameters, such as old growth counts, abundance of logs and snags, high canopy closure, and tree species composition, as well as evidence of

historic mixed conifer and plant community indicators. Forest Service data sources from the field should also be helpful for identifying good marten habitat, along with photos of marten taken by trail cameras or from bait station photos. We had a sighting of a marten in a commercial sale unit near Lick Creek. (BMBP EA comment, p. 35, 1st par.) See also the other partial remedies for the Pacific marten's viability under MIS viability, above.

*Drop all never logged forest and old growth or LOS forest from commercial logging and biomass reduction re: retaining large live trees, abundant large snags and abundant down wood to support viable populations of American goshawks, their prey, and many other wildlife species, such as Management Indicator species, including Pileated woodpecker, American marten, and Primary Cavity Excavators, as well as Sensitive Pacific fisher. (BMBP EA Comments, p. 24, 4th par.)

*Protect all suitable Pileated woodpecker habitat by not logging it or removing biomass, including snags and logs. The Pileated woodpecker represents the habitat needs for the many wildlife species dependent on old growth habitat with large snags and logs, and high canopy closure, which include other Primary Cavity Excavators and MIS Pacific marten. (BMBP EA remedy comment, p. 26, 3rd to last par.)

*More snags and down wood need to be retained for Primary Cavity Excavators. Drop all the best PCE foraging habitat from commercial logging and biomass reduction. Leave far more forest unlogged, for there are far more snags and logs in never logged habitat. Reduce road density so as to retain more snags and logs, since large live trees and snags are felled as hazard trees along road ways and within commercial logging sale units. (BMBP remedy comments, p. 27, par. 2)

*Drop all topping and girdling of large Grand firs and Douglas firs in order to have longer term availability of large live trees for wildlife species using large live trees for nesting, denning, and foraging, and for long-term recruitment of large snag and log foraging habitat and longer term availability of large snags for nesting. Further, most woodpeckers do not show the same interest in created snags as in naturally decayed snags, which have more insects for foraging and more soft, decayed wood for nesting holes. (BMBP EA remedy comments)

*Drop all commercial logging and roading in undeveloped lands, including the never logged commercial sale units on the steep slopes off the canyon ridges and adjacent to the Eagle Cap Wilderness. See our survey sheets for commercial sale units that have never been logged in order to drop the commercial logging and road work in those sale units. Never logged forest usually has much more abundant and large snags than logged forest. Never logged forest usually has a higher abundance of snags and more large snags for wildlife due to past and ongoing logging of mature and large trees, preventing mature trees from becoming large and depleting the already low levels of large trees, including large live trees, large snags, and large logs into the future. (BMBP EA remedy comments)

*Re: Primary Cavity Excavating woodpecker viability: Protect large snags and groups of snags and significantly reduce snag loss by reducing mature tree logging, especially in

the 15–21" dbh range and by dropping "temporary" road construction and closed road reconstruction to reduce loss of snags through hazard tree felling. (BMBP EA comments)

Resolution to our objection regarding snag density includes the following modifications to the Morgan Nesbit project:

*Increase the lowest basal area in the variable density retention range to be at least 80 square feet of basal area in dry Ponderosa pine forest and at least 100 square feet of basal area in the mixed conifer stands, with higher average basal areas to allow for more natural rates of mortality over time to create snags and down wood into the future.

*Reduce the scale of commercial logging and snag reduction overall by dropping best wildlife habitat sale units based on our survey sheets, including moister mixed conifer habitat suitable for Pileated woodpecker and American marten, and stands with abundant snags currently suitable for Primary Cavity Excavating woodpeckers. Small diameter non-commercial thinning up to 9" dbh could usually still be done in these stands without harming the woodpecker species.

*Reduce planned re-opening of closed roads as suggested above under Road Density to reduce the amount of hazard tree felling involved and prevent future increased illegal snag felling for firewood.

*Drop the construction of 'temporary' roads, as these provide access for illegal snag felling for firewood as well as increasing project-associated hazard tree snag felling.

*Buffer and protect existing large snags and pockets of abundant snags from logging.

Potential Violation of Soil Protection Standards

Our comments explain our objections regarding potential violations of the detrimental soil impact standard:

We are concerned that most soils in the Morgan Nesbit project area has "a surface that formed or is strongly influenced by volcanic ash loess." (p. 7, 3rd to last par.) Ash soils are irreplaceable except on a geologic time scale, as the eruption of Mount Mazama that caused Crater Lake about 7,000 years ago spread the ash into top soil across the entire region. Such a quantity of ash soil being spread that far is unlikely to occur within our lifetimes. Thus the Forest Service should not be logging on steep slopes and displacing ash soil sediment into streams. Ash soils are critical for water retention, which is especially critical during extreme heat waves and prolonged droughts under climate change.

We observed a lot of past logging damage within many of the commercial sale units, including repeated logging such as overlapping high-grading and commercial thinning. The Soil Report confirms our field observations of considerable extensive damaged soil areas, showing cumulative long-term negative effects of too much logging, roading and ground disturbance related soil impacts. The Forest Service needs to stop logging the

Morgan Nesbit project area. Obviously the Project Design Criteria and Best Management Practices are not sufficient to restore soil compaction, nutrient loss, and other long-term soil impacts.

There are a lot of unregenerated skid trails in many of the sale units. See our survey sheets and sample photos showing unregenerated skid trails and old logging roads.

We are concerned by loss of moisture retention and loss of soil nutrients and carbon inputs from logging, especially in moist mixed conifer regarding moisture retention.

(BMBP EA comments all on p. 39, above)

We agree that: "Non-commercial and fuel treatments can also have a negative effect on soil chemistry and nutrient cycling such as carbon budget of forest ecosystems and thus wildlife if adequate down wood is not retained (Muller et al. 2005, Peng and Thomas 2006)." (Wildlife Report, p. 52)

We support the use of updated science that recommends leaving more down wood per acre than the outdated Forest Plan and the Eastside Screens, as well as updated science supporting greater snag abundance, both of which better simulate never logged reference conditions.

(Both BMBP EA comments above are on p. 29, 5th and 6th par.s.)

Resolution

BMBP has commented on the potential for detrimental soil impacts on a large scale and with high logging intensity that may violate the Forest Plan detrimental soil impact standard, with comments quoted and cited above. The following comments incorporate suggested remedies to avoid widespread detrimental soil impacts:

*Drop all steep slope logging, including tethered logging.

*Drop all 7,975 acres of shallow soils from heavy equipment use, including logging and biomass reduction.

*Drop all 750 acres of hydric soils from heavy equipment use and biomass reduction, as well as road construction.

*Drop all high intensity and moderate intensity logging on ash soils.

*Drop all logging in RHCAs.

(BMBP EA remedy comments on p. 39)

Further soil impact resolution remedies:

*Drop sale units which are acknowledged to have already high degrees of detrimental soil impacts or sensitive soils likely to lead to violation of Forest Plan standards for soil protection with proposed management.

*Drop logging of any slopes greater than 35% to reduce potential erosion, loss of soil integrity, and potential sedimentation of creeks, if adjacent.

*Drop any sale units or parts of sale units unlikely to meet Forest Plan standards for detrimental soil standards without further mitigation, as mitigation is unlikely to be 100% effective.

Undeveloped Lands and Potential Wilderness Areas

Blue Mountains Biodiversity Project has long-standing concerns over the logging and roading of undeveloped lands, which are some of the last strongholds for wildlife and unimpeded natural ecological processes to occur outside of roadless areas and Wilderness Areas.

We field surveyed never logged, "originally proposed commercial sale units west of Lick Creek in wet mixed conifer that could be overlapping [the wolverine] Stormy's territory, next to the Eagle Cap Wilderness Area. All of those sale units west of Lick Creek and the four digit road heading south should be dropped as big blocks of contiguous never logged good mixed conifer habitat for elk and wolverine security. Some of these sale units may have been dropped but it is not clear that all of them have been dropped.

That area is also an important Potential Wilderness Area or extension of the Eagle Cap Wilderness, to which it is adjacent. Retaining that never logged security habitat adjacent to the Wilderness is critical to protect intact in its existing condition in order to meet Oregon's goals to protect 30% of forest area to significantly reduce loss of forest carbon sequestration and storage to meet the 2030 goal for reducing climate change effects. All elk and wolverine security habitat needs to be protected from logging, roading, and biomass reduction—also as potential habitat for Canada lynx, Pacific fisher, and Gray wolf. (BMBP EA comments, p. 18, last two full par.s)

These wildlife species—Threatened Wolverine, Threatened Canada lynx, Sensitive Pacific fisher, and Threatened/Sensitive listed Gray wolf—are all rare, declining compared to historic populations, and at risk of up-listing to Threatened or Endangered species, so at risk of extirpation and eventual extinction. These wildlife species are also far ranging, which means they need very extensive suitable habitat to provide genetic diversity and to provide sufficient prey or scavenged kills, and to migrate to wild, remote lands to protect themselves from trapping and poaching. See more information regarding the need for suitable habitat for these wildlife species in our comments, in the Endangered Species Act section of the objection below.

The never logged sale units show near reference conditions, especially with tree species composition and large and old tree structure. There is never logged moist or wet mixed conifer along creeks and within drainages or near fens. There is also considerable wet

mixed conifer with riparian hardwoods along creeks next to the Eagle Cap Wilderness Area, with very lush but mostly open forest cover from past fires, with patches of denser mixed conifer in never logged forest, which also has more Western larch due to the fires and no past logging. (BMBP remedy comments, p. 27, middle of 3rd par.)

Never logged forest areas are very valuable as scientific evidence of reference conditions by which to determine adaptive management and to support far ranging wildlife species that depend on extensive suitable habitat within which they evolved and adapted. The far-ranging predators and migrating native ungulates such as elk, moose, and Bighorn sheep, mostly avoid human disturbance and follow seasonal migrations for forage and reproductive security.

Resolution:

Our comments support the need to leave undeveloped lands and Potential Wilderness Areas protected as unmanaged to support Threatened and Sensitive wildlife species that are known to be in the project area—including Threatened wolverines and a local Gray wolf pack—or likely to inhabit the adjacent Eagle Cap Wilderness Area and to use the project area, especially when there is less human disturbance at the lower elevations of the project area. See our partial objection resolution remedies for undeveloped lands and Potential Wilderness Areas below:

For the protection of Wolverine, Gray wolf, and potential Canada lynx and Pacific fisher, there should be no more road access through "temporary" road construction and re-opening closed roads, also for retaining and increasing elk security habitat. Late and Old Structure or old growth should be dropped from logging, along with biomass "fuel" reduction in potential habitat for Wolverine, Pacific fisher, and American marten, which would also benefit many other wildlife species, such as Primary Cavity Excavators. (BMBP remedy comment, pp. 18 (last par.) to first par. of p. 19)

*Drop all logging in moist mixed conifer forest and cold forest habitat which could be suitable for any of these Threatened-listed species, as well as the Imnaha wolf pack and any additional Gray wolves, which could be up-listed to Threatened if numbers of Gray wolves decline due to poaching, poisoning, roadkill, and killing by ranchers and the Oregon Department of Fish and Wildlife.

*Drop all logging in remote areas with little access by roads and where there is planned closure of access spur roads.

(BMBP EA remedy comments, p. 8, 4th & 6th par.s)

These suggested additional conservation measures would also benefit many other wildlife species, including Management Indicator species (MIS) Pacific marten, Pileated woodpecker, and Rocky Mountain elk, as well as any Sensitive Pacific fisher in the area. The Morgan Nesbit sale units have some of the highest amount of wildlife signs and observations in sale units—especially never logged sale units—that I have ever seen in a timber sale area from my field surveying of proposed timber sales over 33 years. (BMBP EA comments, p. 8, 1st full par.)

Further partial resolution remedies and requests re: undeveloped lands and Potential Wilderness Areas:

*Please clearly identify the location and size of any undeveloped lands identified by the Forest Service so that we can evaluate which areas are artifacts of the GIS system not recording early past logging, and which have likely never been roaded or logged.

* Drop any logging in undeveloped lands. We are strongly opposed to any logging or other development in such rare relatively pristine areas, which serve as scientific reference conditions, undisturbed wildlife habitat, fish strongholds, and primitive recreation areas

* We are opposed to converting unmanaged lands to managed lands wherever they exist.

III. The Morgan Nesbit Project Would Violate the Endangered Species Act

We are very concerned that the Forest Service is not adhering to the intent and management guidance of the Endangered Species Act, based on the lack of analysis for each Threatened, Endangered, Sensitive and Candidate (TESC) wildlife species. See the NEPA section under Inadequate Effects Analysis for Direct, Indirect, and Cumulative effects above, which focuses on inadequate effects analysis for TESC wildlife species and effects to their suitable habitat—in both the original EA and the final EA, and not covered in the Wildlife Report. We are concerned regarding Forest Service disregard for the need to maintain sufficient suitable habitat and conditions to prevent a trend toward federal uplisting for Threatened/Sensitive-listed Gray wolf; Threatened Wolverine; potential Sensitive Pacific fisher and Canada lynx; Threatened Bull trout and Mid-Columbia Steelhead trout; Sensitive-listed Columbia Spotted frog and Redband trout; Threatened Whitebark pine and Sensitive-listed plant species; All of these species have known active or potential suitable habitat in the Morgan Nesbit project area that is potentially threatened by proposed management actions on a landscape scale.

Our comments explain our concerns regarding violation of the Endangered Species Act through planned management degradation or elimination of suitable and core habitat setting back species recovery, threatening loss of population viability, or otherwise contributing to a federal uplisting trend for the species:

There is no in-depth, detailed effects analysis in the Wildlife Biological Evaluation for individual TESC (Threatened, Endangered, Sensitive, and Candidate for uplisting) wildlife species analysis for TESC species inhabiting the Morgan Nesbit project area or who are suspected to be using the area. These include Threatened-listed Wolverine, potential Threatened Canada lynx, and Gray wolves, whose TESC status shifts depending on location and fluctuations of the population. Sensitive wildlife species that are known or suspected to be within the Morgan Nesbit project area include: Lewis' woodpecker; White-headed woodpecker; Columbia Spotted frog; Rocky Mountain tailed frog; Pacific fisher; Bighorn sheep; three species of bats: Fringed myotis, Pallid bat, Spotted bat, and Townsend's Big-Eared bat; seven mollusk species; seven butterfly species; and three Bumblebees; and five additional bird species with Peregrine falcon and Bald eagle most

likely to be negatively affected by proposed management actions in the Morgan Nesbit project area. (See Table 3 for more Sensitive species names and habitat characteristics.)

This is an exceptionally long list of Threatened and Sensitive wildlife species for a single proposed timber sale area, indicating that the Morgan Nesbit project area is a major wildlife corridor between the Eagle Cap Wilderness Area and Hells Canyon. Our field surveying of proposed commercial logging sale units also supports this conclusion. (BMBP EA comments above from p. 9 of our comments, 1st two par.s)

There is no sufficient detailed analysis for Sensitive Pacific fisher, even though there is suitable habitat in the project area and adjacent to it. There have been sightings in the Wallowa Mountains nearby since reintroduction of Pacific fishers in 1960 and 1961 there. Canada lynx have been detected on the Wallowa-Whitman National Forest and also did not receive sufficient detailed analysis as to where they were located on the Wallowa-Whitman National Forest and their potential to use the Morgan Nesbit. Are there Canada lynx in Hells Canyon or in the Eagle Cap Wilderness Area? Where does potential habitat for Pacific fisher and lynx exist in the Morgan Nesbit habitat? We assume that old growth moist mixed conifer habitat would be suitable habitat for Pacific fisher and that Lodgepole pine stands with Snowshoe hares would be good winter foraging habitat, both of which exist in the Morgan Nesbit project area. The Wildlife Biological Evaluation and the Wildlife Report do not answer these basic questions that would usually be part of the detailed analysis in an Environmental Assessment, the Biological Evaluation, and any Wildlife Report. The adjacent Eagle Cap Wilderness Area proximity greatly increases the potential for Canada lynx and Pacific fisher to be using the Morgan Nesbit project area.

There is no analysis in the BE of the benefits to TESC wildlife species from the No Action alternative. Without any analysis of the ecological benefits of the No Action alternative, the No Action alternative loses its usefulness for an unbiased comparison between the effects of existing conditions versus the effects of the proposed actions in alternative 2.

The Wildlife Biological Evaluation mostly just identifies relevant laws and reiterates generalized effects from the Wildlife Report. (BMBP EA comments above in order on p. 9, 3rd, 4th, and 5th par.s)

A return to a mythic, blanket "prescription" to return to an assumed historic range of variability does not necessarily benefit any of the TESC wildlife species, and many other wildlife species, since logging, biomass reduction, increased road density, and increased human access are primary causes of many species' declines—all of which are planned under the proposed action alternative for the Morgan Nesbit timber sale "project". (BMBP EA comment, p. 10, 3rd par.)

It can't be demonstrated that: "The proposed action alternative (preferred) would have 'No Impact' or 'No Effect' on PETS [TESC] lacking potential distribution of suitable habitats within the analysis area" when there is no sufficient detailed, in-depth analysis for each PETS (or TESC) wildlife species. Further, it is damning that: "No population surveys were conducted for any of the species addressed in this Wildlife Biological

Evaluation." (Wildlife BE, p. 16) How can it be known that Threatened and Sensitive wildlife species don't exist in the project area when no population surveys were done within the project area for any of the species addressed in the Wildlife Biological Evaluation? With Pacific fisher sightings having occurred (with no dates or locations given, there could be Pacific fishers using the project area. Canada lynx are likely to be using the project area since it is adjacent to the Eagle Cap Wilderness Area, which has great high elevation habitat for lynx with very little human disturbance. (BMBP EA comments, p. 10, 5th par.)

There is no detailed effects analysis for either the wolf pack or the wolverines documented in the area—with one named Stormy and another one sighted after a wildfire. Table 3 does not provide sufficient in-depth analysis for Threatened and Sensitive species.

For instance, there is no detail about the Imnaha wolf pack use of the area, as a special status species with a recovery plan and stakeholder groups to determine Oregon's wolf management. Why isn't it disclosed in the EA or Wildlife BE whether there are wolf dens or rendezvous sites within the project area? Where were the wolverines sighted? There's no analysis to answer these basic questions. (BMBP EA comments above, from p. 10, 6th and 7th par.)

I have had two positive daylight sightings in Wheeler County of lynx where there is much less core habitat for lynx than in the Morgan Nesbit project area. These sightings were a few years apart in the mid-2000's in dry Ponderosa pine/Douglas fir forest with interspersed private and BLM lands, and the other was a lynx crossing Highway 19 to the John Day River, at about only 1,000 feet in elevation, with both sightings in the summer. So it's not like lynx no longer exist in eastern Oregon.

Likewise, I have had two night sightings of what could only be Pacific fishers—one in the Heppner District of the Umatilla National Forest and the other on the Sisters District of the Deschutes National Forest, crossing Highway 20 between Sisters and Suttle Lake. Three or four volunteers saw a Canada lynx in high elevation Lodgepole pine habitat with mixed conifer crossing a spur road in the afternoon in the Paulina District of the Ochoco National Forest in about 2003. Another volunteer and I had a positive daylight sighting of a Pacific fisher running down a huge Douglas fir log right in front of us about 15 feet away in appropriate moist mixed conifer old growth habitat at about 6,000 feet elevation in a Wolf timber sale unit on the Ochoco National Forest also on the Paulina District in the mid 2000's. Thus we know that Pacific fisher can be found where they are not documented to exist.

The analysis in the Wildlife BE seems very disorganized, with very disparate wildlife species lumped together that have distinct habitat requirements that are not the same as the other species' habitat needs. It's confusing, with skipping from one species to the next. Whether it is intentional or not, of just rushed, this generalized analysis seems geared toward avoiding in-depth, detailed analysis for each species at risk from proposed management actions. (BMBP p.11, first three par.s in order, above)

Commercial logging in RHCAs would likely result in: "A significant increase in tree mortality or removal, loss of down wood, alteration of microhabitats that increase stream temperatures, and increased sedimentation is more likely to negatively affect amphibian habitat and survival." (Wildlife BE, p. 20). Logging within RHCAs and using heavy equipment is likely to degrade habitat for Sensitive Columbia Spotted frog and Rocky Mountain tailed frog, as well as for Sensitive mollusk species and for Threatened and Sensitive fish species, which likely include Threatened Mid-Columbia Steelhead trout, potential Threatened Bull trout, and Chinook salmon recovery, as well as Sensitive Redband trout. (BMBP EA comment, with Wildlife BE quotation, p. 12, 3rd par.)

Increased water temperature and excess sediment into streams are likely to result from logging in RHCAs. Some amphibians could be crushed by logging heavy equipment use. Yet there is no detailed in-depth analysis for effects to each TESC aquatic or riparian-associated species. (BMBP EA comment, p. 12, 4th par.)

While numerous science citations and short summaries or conclusions regarding wolverines avoiding areas with too many humans or human disturbance (on p. 24 of the Wildlife BE, last par.), there is no follow through as to where suitable wolverine habitat exists within the sale area outside of the wildlife corridors. Since a wolverine pair's home range is up to about 150 square miles, wolverine must be using less than ideal habitat within their home ranges. It's likely that wolverines may travel and scavenge road kills and the remains of hunters' kills and cougar kills, as well as winter mortality carcasses from cold, lack of forage, and severe storms. These sources of food would all be available in the Morgan Nesbit project area, especially as it is a favored area in which to bow hunt and rifle hunt. We had a hard time finding a camp site during bow hunting season due to so many hunters, and watched rifle hunters pouring in days before the rifle season started. (BMBP EA comments, p. 12, 6th par.)

As with Canada lynx and Pacific fisher, wolverine likely use the Morgan Nesbit project area as connective habitat between core habitat in the Eagle Cap Wilderness Area, and for wolverine, also core habitat in the remote large expanses of Hells Canyon. Both of these big wild core habitat areas have little human use compared to the size of these wild lands. (BMBP EA comment, p. 12, 7th par.)

As the Wildlife BE states: "gray wolves are more strongly associated with areas that have lower human presences (1.5 humans or less per square mile) and lower road density (less than 1.35 miles per square mile) (Belongie 2008, ODFW 2019)." (Wildlife BE, p. 24, last par.) So we are strongly opposed to logging or roading in remote areas with few roads that don't have much traffic and never logged areas, which also would benefit potential Canada lynx, Wolverine, potential Pacific fisher, Pacific marten, and Rocky Mountain elk. (BMBP EA comment, p. 12, last par. through 1st par. of p. 13)

Where were these four road-killed wolverines? The Wildlife BE says that "in 2018 there were at least four wolverine mortalities due to vehicle collisions (USDI 2023)." (Wildlife BE p. 29, last par.) (BMBP EA comment, p. 13, 3rd par.) Based on the biological science for wolverines, just losing one pair, could extirpate wolverines for 150

square miles, since that is their home range for a pair. Wolverines were rare even historically and are now very vulnerable to extirpations and extinction.

Other reasons for not constructing "temporary" roads and not re-opening closed roads, as well as fully decommissioning roads that should be closed, include: "wolverines have been documented as avoiding areas with increased traffic noise and light pollution (Scrafford et al. 2018, Barrueto et al. 2022). (BMBP EA comment with Wildlife BE quotation, p. 13, 4th par.)

We are greatly concerned by potential negative impacts to Sensitive Columbia Spotted frogs and Rocky Mountain tailed frogs, as well as Western toads, from proposed commercial logging, biomass "fuel" breaks, and any re-opening of closed roads in RHCAs. The Wildlife BE supports our concerns: "Western toads are found throughout the project area with a number of roads paralleling riparian habitat and disconnecting uplands, thus increasing the potential for toad mortality during migration. Columbia spotted frogs and Rocky Mountain tailed frogs are sensitive to changes to water quality such as sustained warm water temperatures (Bull 2005, Bull and Carter 1996). For example, when there is a significant increase in sedimentation, such as during heavy downpours that drain down roads and into creeks, increased sediment transport into streams can result in excessive water temperatures for long periods." (Wildlife BE, p. 30, 1st par.) (BMBP EA comments with Wildlife BE quotation, p. 13, 5th par.)

"For example, Columbia spotted frogs and Rocky Mountain tailed frogs are sensitive to geomorphic changes to their breeding and rearing habitat because it can limit cool water refuges by disconnecting springs and seeps from streams (Bull 2005, Bull and Carter 1996)...the removal of culverts, closing roads, and decommissioning roads can substantially reduce direct and indirect impacts (e.g. climate change) to amphibians." (Wildlife BE p. 30, 1st full par.) These are some of the remedies that help support amphibian species viability. (BMBP EA comment including the quotation from the Wildlife BE, p. 13, 6th par.)

Re: Table 3 Summary of PETS [Proposed, Endangered, Threatened, and Sensitive] species and Effect Determinations

First, it is noticeable that nowhere in the EA and the Wildlife Biological Evaluation, including this table of effects determinations, does the analysis disclose the current status of these TESC (or PETS) species on the Wallowa-Whitman National Forest and within the Morgan Nesbit project area. Also there is no detailed analysis disclosing and considering the trends for any of the TESC species populations in the region and in Oregon. By contrast, the Wildlife Report includes the current status of Management Indicator species and information on whether their populations are stable, increasing, or declining. So again, the analysis for TESC species is deficient in not disclosing species-specific population status in Oregon, the Wallowa-Whitman National Forest, and the Morgan Nesbit project area. The EA and the Wildlife BE also are deficient by not divulging any trends for TESC species populations for species that are known or suspected to be in the Morgan Nesbit project area or within the Wallowa-Whitman National Forest. These are such glaring omissions for a Biological Evaluation that we

find it necessary for the Forest Service to prepare an Environmental Impact Statement with in-depth, detailed analysis and a full range of alternatives for this highly controversial timber sale that could have significant negative impacts to an array of Threatened and Sensitive wildlife species, as well as Management Indicator species.

This is outrageous that there is management in RHCAs (undisclosed as to what kind of management) "being proposed adjacent to these occupied streams" that are occupied by Sensitive Columbia spotted frogs and Sensitive Rocky Mountain tailed frogs. Planned management adjacent to or overlapping these frog species' habitat could be non-commercial thinning, commercial logging, biomass reduction, heavy equipment use, and/or prescribed burning, with no analysis disclosure of which other types of management aside from hand thinning near the stream (and lop and scattering of the thinned small trees) that would occur and potentially affect Columbia Spotted frogs and Rocky Mountain tailed frogs. There is no indication of how far from the stream the management would be, and no analysis of the intensity of the other management in the RHCAs and its likely effects to each frog species.

It is especially disturbing that the only effects analysis for the effects of the management to Columbia Spotted frogs (with hand thinning mentioned) near the streams, and with no disclosure of whether or not the management in the RHCA would include commercial logging further away from the stream, is: "The severity of impacts (negative and positive) to frogs from thinning depends largely on the retained microhabitat and effects to hydrologic processes (Patla and Keinath 2005)." This is very noncommittal and ambiguous due to no site-specific analysis. There is no description of what kind of microhabitat, in what abundance, would be retained and on what the effects to hydrologic processes there would be and thus no knowledge of what the effects to Columbia spotted frogs would be. Then the author then writes that: "This [whatever "this" refers to] is because treatment within the inner half of the RHCA will be lower intensity [than what other management? Commercial logging?] and have greater restrictions along perennial streams (i.e., hand thinning only). The proposed lop and scatter thinning near streams and along floodplains should increase groundwater storage thus improving overall water quality (Wondzell 2001)." These statements apparently are to imply that these are mitigations and to reassure us that everything will be fine for the Columbia Spotted frog. However, the Columbia Spotted frog is not wholly aquatic and actually migrates from one drainage or watershed to another, which means that Columbia Spotted frogs could be affected by management a distance away from the stream, not just immediately adjacent to it. Further, there is no disclosure as to whether there is heavy equipment use in the RHCA, which could crush frogs, and whether or not there would be commercial logging on a slope above the stream, which could send down felled trees, loose debris, rocks, sediment, etc. which could significantly degrade Columbia Spotted frogs' habitat or wound or kill them directly. So there is not enough information as to what other management would be taking place in or near the Columbia Spotted frog's habitat to know what the effects could be.

The brief summary for Rocky Mountain tailed frogs has similar problems to the lack of clarity for understanding the potential effects to Columbia Spotted frogs. However, there is a different summary for the Rocky Mountain tailed frog: "Year-round resident. Rocky

Mountain tailed frogs are strongly adapted to cold water conditions. They occur in very cold, fast-flowing streams that contain large cobble or boulder substrates, little silt, often heavily shaded, and less than 20 degrees Celsius (Bull and Carter 1996). Rocky Mountain tailed frogs are known to occur in the project area along high gradient streams within Big Sheep, Grouse, and Gumboot Creek drainages. There are RHCA treatments being proposed adjacent to these occupied streams and tributaries. At low and moderate levels of timber harvest, there were no significant differences found in tadpole nor adult populations though there was a downward trend as thinning increased (Bull and Carter 1996). This may reflect less favorable temperature and moisture conditions or reduced levels of instream interstitial habitat (Hayes and Quinn 2015)." (Table 3, pp. 34-35) This summary of habitat needs still leaves us in the dark as to whether or not commercial logging is proposed adjacent to Rocky Mountain tailed frog stream habitat and if there is commercial logging planned, what is the intensity level, and how would it affect the Rocky Mountain tailed frogs? This is a good example of how just a Table summary does not provide sufficient detailed analysis as to potential effects to each species from particular management practices—especially when the management proposed is not specified, and any potential negative effects to the species are not considered.

It is not clear whether or not the Rocky Mountain tailed frog is wholly aquatic. It is clear that they need very cold, fast-flowing streams with little silt, often heavily shaded, and less than 20 degrees Celsius. These habitat parameters are typical of the high quality major creeks that are suitable for Threatened Bull trout. Gumboot Creek is a high quality large creek with cold water and fast, strong flow—we know this because we field surveyed never logged forest sale units on very steep slopes above Gumboot Creek and we had to cross it to get into the sale units from downhill. Logging within the RHCA s in drainages of major high quality creeks could be extremely detrimental to water temperature, sediment, and tall tree shading on upper slopes above the drainages, foreseeably causing the high gradient streams within Big Sheep, Grouse, and Gumboot Creek drainages to no longer be suitable for Sensitive Rocky Mountain tailed frogs and for Threatened Bull trout and/or Threatened Mid-Columbia Steelhead trout downstream.

(BMBP EA comments above from p. 15, 2nd par. through par. 3 of p. 16)

*Drop all commercial logging, biomass reduction "fuel" breaks, heavy equipment use, and mechanical thinning, and/or any re-opening of closed roads within or adjacent to RHCAS in general and in particular within or adjacent to RHCAs that provide suitable or actively occupied Rocky Mountain tailed frog habitat and/or Columbia spotted frog habitat, as well as within or adjacent to RHCAs with suitable or occupied habitat for Threatened Bull trout, Threatened Mid-Columbia Steelhead trout, Sensitive Redband trout, and potential recovery of Chinook salmon.

Any "thinning" (logging), especially any commercial size logging and use of heavy equipment could increase stream temperature if tall trees on slopes above the stream are logged. Both removal of shading trees and of down wood and removal of plants through heavy equipment use could reduce water retention and moist micro-habitat conditions for amphibians, including both Rocky Mountain tailed frog and Columbia spotted frog. Logging could also reduce water flow and water abundance through moisture reduction

in the drainage. There is no guarantee that "lower intensity thinning" would not cause excess stream sediment, increased water temperature, loss of cooling tree shading and plant cover, and reduced stream flow due to reduced moisture retention.

Table 3, which gives only short summaries of potential effects to TESC wildlife species, fails to disclose the status of the species on the Wallowa-Whitman National Forest and in the project area and what the site-specific management impacts would be for each species and what level of risk they would have. There's also no discussion of how to mitigate the potential negative effects of proposed management on TESC wildlife species. The analysis deficient EA plus the lack of detailed analysis for each species most at risk from proposed management in the Wildlife Biological Evaluation requires the preparation of an EIS for the Morgan Nesbit sale for in-depth, detailed effects analysis and a full range of alternatives. Without more consideration of potential negative effects to TESC wildlife species, proposed management actions could contribute to the uplisting of Threatened and Sensitive species and potential loss of viability in the project area.

In Table 3, on pp. 40-41 the status of lynx habitat and Canada lynx are described as: "Not documented on the Wallowa-Whitman National Forest since 1964. Lynx habitat in northeastern Oregon is categorized as a 'peripheral area' meaning there is no evidence of long-term presence nor reproduction that might indicate colonization or sustained use by lynx (Stinson 2001). This is due to limited records indicating occupancy, lack of evidence of reproduction, and occurrences in atypical habitat that correspond with cyclical highs." (Table 3, underlining emphasis ours) Yet: "The Forest conducted extensive winter track surveys for wolverine and lynx from 1991-1994 and two sets of possible lynx tracks were found on the Whitman Ranger District (Wolverine and Lynx Winter Snow Track Reports, 1991-92, 1992-93, 1993-94, Wallowa-Whitman NF)." I talked to an ex-staff person from the Oregon Department of Fish and Wildlife or the U.S. Fish and Wildlife Service who was there when the "Lynx Analysis units" that were mapped for eastern Oregon were quietly shelved, as she said, for political reasons. She was outraged by that decision. It was in the late 1990's that lynx surveys apparently stopped. The Forest Service should be doing lynx surveys and long-term studies if they are found. Have there been lynx surveys or studies in the Eagle Cap Wilderness Area? If so, please send me those surveys or studies.

What were the results of the "Extensive wolverine and marten surveys in 2011 and 2021" for wolverine, marten, and any Gray wolf detections? Please send me the report or summary of findings from those surveys.

Regarding Pacific fisher: "There are occasional reports of fisher sightings since they were reintroduced, but occupancy has not been confirmed." However it is hard to confirm occupancy without a long term study. Please send me copies of documentation of fisher sightings, including dates and locations, and any photos of the fishers. Table 3 acknowledges that "There is suitable habitat within the project area [for Pacific fisher] with ongoing mustelid surveys being conducted." If there are Pacific fishers in the Morgan Nesbit project area, there could be negative impacts to them from planned high intensity logging in moist mixed conifer and from "fuel" breaks and increased road access for trappers.

What is the current status of Gray wolves in the Morgan Nesbit area? Why is this not disclosed and discussed in the Wildlife Report or the Wildlife Biological Evaluation? What are the population trends and numbers for the Imnaha pack? Are there other wolf packs in the Morgan Nesbit project area? When do wolves most use the Morgan Nesbit area, in winter when there is less human disturbance? Please let me know about the current status and evidence of Gray wolves in the Morgan Nesbit project area or adjacent or near to the project area. Table 3 characterizes wolf habitat as: "Suitable habitat for gray wolves includes areas with higher ungulate density, forested habitat, steeper slopes, lower human presences, and lower road density (Belongie 2008, Mesler 2015, ODFW 2019)." We appreciate the information that "There are several dens or rendezvous sites within the project area (ODFW 2022)." (Wildlife BE p. 42 in Table 3)

High intensity logging, big "fuel" breaks, and increased road access—all planned—could greatly reduce elk and deer, Gray wolves' main prey, thus reducing habitat suitability significantly. Why wasn't the connection made in the analysis regarding wolves being dependent on abundant prey species—elk and deer? These impacts could contribute to an uplisting tend, potential poaching with greater lines of sight through high intensity logging areas and potential loss of Gray wolf viability, especially if elk and deer prey are reduced in numbers. The bare bones Wildlife BE and the Wildlife Report do not consider and analyze these foreseeable negative effects from the proposed action alternative.

Re: Wolverine:

From Table 3, p. 42: "Suitable habitat consists of old and late structured forest, logged and unlogged forest, and areas with abundant prey (Hornocker and Hash 1981; Krebs et al. 2007, Inman 2012, 2013)....Wolverines are sensitive to human and noise disturbance due to strong predator avoidance response including motorized and nonmotorized activity (Scrafford et al. 2018, Heinemeyer et al. 2019, Barrueto et al. 2022). Female wolverines are negatively associated with recently logged areas in summer likely to avoid gray wolves....(Krebs et al. 2007, Scrafford et al. 2017). In 2011, three wolverines were documented in the Eagle Cap Wilderness. Up until 2021, only one resident male was observed named Stormy. There were two sightings of a wolverine within the Double Creek Fire in 2021 that was likely a dispersing individual. Recent winter surveys indicate that the periphery of Stormy's home range does overlap with the southwestern boundary of the Morgan Nesbit project area."

Thus the Wildlife BE supports our concerns regarding impacts to wolverines from proposed management actions. (BMBP EA comments in order above from p. 17, 1st par. through the 3rd par. of p. 18 and this last statement from the 4th par., p. 18)

All elk and wolverine security habitat needs to be protected from logging, roading, and biomass reduction—also as potential habitat for Canada lynx, Pacific fisher, and Gray wolf. (BMBP comment, p. 18, last sentence of last par.)

For the protection of Wolverine, Gray wolf, and potential Canada lynx and Pacific fisher, there should be no more road access through "temporary" road construction and

re-opening closed roads, also for retaining and increasing elk security habitat. Late and Old Structure or old growth should be dropped from logging, along with biomass "fuel" reduction in potential habitat for Wolverine, Pacific fisher, and American marten, which would also benefit many other wildlife species, such as Primary Cavity Excavators. (BMBP EA comments, last par. of p. 18 through first par. of p. 19)

Stating that "none of these impacts rise to the level of significance" does not make it true, as there is no detailed species-specific in-depth analysis that confirms the negative effects would not be significant. Threatened and Sensitive listed wildlife species are most at risk to significant negative effects of the proposed action alternative, since these species are already in decline. There are also Management Indicator species already in decline, including Sensitive Lewis' woodpecker, Sensitive White-headed woodpecker, and Vulnerable ranked Pacific marten, as well as Three-toed woodpecker. The proposed alternative could contribute to uplisting of Threatened Wolverine and the MIS and Sensitive wildlife species listed above. (BMBP EA comments, p. 19, 2nd par.)

We agree that some riparian restoration efforts would improve habitat for the Columbia spotted frog, Rocky Mountain tailed frog, Sensitive mollusk species, and Threatened-listed and Sensitive fish species. We are strongly opposed to commercial logging, "fuel" breaks, and road re-opening in RHCAs as contrary to riparian restoration and attainment of Riparian Management objectives.

The beneficial effects described for proposed logging are biased toward very open stands, edges, and grasslands-associated species in the analysis. Yet most currently declining wildlife species are associated with denser forest habitat, never logged areas with little human disturbance, late and old structure or old growth, and higher canopy closure due to about a century of overlogging.

(BMBP EA comments above from p. 19, last two par.s)

Wildlife Biological Evaluation comments:

Keep in mind that: "<u>The Endangered Species Act of 1973 requires Federal agencies make certain all actions they authorize, fund, or carry out will not likely jeopardize the continued existence of any threatened or endangered species</u>." (Wildlife BE, p. 10, underlining emphasis ours)

More specifically: "Each Federal agency shall...ensure that any action authorized, funded, or carried out by such agency...is not likely to jeopardize the continued existence of any endangered species or threatened species <u>or result in the destruction or adverse modification of habitat of such species</u>...in fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available." (interior quote on Wildlife EA pp. 10-11, underlining emphasis ours)

We want more conservation measures and eliminating destruction or adverse modification of habitat for each Threatened species known or suspected to be within the Wallowa-Whitman National Forest or within the Morgan Nesbit project area. This would include the Imnaha pack of recovering Gray wolves that could need to be uplisted to a

Threatened species. Wolverine, and Canada lynx are Threatened species documented and suspected to be within parts of the Wallowa-Whitman National Forest, and in the case of the Gray wolves and wolverines are known to be using habitat within the Morgan Nesbit project area. Canada lynx are far ranging and are likely using the Morgan Nesbit area in the winter when there is less human disturbance. Lynx probably inhabit the Eagle Cap Wilderness Area, which is adjacent to the Morgan Nesbit project area. (BMBP EA comments, p. 7, first three par.s after "Wildlife Biological Evaluation comments")

Resolution:

Blue Mountains Biodiversity Project has commented extensively on the many TESC wildlife species are or could be using the Morgan Nesbit project area and how proposed management actions would threaten their viability in the project area and could contribute to federal uplisting of some of these TESC wildlife species. Many of our comments suggested partial resolution remedies for better protecting the viability of TESC wildlife species in the Morgan Nesbit project area and for the Wallowa-Whitman National Forest and eastern Oregon:

Due to the deficient analysis and lack of disclosures of the EA, the Wildlife Biological Evaluation, and the Wildlife Report regarding the lack of detailed, in-depth analysis for TESC species that could be using the Morgan Nesbit project area, we find that an Environmental Impact Statement is needed. An EIS is needed to properly include sufficient detailed, in-depth effects analysis for TESC wildlife species and a full range of alternatives, since there could be significant impacts to Threatened listed species, including Wolverine and Canada lynx, Sensitive species such as Pacific fisher, as well as special status species, such as Gray wolf. (BMBP EA remedy comments, p. 9, 2nd to last par.)

The Forest Service needs to prepare an EIS to provide detailed, in-depth analysis for each Threatened and Sensitive wildlife species, as well as special status species that could be up-listed, that are known or suspected to exist in the project area or could be using the project area with core habitat in the project area Wildlife Connectivity corridors and in the adjacent Eagle Cap Wilderness Area. Threatened-listed Canada lynx and Sensitive Pacific fisher could be using much of the project area for finding prey and dispersing for genetic diversity, with very expansive ranges. (BMBP EA remedy comment, p. 10, last par. through par. 1, p. 11)

*Drop all commercial logging, biomass reduction "fuel" breaks, heavy equipment use, and mechanical thinning, and/or any re-opening of closed roads within or adjacent to RHCAS in general and in particular within or adjacent to RHCAs that provide suitable or actively occupied Rocky Mountain tailed frog habitat and/or Columbia spotted frog habitat, as well as within or adjacent to RHCAs with suitable or occupied habitat for Threatened Bull trout, Threatened Mid-Columbia Steelhead trout, Sensitive Redband trout, and potential recovery of Chinook salmon. (BMBP EA remedy comment, p. 16, last par.)

Our additional conservation measures recommended to help protect these Threatened species include:

*Dropping all logging and road work or "fuel" reduction in never logged forest, which is included in proposed commercial logging sale units. See our field survey sheets for where "never logged" may be checked and described as having no sign of commercial logging, such as no stumps away from roadside hazard tree felling and no evident skid trails or obvious plantations. Check also Forest Service information as to what areas have not been logged.

*Drop all high and moderate intensity logging, still allowing for much reduced single tree selection thinning with higher canopy cover and basal area retention at a minimum of 80-100 square feet of basal area. Any low intensity logging should be focusing on the understory, not the midstory or overstory.

*Drop all construction of "temporary" roads and re-opening of closed roads.

*Drop all commercial logging in RHCAs and drop all "fuel" reduction in RHCAs. RHCAs in general are used as wildlife connectivity corridors, access to water, and hiding cover.

*Drop all logging in moist mixed conifer forest and cold forest habitat which could be suitable for any of these Threatened-listed species, as well as the Imnaha wolf pack and any additional Gray wolves, which could be up-listed to Threatened if numbers of Gray wolves decline due to poaching, poisoning, roadkill, and killing by ranchers and the Oregon Department of Fish and Wildlife.

*Drop prescribed burning in cool moist mixed conifer forest and cold dry forest sale units, due to potential drying out of water retention.

*Drop all logging in remote areas with little access by roads and where there is planned closure of access spur roads.

(BMBP EA remedy comments on p.8, above)

Additional partial resolutions are by species below:

Re: Sensitive Redband trout and Columbia Spotted frog and Sensitive riparian plant species:

*Drop all heavy equipment use and related commercial-size logging in potential Columbia Spotted frog habitat and Redband trout habitat stream reaches and within RHCAs in general except for aspen stand restoration-related conifer thinning up to 15" dbh or less, as long as trees contributing to bank stability and primary stream shading are retained. Buffer and protect any Sensitive plants found in current or pre-implementation surveys.

Re: Gray wolf:

*Retain more good security cover (hiding and thermal) for elk and deer where there is high use by elk and deer, and through dropping sale units suitable in habitat for other density-related species, such as Northern goshawk, American marten, and Pileated woodpecker.

*Drop construction of 'temporary' roads and greatly reduce the proposed re-opening of closed roads to protect Gray wolf security during dispersal as much as possible.

*Drop logging and roading in any identified undeveloped lands.

Re: Pacific fisher:

*Drop all commercial logging of LOS stands with suitable habitat for Pacific fisher, such as old growth moister mixed conifer.

*Retain more mature and large Grand fir and Douglas fir wherever it would naturally occur (e.g. in moist mixed conifer, in riparian zones, on North to Northeast facing slopes, and in high elevation mixed conifer) so that more mature and large Grand fir and Douglas fir will survive to become suitable hollow denning trees.

*Drop all known suitable Pacific fisher habitat.

IV. The Morgan Nesbit Project Would Violate the Clean Water Act

Examples of our comments regarding water quality and potential violations of the Clean Water Act:

We are greatly concerned by potential negative impacts to Sensitive Columbia Spotted frogs and Rocky Mountain tailed frogs, as well as Western toads, from proposed commercial logging, biomass "fuel" breaks, and any re-opening of closed roads in RHCAs. The Wildlife BE supports our concerns: "Western toads are found throughout the project area with a number of roads paralleling riparian habitat and disconnecting uplands, thus increasing the potential for toad mortality during migration. Columbia spotted frogs and Rocky Mountain tailed frogs are sensitive to changes to water quality such as sustained warm water temperatures (Bull 2005, Bull and Carter 1996). For example, when there is a significant increase in sedimentation, such as during heavy downpours that drain down roads and into creeks, increased sediment transport into streams can result in excessive water temperatures for long periods." (Wildlife BE, p. 30, 1st par.) (BMBP EA comment, p. 13, 5th par.)

Logging on steep slopes over stream drainages (as planned) can cause excess sedimentation from displaced soils that can choke out fish species downstream and logging can also "result in excessive water temperatures for long periods" that an kill fish, such as Threatened Bull trout, which requires 50 degrees Fahrenheit or cooler water, or sicken or kill Threatened Mid-Columbia Steelhead trout, or Chinook salmon used for recovery of the salmon runs. Sensitive amphibians are also at risk through water quality impairment. See also our objection comments under NFMA INFISH and PACFISH

violations and proposed remedies and Paula Hood's objections regarding Clean Water Act violations.

Any "thinning" (logging), especially any commercial size logging and use of heavy equipment could increase stream temperature if tall trees on slopes above the stream are logged. Both removal of shading trees and of down wood and removal of plants through heavy equipment use could reduce water retention and moist micro-habitat conditions for amphibians, including both Rocky Mountain tailed frog and Columbia spotted frog. Logging could also reduce water flow and water abundance through moisture reduction in the drainage. There is no guarantee that "lower intensity thinning" would not cause excess stream sediment, increased water temperature, loss of cooling tree shading and plant cover, and reduced stream flow due to reduced moisture retention. (BMBP EA comments, p. 17, par. 1) Notably, much high intensity logging is now planned under the proposed action, which is more likely to cause excess sediment, increase water temperature, greatly reduce plant cover and forest canopy that otherwise cools the forest and retains more moisture, and reduce stream flows, as well as cause increased overland flow during storms that would increase sediment release into streams.

Resolution

Blue Mountains Biodiversity Project has commented on potential Clean Water Act violations. See also Paula Hood's Clean Water Act objections and potential remedies. See the NFMA RHCA section for appropriate remedies to prevent water quality impairment, as well as the remedies below:

*Drop all planned commercial size logging and heavy equipment use in the RHCAs. Aspen stand restoration and meadow restoration should only-allow conifer thinning up to 15" dbh or just by non-commercial thinning up to 10" dbh, with the conifers thinned left in the RHCAs for floodplain roughness, with both meadow restoration and aspen stands also leaving any felled conifers. Both aspen stands and meadow restoration should retain all live conifers and existing snags contributing to stream bank stability or primary shading of a stream in both aspen stands and meadows.

*Drop all re-opening of closed roads and construction of 'temporary' roads within, or adjacent to, RHCAs.

*Drop any planned logging equipment stream crossings.

*Drop all steep slope logging on >30% slope.

*Drop all of the high intensity logging planned, including seed tree clearcutting and patch cuts, and any other logging to basal area retention less than 80 square feet of basal area for dry forest types and no basal area retention less than 100 square feet of basal area for moist mixed conifer forest, in order to retain forest canopy cooling and moisture, and to reduce ground disturbance that releases sediment to be channelized into streams in overland flows.

Inadequate Analysis and Mitigation Regarding Effects to Climate Change

Once again, the Forest Service fails to accept responsibility for their increasing contributions to climate change through the increasing scale and pace of incremental deforestation and associated carbon storage reduction through repeated timber sales at an accelerated pace and scale, and with higher intensity logging. This characterizes the Morgan Nesbit timber sale. See our related comments below:

The overall trend of Forest Service timber sales in the region is cumulative, increasing ecological destruction and further declines in wildlife species populations contributing to the Sixth Mass Extinction and to extreme climate change effects that could overwhelm the viability of up to 10-50% of all wildlife species by the end of the century. (BMBP EA comment, p. 8, in the middle of the last par.) This means that there may not be an organized human civilization by the end of the century, as ecosystems unravel due to mass wildlife and plant species extinctions.

Notably, Oregon's biggest source of Carbon dioxide emissions is from logging, but this is never disclosed in the climate change sections of Forest Service timber sale documents so far in eastern Oregon and southeast Washington.

Global warming is also human caused and aggravated by failure to respond appropriately, resulting in increased fire intensity, unprecedented heat waves, prolonged drought, and more severe storms. The Forest Service uses their own mismanagement as rationales for yet more extensive and intensive logging, more road building and re-opening, more removal of down wood, more tree species conversion, more fragmentation of habitat, and continued livestock grazing in riparian areas—as if the causes of imbalances could be used to remedy the problems. (BMBP EA comments, p.2, first full par.)

The fifth need [in the Purpose and Need for the Morgan Nesbit project] "is a need to implement adaptation strategies that address climate change vulnerability to sustain ecosystem functions and services into the future by: (a) increasing landscape resiliency to future climate conditions and extreme disturbance events such as fires, insect outbreaks , and flooding." Yet planned high intensity logging and even moderate and low intensity logging remove needed forest cover, especially as mature trees and some large trees would be removed (as with hazard trees and proposed killing of large Grand fir and Douglas fir by girdling and topping.) Retaining mature and large trees is critical to maximize long-term forest carbon sequestration and storage for up to centuries. Without preserving the forest carbon sink in its entirety as part of the forest ecosystem, this need will not be achieved. Landscape scale, high and moderate intensity logging would not "sustain ecosystem functions and services into the future by (a) increasing landscape resiliency to future climate conditions and extreme disturbance events such as fires, insect outbreaks, and flooding" since logging reduces long-term carbon sequestration and storage. Reduced carbon sequestration and storage increase climate change intensified fire, insect outbreaks, heat waves, droughts, and flooding from more severe storms. Thus high and moderate intensity logging and extensive biomass reduction "fuel" breaks are not consistent with this stated need as part of the Purpose and Need. (BMBP EA comment, p. 3, first full par.)

"Changing climatic conditions are likely to increase the frequency and intensity of fire across areas occupied by marten, resulting in diminished habitat abundance and extent (Koehler and Hornocker 1977, Zielinski 2014, DecAID 2023 a/b/c)." (Wildlife Report p. 76, last par.) This is all the more reason to fully protect Pacific marten from logging and biomass reduction to ensure continued viability of Pacific marten as a Management Indicator species. (BMBP EA comment, p. 38, which incorporates a science quotation from the Wildlife Report, on p. 38, 3rd par.)

Of course, the Pacific marten is not the only wildlife species that is threatened by climate change, as there are already mass species extinctions, which would eventually render the Earth uninhabitable by humans—unless we do everything we can to reduce and reverse global warming, including retaining and increasing large trees and forest cover as a natural carbon sink.

Resolution

BMBP has often commented regarding Forest Service failure to acknowledge and mitigate their contributions to catastrophic climate change through their increased intensity and scale of commercial logging to unsustainable levels in multiple large timber sales, including the Morgan Nesbit project.

To resolve this problem, the Forest Service needs to make the following modifications to the Morgan Nesbit timber sale, as suggested in other proposed resolution remedies above:

* Significantly decrease the geographic scale of the Morgan Nesbit project commercial logging of mature trees by dropping logging in undeveloped lands, on steep slopes, in old growth forest, and in suitable habitat for Management Indicator species and TESC wildlife species.

* Significantly decrease the intensity of planned commercial logging by leaving higher minimum and average basal area per acre. Drop all planned "Irregular shelterwood" clearcutting and patch cuts.

* Retain all large tree structure, including snags, down wood, and large live conifer trees in all forest stands (equal to or greater than 21" dbh) to retain the most significant existing carbon storage and increase the biodiversity of the forest, including the aspen stands.

* Retain more mature trees to sequester carbon and become large trees by dropping the best wildlife habitat from logging as per our survey sheet recommendations and dropping logging in other critical forest areas, including old growth, RHCAs, undeveloped lands, and suitable habitat for declining MIS and TESC species.

*Retain more soil sequestration of carbon by dropping logging in sensitive soil areas and in sale units that would exceed Forest Plan detrimental soil impact standards, as specified above.

*Leave more down wood and narrow down "fuel" breaks to contribute more nutrients and carbon to the soils and to support small mammals and birds dependent on ground level habitat.

V. Aquatics-focused objections

Suggested remedies/resolution for our water quality and aquatic species concerns:

- Respect PACFISH/INFISH RHCA buffer widths and drop all commercial logging (237 acres) proposed within RHCAs
- Drop all non-commercial thinning in RHCA Categories 1, 2, and 3, and limit NCT along Category 4 streams to 9" dbh. Don't remove any felled trees from within RHCAs, with preferable lopping and scattering, left whole, or masticated, not pile burned or limbed.
- Drop all logging proposed for steep slopes over 30% in RHCAs and in upslope forests
- Drop all logging in moist mixed-conifer forests, especially those at mid and high elevations
- Drop all logging proposed in mature and old forests
- Drop all logging, including commercial logging, near goshawk nests and near goshawk roosting and foraging areas, as well as in source/core habitat for marten
- Drop all logging and burning in RHCAs adjacent to or directly upstream of streams that support ESA-listed and special-status imperiled or sensitive riparian and aquatic species including: Snake River Steelhead, Snake River Spring Chinook Salmon, and Columbia River Bull trout, Redband trout, Western Ridged Mussel, Shortface Lanx, Pacific Lamprey, Columbia Pebblesnail, Columbia spotted frog, and Rocky Mountain tailed frog.

Overview of water quality and aquatic species concerns:

Aquatic and riparian ecosystems are especially vulnerable to negative impacts of logging, both from logging within RHCAs and from upslope logging. We are very concerned that the FEA did not adequately disclose, analyze, or avoid the negative effects that logging would have on these ecosystems and the cumulative impacts of ongoing threats (roads, livestock grazing, fragmentation, climate change, logging, invasive species, etc.). The EA cherry-picked science and scientific interpretations that bolstered their desired actions of logging within riparian corridors, while ignoring or severely downplaying science that did not align with the agency's assumptions or conclusions.

The FEA's proposed logging in riparian corridors (RHCAs) and heavy upslope logging--including in important wildlife areas such as marten source habitat areas-- flies in the face of widespread scientific consensus to increase core habitats and connectivity in response to climate change (Heller and Zavaleta 2009). The agency needs to consider how existing conditions and proposed logging would potentially exacerbate possible negative impacts from climate change. The EA has an extreme and disproportional emphasis on logging and fails to consider the importance of less risky and more effects strategies that do not focus on logging.

The USFS's response to comments appendix states *"[c]itation of Heller and Zavaleta (2009) noted. Regarding landscape connectivity (noted as the most frequent recommendation for climate adaptation within the literature reviewed within Heller and Zavaleta (2009), please refer to the Wildlife Corridor map in the draft EA."* We are in favor of protecting these wildlife corridors, and are glad that the FS protected some of them. However, many other corridors are instead being heavily logged and will suffer from fragmentation, loss of wildlife habitat and biodiversity, and ultimately harm many species that rely on them including imperiled species—particularly in the face of climate change. Species need all available core habitats and connectivity corridors possible, in order to stand the best chance of surviving and adapting to climate change.

Managed watersheds with logging associated roads have worse stream habitat conditions. From NOAA 5-Year Review of Snake River Salmonids: *"Information from the [PACFISH Biological Opinion Monitoring Program]* ***PIBO monitoring program indicates that unmanaged or reference reaches (streams in watersheds with little or no impact from road building grazing, timber harvest, and mining) on Federal lands in the Interior Columbia basin (including the Snake River basin) are in better condition than managed streams (Al- Chockhachy et al. 2010b). In particular, managed watersheds with high road densities or livestock grazing tend to have stream reaches with worse habitat conditions than streams in reference watersheds. When roads and grazing both occur in the same watershed, the presence of grazing has an additional significant negative effect on the relationship between road density and the condition of stream habitat (Al-Chockhachy et al 2010b)."***

Logging can be associated with changes in macroinvertebrate community structure or metrics (Flaspohler et al. 2002, Kreutzweiser et al. 2005), increases in stream temperatures (Guenther et al. 2012) and alterations in nutrient cycling and leaf litter decomposition rates (Lecerf and Richardson 2010). Flaspohler et al. (2002) noted that changes to biota associated with selective logging were found decades after logging. For example, the USFS's 2014 Draft Forest Plan Revision for the Blue Mountains (vol. 2 pg. 48) noted: *"Timber harvest can influence aquatic ecological condition via such activities as removal of trees in the riparian zone, removal of upslope trees, and associated understory or slash burning (Hicks et al. 1991). These activities can affect wood recruitment, stream temperatures, erosion potential, stream flow regime, and nutrient runoff, among others (Hicks et al. 1991). Effects of harvest are likely to be different at different scales. Hemstad and Newman (2006) found few effects of harvest at the site or reach scale, but found that harvest five to eight years earlier resulted in losses of habitat quality and species diversity at the scale of a stream segment (larger than a reach) or at the subwatershed level. Those losses were revealed in terms of increases in bank instability and fine sediment throughout the watershed and increased water temperatures and sediment problems throughout the channel segment.* ***The cumulative effects of widespread harvest within a single drainage in a short period of time resulted in deterioration of the aquatic and riparian habitats, but evidence of effects lagged harvest by several years and different evidence of deterioration showed up at different spatial scales within the watershed".***

Headwater streams and non-fish bearing streams are particularly at risk and need more, not less, protection. In order to protect downstream fish bearing reaches, headwater streams

need at least as much protection as larger downstream reaches (Rhodes et al., 1994; Erman et al., 1996; Espinosa et al., 1997). Both Erman et al., (1996) and Rhodes et al., (1994) concluded, 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. Headwater streams and small intermittent streams do not have buffer widths that are sufficient to protect water quality and stream habitats. Wider buffers are needed in order to prevent excess fine sediments and nutrients entering waterways. (Freeman et al. 2007; Gomi et al. 2005; Nieber et al. 2011; Sweeney and Newbold 2014). Negative impacts to upstream reaches, such as higher temperatures, increased sediment loading, down-cutting, and altered hydrographs also negatively affect downstream reaches.

The Morgan Nesbit Aquatics BE notes that *"[m]ost riparian thinning is located in the RHCAs of Cat 2 and 4 streams, with the majority of these acres in Cat 4 RHCAs (Table 3). Although these streams are fishless,* ***water temperature in these smaller streams is important for fish habitat because cold water inputs from tributaries provide thermal refugia, and intermittent streams can still provide cold groundwater inputs even after surface flow ceases*** *(Ebersole et al. 2015)."*

Unfortunately, this information is downplayed or ignored in order for the agency to determine that logging within RHCAs will not have measurable effects on temperature.

The Aquatics BE goes on to state: *"RHCA thinning in the Morgan Nesbit project is expected to create only small reductions in shade in fishless streams, and is not anticipated to have effects on temperature in downstream fish habitat. This is based on the following:*
- Commercial thinning will occur in only 2.1% of category 2 RHCA acres, and 4.2% of category 4 RHCA acres, within the project area
- A noncommercial (< 9" DBH) thinning only buffer in the inner half of RHCAs (75 ft in category 2, 50 ft in category 4) will retain overstory trees close to the stream which provide the most shade.
- Commercial thinning will only occur in the outer half of RHCAs, so overstory trees removed will be trees that are > 50 ft or > 75 ft from the stream, which provide less stream shade than trees close to the stream. Thin from below prescriptions based on forest type and the historical range of variability will retain large overstory trees even in commercial thinning units"

However, we note that the Morgan Nesbit sale is planning to commercially log a huge amount of area (~13,900 acres), including hundreds of acres of logging within RHCAs. The negative effects that logging will have on aquatic resources are very likely to be widespread and long-term, and have measurable and significant effects at the subwatershed scales. Given the enormity of logging throughout the uplands, the effects from logging within RHCAs combined with upland logging, the negative effects are likely to be seen at downstream and at larger watershed scales as well. Even localized negative impacts to streams, water quality, and fish can have long-term negative effects from which fish and other aquatic organisms may have difficulty recovering from.

The primary threats and stressors to special-status and at-risk riparian and aquatic species

on National Forests in eastern Oregon are logging, roads, and livestock grazing. These activities result in increased fine sediment inputs to streams, warming stream temperature, increased diurnal stream temperature fluctuations, stream bank instability, soil compaction and erosion, fish passage barriers, and other widespread problems.

In research in eastern Oregon, Ebersole 2015 found that dry streams supplied cold water to downstream reaches at confluence sites. Such cold water refugia habitats are important for fish, which were observed at these locations.

Logging will increase surface runoff and overland flow, which delivers warmer water and excess sediments into streams quickly, and can alter peak flows and increase stream temperatures. In addition, increased surface runoff and faster delivery of water into streams also means that less water becomes groundwater. This decreases groundwater storage, groundwater flows, and hyporheic flows. (Coutant 1999; Croke and Hairsine 2006; Jones and Grant 1996). Protecting groundwater storage, groundwater flows, and hyporheic flows associated with intermittent streams is crucial for protecting temperatures in larger downstream perennial streams. Cold water inputs from intermittent streams to downstream reaches are essential providing cold water refugia for special-status and imperiled aquatic organisms, including ESA-listed fish (Caissie, 2006; Ebersole et al. 2015; Groom 2011; Groom 2011; Jones and Grant, 1996; Pollock et al. 2009). Patches of cold water refugia are crucial for fish. Shallow groundwater patterns can be important for influencing stream temperatures, (Poole et al. 2008) and so are likely vulnerable to upslope logging (Caissie 2006).

Logging, including upland logging, can cause decreases in summer baseflows in the long-term. Decreased canopy cover due to logging can cause more snow to accumulate in these more open areas, which alters the timing and magnitude of runoff from snow melt. This can also cause changes to peak flows (Harr and Coffin 1992). Should proposed logging be implemented, it would create more open canopies, which will then increase solar radiation inputs, and as a result may increase the amount of early snow melt. This, in turn, may further alter peak flows and groundwater recharge and the hyporheic cold water delivery downstream, including to perennial streams. (Caissie 2006; Harr and Coffin 1992).

Logging also alters microclimates, creating hotter, drier, and windier conditions that stretch beyond forests directly affected and into adjacent forests, sometimes for distances of hundreds of feet. Such microclimate edge affects could extend into the entirety of riparian buffers, especially in smaller headwater streams. (Chen et al. 1992; Chen et al. 1995; Brosofske et al. 1999)

Given the research done by Ebersole and others cited above, it is very likely that logging within RHCAs, is likely to threaten the cold-water temperatures and refugia in streams that are important for ESA-listed aquatic species such as Bull trout, Snake River steelhead, Snake River Chinook, and other Sensitive and imperiled aquatic species. We are very concerned that the agency is ignoring PACFISH buffers, and instead is proposing no setback for small and intermittent streams and only a 25 ft. no activity buffer for streams, with commercial and non-commercial logging proposed for the “outer half” of category 2 and 4 streams.

Potential violations of the National Forest Management Act, PACFISH/INFISH, Riparian Management Objectives, and/or the Clean Water Act:

The PACFISH Standards and Guidelines state that activities within the RHCA *"should not prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function, listed anadromous fish, or designated critical habitat."*

According to the Aquatics BE, many streams are already not meeting RMOs, especially for temperature. Nevertheless, logging is planned adjacent to streams. Such logging will further retard attainment of RMOs by removal of riparian shade, as well as increased stream temperature and fine sediment, and retard attainment of RMOs such as pool depth, embeddedness, LWD, and others. PACFISH/INFISH no-cut stream buffers should be adhered to and fully implemented. No commercial logging should occur with RHCAs, and noncommercial logging should be dropped or severely scaled back. We are also very concerned about other activities within RHCAs, such as widespread fuel breaks, pile burning, skidding, heavy equipment use within RHCA buffers, and other harmful actions the agency has proposed that will retard attaining RMOs. It is not entirely clear if or how much the agency is proposing to deviate from PACFISH standards in terms of downed wood left within RHCAs after logging. We are also concerned about this issue, as downed wood is a key component for many species of wildlife and is important for protecting soils and supporting other dynamics on the forest floor.

Stream temperatures:

The Aquatics BE (pg. 34) states: "Commercial thinning in RHCAs is not anticipated to affect water temperatures. ***Reduction in canopy cover and shade is the mechanism by which thinning can affect stream temperature***." The Aquatics Effects Analysis (pgs. 8 – 9) also states that stream shade is being used as a proxy for temperature: ***"[w]e used stream shade as a proxy for stream temperature as shade can be altered by riparian thinning, and because shade has larger impacts on stream temperature than air temperature or discharge*** *(Wondzell et al. 2019)."*

Contradictorily, the Aquatics BE also admits, in other sections of the document, that shade is NOT a strong predictor of stream temperature: *"Studies on riparian thinning have found that thinning is sometimes correlated with increases in stream temperature, but responses are variable and* ***shade is only one factor influencing stream temperature.*** *Janisch et al. (2012) found that patch cuts in western Washington forest had smaller than expected, and* ***highly variable effects on temperature in intermittent streams despite reducing shade.*** *They found that other* ***variables such as aspect, substrate size, and amount of surface flow had a greater impact on temperature****."*

The Aquatics BE attempts to downplay likely increases in stream temperatures, in relation to the Janisch et al. 2012 paper and the size of patch cuts within riparian zones in that

research. The Aquatics BE states: *"**The riparian thinning treatments planned in the Morgan Nesbit project will not remove as much shade as those patch cuts."*** Again, the Janisch et al. 2012 paper found that shade is not a reliable predictor of water temperature. Janisch et al. 2012 discusses the findings of their research and note: *"These analyses showed that the amount of canopy cover retained in the riparian buffer was not a strong explanatory variable…".* Furthermore, in some study sites in the Janisch et al. research, riparian buffers with ***more logging had a smaller magnitude of stream temperature increases compared to streams with less logging***. I.e., riparian zones with patch cuts had LESS stream temperature increase compared with riparian zones with continuous buffers (i.e., removal of less canopy cover). The whole point is that the results clearly indicate that stream shade was not correlated to stream temperature changes, and that the results were highly variable regardless of amount of riparian canopy cover. The FS seems to be willfully ignoring the main take-away from the results of the study, in order to suggest that less shade removal in riparian zones will produce negligible increases on stream temperatures. While stream shade is important, it does not necessarily protect stream temperatures from the wide-ranging and complex dynamics of the negative impacts to stream temperatures associated with logging in RHCAs and uplands.

The USFS's response to comments notes that "Sweeney and Newbold 2014 was a review paper synthesizing a large number of studies, note that their less than 2 degrees language indicates that no streams studied exceeded this threshold, and does not mean that all streams studied experienced temperature increases of 2 degrees." We note that 2 degrees is a huge increase, and any measurable change can be well below that and still result in violating clean water act and water quality standards. I believe that anything over an increase of 0.1 degrees Celsius in a 303d listed stream is a violation of ODEQ water quality standards. The USFS dismissing even smaller temperature increases as ecologically or legally inconsequential is not in keeping with upholding stream water quality standards, or with habitat conditions needed for the recovery of ESA-listed aquatic species.

Similarly, the USFS response to comments notes: "Janisch et al 2010 saw statistically significant ($p < 0.05$) increases, but state that "Temperature responses were highly variable within treatments and, contrary to our expectations, stream temperature increases were small and did not follow expected trends among the treatment types. ...These analyses showed that the amount of canopy cover retained in the riparian buffer was not a strong explanatory variable. ... Overall, the area of surface water exposed to the ambient environment seemed to best explain our aggregate results." The stream temperature increases shown in the study as "small" were still enough to have meaningful and negative impacts for imperiled aquatic species and potentially run afoul of water quality standards. The issues raised in this study remain extremely relevant, and the FS's insistence on dismissing study after study showing correlations between even moderate logging and stream temperature increases shows their bias and highlights their own inadequate analyses.

The Janisch et al. 2012 study found statistically significant increases in stream temperature as a result of all logging treatments. The Aquatics BE also downplays the stream temperature increases in the Janisch 2012 study, and notes *that "patch cuts which*

reduced shade in riparian areas had variable and smaller than expected effects on temperature (Janisch et al. 2012)." While true that the increases in stream temperatures in the Janisch study were smaller than expected, it is important to note that stream temperature increases were statistically significant for all treatments. **Comparable increases in stream temperatures in the Morgan Nesbit sale area—even if they were to be substantially lower than many of those found in the Janicsh et al. 2012 study—would still result in measurable increases that would be detrimental to ESA-listed fish such as Bull trout, and would be in violation of state CWA regulations.** The Janicsh et al. 2012 study found that: *"[s]tatistical analyses indicated that* ***all treatments resulted in significant (α = 0.05) increases in stream temperature.*** *In the first year after logging, daily maximum temperatures during July and August increased in clearcut catchments by an average of* ***1.5 °C (range 0.2 to 3.6 °C****), in patch-buffered catchments by* ***0.6 °C (range −0.1 to 1.2 °C),*** *and in continuously buffered catchments by* ***1.1 °C (range 0.0 to 2.8 °C)."***

Many streams within the Morgan Nesbit sale area are vulnerable to temperature increases as a result of logging within RHCAs, based on parameters demonstrated in the Janisch et al. 2012 paper. These include stream substrates with relatively fine composition, longer surface-flowing extent, and the presence of stream-adjacent small wetlands (please see BMBP's survey sheets). Streams within the Morgan Nesbit sale include the parameters that the Janisch et al. 2012 study identified as correlated with increased stream temperatures in response to logging, including northerly aspects, relatively longer surface flow, adjacent wetlands, and fine substrates. For example, while most streams within the project area meet RMO standard for fine sediments (<20% particles <6.33mm), many are at the upper end of compliance. Approximately 10 out of 14 streams have greater than 10% of particles greater than 6.3mm; 8 of those are greater than 15% (Aquatics BE pg. 28). The Aquatics BE notes that the Janisch et al. 2012 study showed that "*variables such as aspect, substrate size, and amount of surface flow had a greater impact on temperature."* The Janisch et al. 2012 study noted: "*cumulative surface area of small, stream-adjacent wetlands (0.93) and length of flowing surface water above our stream temperature monitoring stations (0.65). Additionally, stream sediment texture appeared important, with streams having coarse substrates being thermally unresponsive and streams having fine substrates being thermally responsive."*

The Aquatics BE further attempts to justify the use of stream shade as a proxy for temperature, stating: *"Modeling by Wondzell et al. (2019) found that shade was the most important factor influencing stream temperature in the Middle Fork John Day River, but that large changes in stream shade (e.g. a mature forest vs. an open, young forest) were needed to see temperature effects, and that small changes in shade (e.g. a post wildfire forest vs. an open, young forest) had a limited effect on temperature."*

However, we note that the Wondzell et al. 2019 study looked at temperatures only along the Middle Fork of the John Day River. The Middle Fork of the John Day River is decidedly NOT a headwater stream. Most riparian logging within the Morgan Nesbit sale is planned for smaller headwater/category 4 streams—which were not included and are very different than those in the Wondzell et al. 2019 study. Rather, the Janisch et al. 2012 research *did* sample these smaller headwater streams and they found that stream shade was not a reliable

predictor of stream temperature. Janisch et al. 2012 go so far as to note: *"**Results from our study suggest that very small headwater streams may be fundamentally different than many larger streams because factors other than shade from the overstory tree canopy can have sufficient influence on stream energy budgets…."***

Figure from Wondzell et al. 2019 depict the study's sample locations along the Middle Fork of the John Day Watershed—which is clearly NOT a small headwater stream:

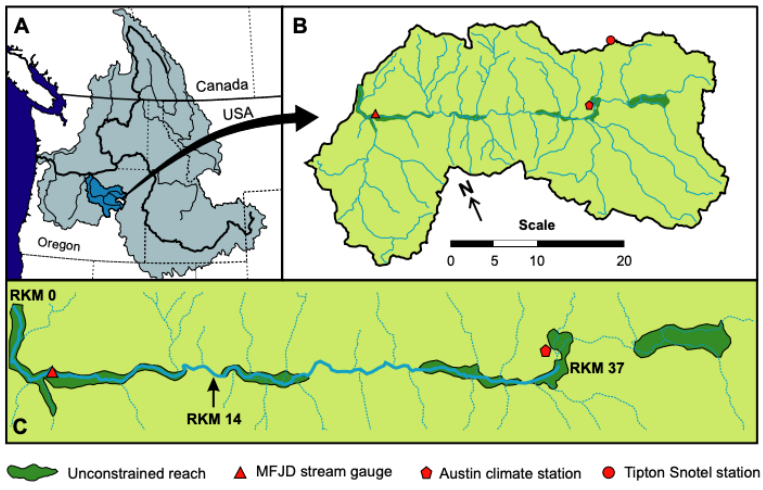

FIGURE 1. Site location map. (a) The location of the upper Middle Fork John Day (MFJD) catchment (white fill) within the John Day catchment (bright blue fill) and its location within the Columbia–Snake River catchments (gray-blue fill) of northwestern USA and southwestern Canada. (b) The upper MFJD with the simulated study segment shown in bold. (c) Close-up of the study segment showing the location of unconstrained valley reaches that have been converted to meadows. RKM, river kilometer.

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The Morgan Nesbit Aquatics BE acknowledges that few studies have researched the effects of thinning within RHCAs, and those studies took place in very different forest types compared to those in the Morgan Nesbit sale. They go on to acknowledge that logging within RHCAs may have different effects than what the [unmeasurable and/or nonconsequential] effects that the agency claims it's anticipating. However, in order to address this "knowledge gap", the agency plans to monitor shade before and after logging by taking densiometer measurements in 5 streams within RHCA logging units. Again, there is ample evidence that stream shade is not well correlated with stream temperatures, and is not a good predictor for potential temperature violations—particularly in headwater streams (Janisch et al. 2012).

From the Aquatics BE: "Available literature suggests that our buffers will be sufficient to prevent measurable temperature increases in Cat 1 streams. However, one limitation is that many past studies have examined the efficacy of no activity buffers for protecting stream temperature, but fewer studies have investigated the effects of thinning or limited activity buffers in RHCAs, and available literature has addressed thinning effects in different forest types such as those in northwest California (Roon, et al. 2021). ***It is possible that RHCA thinning in the dry forests of the Blue Mountains could have different effects on shade than we anticipate. To address this knowledge gap, we plan to monitor shade before and after implementation by taking densiometer measurements in 5 streams within RHCA***

thinning units. We will use these measurements to ensure canopy cover reductions are less than identified thresholds (see aquatics specialist report). If reductions in canopy cover exceed these thresholds, we will use adaptive management techniques to work with timber marking crews and ensure that more trees are retained near streams in units planned for future thinning."

In addition to the evidence discussed above, one has only to look briefly at NEPA documents to understand that data on the percent of shade in a streamside corridor is a poor substitute for water temperature data. For example, in the Aquatics Report of the Camp Lick timber sale on the Malheur National Forest, in the 25 reaches for which both stream shade and temperature were reported in Camp Lick NEPA documents, the data show streams meeting stream shade standards but NOT meeting stream temperature standards in 13 out of 25 reaches. **That's a 52% failure rate regarding the accuracy of using stream shade as a surrogate for stream temperature**. Only one instance went the other direction—i.e., showed stream shade standards not being met, while the stream shade standard was met. **In the Big Mosquito timber sale in the Malheur National Forests, using stream shade as a surrogate for temperature would fail in one or more reaches in 80% of creeks for which data were collected (Big Mosquito Aquatics Report Table 1). In the Ragged Ruby timber sale NEPA documents (Ragged Ruby Final Aquatics Report Table 3) shows that using stream shade as a surrogate for temperature fails in one or more reaches in 42% of streams for which data were reported.** Five of the twelve streams met shade standards, while stream temperature did not meet standards.

Clearly, using stream shade as a proxy for stream temperature in these eastside forests is not appropriate. While we understand that stream shade is an important driver of water temperatures, it is not the primary or only one, especially in smaller streams. Many factors influence stream temperatures, as we've discussed and provided scientific references for in numerous portions of these comments.

The Aquatics BE admits that streams are currently impaired and have excessively high water temperatures. The FEA also proposes to severely reduce stream shade in category 2 and 4 streams, noting that in category 4 streams the buffers are smaller than one site-potential tree height. However, the Aquatics BE then downplays the effects of removing shade, based on results from Roon et al. 2021. From the Aquatics BE: *"Streams in the project area are rated as not functioning regarding temperature due to high water temperatures….In fishless streams (category 2 and 4) some trees that shade streams will be removed in RHCA thinning units because buffers are narrower than 1 site potential tree height. Studies have found that light riparian thinning (4-5% shade reduction) did not increase temperature, and heavier thinning (20-35% reduction in shade) was needed to effect temperature (Roon et al. 2021)…."*

The Morgan Nesbit FEA describes logging within the RHCA as removing up to 50% canopy cover, and include logging on steep slopes greater than 30%. A 50% loss of canopy cover within RHCAs is huge loss, and will negatively and significantly affect water quality parameters, RMOs, watershed hydrology, microclimates, and biodiversity. The Morgan Nesbit analyses states (Aquatics Effects Analysis pg. 8) that logging within RHCAs "…will likely cause small to moderate reductions in stream shade in Cat 2 and 4 streams,

but reductions in shade will not be extensive enough to cause measurable increases in stream temperature." The loss of 50% of canopy cover within RHCA buffers (beyond a paltry 25-ft setback) is not a "moderate" reduction in canopy cover. The FS's determination that the loss of half of the canopy cover within RHCAs will not cause measurable increases in stream temperatures is unsubstantiated, capricious, and lacks credibility. Logging on steep slopes, both within the RHCA and in upslope forests, is likely to exacerbates these issues and is likely to cause significant erosion, increase landslides, alter hydrology, and increase excess fine sediments in streams.

The EA notes that patch cuts (clearcuts) can be up to five acres in upslope areas. It is not clear what percent of a given subwatershed will be comprised of these patch cuts after logging has occurred. The USFS's response to comments notes that some of the studies we cited in our DEA comments, such as Hick's et al. 1991 included a higher percentage of patch cuts in their study design. What is the upper limit percentage of patch cuts allowed in small subwatersheds in the Morgan Nesbit project? Simply because the percentage of patch cuts may be higher in the Hicks et al. 1991 study does not mean it is not applicable or relevant to logging proposed in Morgan Nesbit—effects are likely to be a proportional response to, among other factors, scale and intensity of logging. Just because the logging proposed in Morgan Nesbit includes somewhat less very intensive logging (such as patch cuts, shelterwood logging, logging on steep slopes, etc.) does not mean that there are then no measurable effects.

Similarly, the USFS's response to comments notes that *"Hemstad and Newman 2006 studied clearcut upland treatments and with commercial harvest in riparian areas without buffers, which are more disruptive logging practices than are proposed."* However, we note that shelterwood logging with only 10-20 trees left per acre after logging is analogous in effects to a clearcut, and that the Morgan Nesbit sale is indeed planning commercial logging within RHCAs. The Hemstad and Newman 2006 study is extremely relevant to proposed logging in Morgan Nesbit.

Extensive studies and decades of research point to logging—even moderate and upslope logging—having measurable effects on water quality parameters and riparian habitats. In addition, the scale of proposed logging within Morgan Nesbit is larger than in many studies, and includes commercial logging closer to streams and on steeper slopes than in some of the studies.

We also note that in the Roon et al. 2021 research, trees felled within riparian areas in the Lost Man watershed (the watershed where no statistical increases in water temperatures were found as a result of logging within riparian zones)—these trees were left on site and scattered throughout the riparian zones, likely helping to protect dynamics such as soil permeability, groundwater flows, and other important hydrologic functions. This is a very different prescription (and much more gentle on the landscape and of less intensity) compared to the commercial logging/removal of trees planned in the Morgan Nesbit sale.

From Roon et al. 2021: *"In the Lost Man watershed in Redwood National Park (RNP) riparian thinning treatments coincided with a larger upland forest restoration thinning*

effort in the Middle Fork of the Lost Man Creek watershed [44]. Riparian thinning treatments sought to remove up to 40% of the basal area within the riparian zone on slopes less than 20% on both sides of the channel along a ~100–150 m reach. Riparian thinning treatments primarily targeted Douglas-fir and red alder to achieve RNP's objective of promoting the recovery of late-successional coast redwood forests [21]. While thinning treatments removed trees from upland forests, trees within the riparian zone ***were felled following a lop-and-scatter protocol which left trees in the riparian zone but out of the stream channel****."*

In the Lost Man watershed in the Roon et al. 2021 study, stream shade decreased by 4.8 percent and did not show significant increases in stream temperatures. Are there any areas within the Morgan Nesbit sale that will exceed the 4.8% shade reduction that was found in the Lost Man watershed? Ultimately, in the more intensively logged watersheds (the Tectah watersheds) in the Roon et al. 2021 study, riparian shade was decreased after logging by an average of 18.7 percent. What is the upper limit of shade reduction that will occur post-logging in the Morgan Nesbit sale? How many years are reductions in shade expected to persist?

The authors of the Roon et al. 2021 study further discussed research showing increased in stream temperatures in response to riparian logging: "…a study by Rex et al. [58] found that variable-retention treatments within riparian buffers in British Columbia that reduced riparian shade between 30 and 50% increased MWAT by 3˚C and MWMT by 5–6˚C, both higher than documented in our study. Studinski et al. [59] found that thinning treatments that targeted a 50% reduction in basal area in some West Virginia streams resulted in a similar reduction in canopy closure to the treatments in the Tectah watersheds, yet resulted in much smaller increases (0.2–0.5˚C/100m) than what we observed and were more in line with the responses documented in Lost Man. Another study in Minnesotan boreal streams found that their most intensive thinning treatment resulted in a 10% reduction in canopy closure but increased summer maximum temperatures by ~4˚C [60]. These studies highlight that the magnitude of responses to thinning are often system dependent, making broader-scale generalizations challenging."

The Roon et al. 2021 authors also note that stream temperature increases can travel downstream further than expected: *"Local temperature responses to thinning were not limited to thinned reaches and effects frequently extended into downstream reaches. Downstream effects reflected the magnitude and timing of upstream temperature increases and were typically ~50% of the response observed in respective thinned reaches, similar to results observed by Davis et al. [61] ~300 m downstream of harvest. Longitudinal profiles revealed three distinct downstream trajectories at the reach scale, with temperature remaining elevated 150 to 200 m downstream, dissipating either partially or completely, or remaining undetectable where minimal change occurred upstream (e.g., Lost Man). Downstream effects sometimes propagated beyond the extent of the downstream reach and into adjacent sites where sequentially located. Subsequent temperature responses were more likely to be elevated, which suggests the potential for cumulative heating in cases where harvests are spaced closer together. These patterns suggest that local temperature within our sites were not independent from upstream sites and that there was a high degree of longitudinal connectivity in these streams [4, 62]. Although we limited our analysis to*

immediate reach-scale responses in downstream effects ~150–200 m downstream from thinning treatments, we recognize that in some reaches the spatial extent of downstream effects likely extended further [52, 61]. For example, Wilzbach et al. [63] documented that local increases in temperature associated with complete canopy removal along a 100 m reach persisted up to 430 m downstream."

We note that the streams in the Roon et al. 2021 paper were in Coastal Redwood forests in Northern California, and likely to be influenced by factors such as the maritime climate, different geology and soils, etc. In addition, relying on the Roon et al. 2021 study ignores the Janisch et al. 2012 findings that shade is a poor predictor of stream temperatures.

Logging within RHCAs has well-documented and negative effects on stream temperatures, including increased water temperatures. For example, Guenther et al. (2012) found increases in stream temperature in relation to selective logging. The Guenther study 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 harvest area from 1.6 to 3 degrees Celsius. Pollock et al. 2009 found that stream temperature was more closely associated with degree of logging within catchments than with streamside vegetation.

The Aquatics BE also notes that *"[a] literature review by Sweeney and Newbold (2014) found that buffers of > 65 feet kept stream temperature increases to < 2°C, and buffers > 100 feet provided full protection from stream temperature increases."* We note that increases of up to 2°C are unacceptable, both for fish and for RMO and state water quality standards.

Small streams are particularly vulnerable to increases in temperature, even with limited selective logging. There is evidence to suggest that ***wider*** buffer widths may be necessary to protect stream temperatures, particularly in intermittent and headwater streams, and particularly when logging within 100' of streams. Logging within RHCAs, removing shade, road-related impacts, and degrading hyporheic flow can increase stream temperatures in small intermittent streams. Parameters that influence stream temperatures include, stream shade, overland flow, groundwater and hyporheic flows, and groundwater storage. Alteration of these parameters can increase stream temperatures, especially in small streams. Logging alters these parameters, and degrades the ability of these parameters to support cold water, and is likely to increase stream temperatures. (Caissie 2006; Davies and Nelson 1994; DeWalle 2010; Kiffney et al. 2003; Groom et al. 2011 201; Jones et al. 2006; Sweeney 2013; Pollock et al. 2009; Wigington et al. 2006; Poole et al. 2008; Poole and Berman 2001; Ebersole et al. 2015).

Also, logging within RHCAs or forest wetlands can magnify water quality and hydrology impacts from upland logging. (Hicks et al. 1991; Moore and Wondzell 2005). Janisch et al. (2011 and 2012) and Buttle et al. (2009) found that wetlands associated with headwater and low order streams are more common and influential on stream hydrology and water quality than previously realized. Many of the wetlands associated with first order streams are small and fall below the size requirements for protection in relation to timber sales. Janisch et al.(2012) found streams in headwater catchments with wetlands had larger and

more consistent increases in temperature in relation to adjacent logging than did the catchments that did not contain wetlands. The authors found that in streams with wetlands present in their catchments tended to have streams with finer sediments in their substrates.

Even in situations where logging within RHCAs is limited to thinning of smaller diameter trees, logging may compromise the ability of the RHCA buffer to protect streams or ameliorate the negative impacts from upland logging, including increased stream temperatures and the delivery of sediment and nutrients into waterways.

Additional useful information regarding the Janisch et al. 2012 paper: *"….spatially intermittent streams with short surface-flowing extent above the monitoring station and usually characterized by coarse-textured streambed sediment tended to be thermally unresponsive. In contrast, streams with longer surface-flowing extent above the monitoring station and streams with substantial stream-adjacent wetlands, both of which were usually characterized by fine-textured streambed sediment, were thermally responsive."*

The Washington Department of Ecology provides a concise and informative summary of the Janisch et al. 2012 research (https://apps.ecology.wa.gov/publications/SummaryPages/1203020.html):

> *"During approximately the past 50 years, stream temperature response to logging practices has been frequently studied. These studies have suggested that the amount of shade from stream-adjacent forest, as well as other variables such as elevation and aspect, can influence stream temperature when the streamside forest is removed by logging or otherwise disturbed.*
>
> *Results from these studies, however, have been variable, and the magnitude of stream temperature response has not always been predictable by the amount of stream-adjacent forest removed. Recent thought and research on this topic has thus tended to consider why, given similar logging treatments, some streams increase greatly in temperature after logging whereas temperatures of others increase only slightly, and why occasionally temperatures of yet other streams after logging have appeared to decline. Hyporheic flow and streambed sediment texture have been proposed as possible explanations.*
>
> *Recently, we observed that the temperature response of small forested headwater streams to logging were also highly variable. We further observed, however, that the degree of stream temperature response in the streams studied was strongly correlated with two landscape variables: cumulative surface area of small, stream-adjacent wetlands (0.93) and length of flowing surface water above our stream temperature monitoring stations (0.65). Additionally, stream sediment texture appeared important, with streams having coarse substrates being thermally unresponsive and streams having fine substrates being thermally responsive. Conversely, our measure of stream shade was not a strong predictor of stream thermal response.*
>
> *These results suggest that very small headwater streams may be fundamentally*

different than many larger streams because factors other than shade from the overstory tree canopy can have sufficient influence on stream energy budgets to strongly moderate stream temperatures even following complete removal of the overstory canopy. This raises the possibility that there are several types of very small headwater streams, some being thermally responsive and some not. Such a finding is potentially of importance to several fields of natural resource management. Confirming our observations, however, will take substantial additional work."

Again, the USFS's response to comments attempts to downplay this veritable mountain of scientific evidence showing-- time after time, in a broad range of logging intensity and scale, and in uplands as well as RHCAs—that there a strong correlation between logging and stream temperature increases and other changes to water quality parameters, watershed hydrology, biodiversity, and riparian habitats. For example, the USFS noted that "temperature increases noted by Janisch et al. 2012 were greatest in catchments where clearcutting to the stream occurred; this is not proposed in this project." Again, even increases on the smaller end of what Janisch et al. 2012 found in their study would be very concerning and relevant in the Morgan Nesbit sale, and would harm imperiled species and run afoul of legal standards in some cases.In addition, the Morgan Nesbit sale contains large amounts of very intensive logging activities, including those analogous to the clearcutting in the Janisch paper. For example, the FEA proposes clearcut-style "shelterwood" logging = 445 acres with only 20-30 trees left per acre (not discernably different from a clearcut in terms of effects on soils, erosion, landslides, sedimentation, etc); logging with "patch cuts" (includes mini clearcuts) = 1,522 acres; and tethered logging on 1,597 acres on steep slopes—for a combined total of **3,564** acres of these specific categories of erosion and sediment-producing industrial logging.

The USFS's response to comments also notes that replacing culverts will help provide for passage and connectivity for aquatic organisms, and so the Morgan Nesbit project will help protect genetic diversity and connectivity. We are very supportive of activities such as culvert repair and replacement, and agree that such actions will help with connectivity and genetic diversity. However, the logging, roading, and indiscriminate burning will harm connectivity and genetic diversity. Because the FS refuses to acknowledge the well-documented risks and likely harms from logging and roading, it is very difficult to have an honest and complete assessment of overall outcomes between these harmful vs. helpful actions.

The Clean Water Act and impaired waters within the Morgan Nesbit sale:

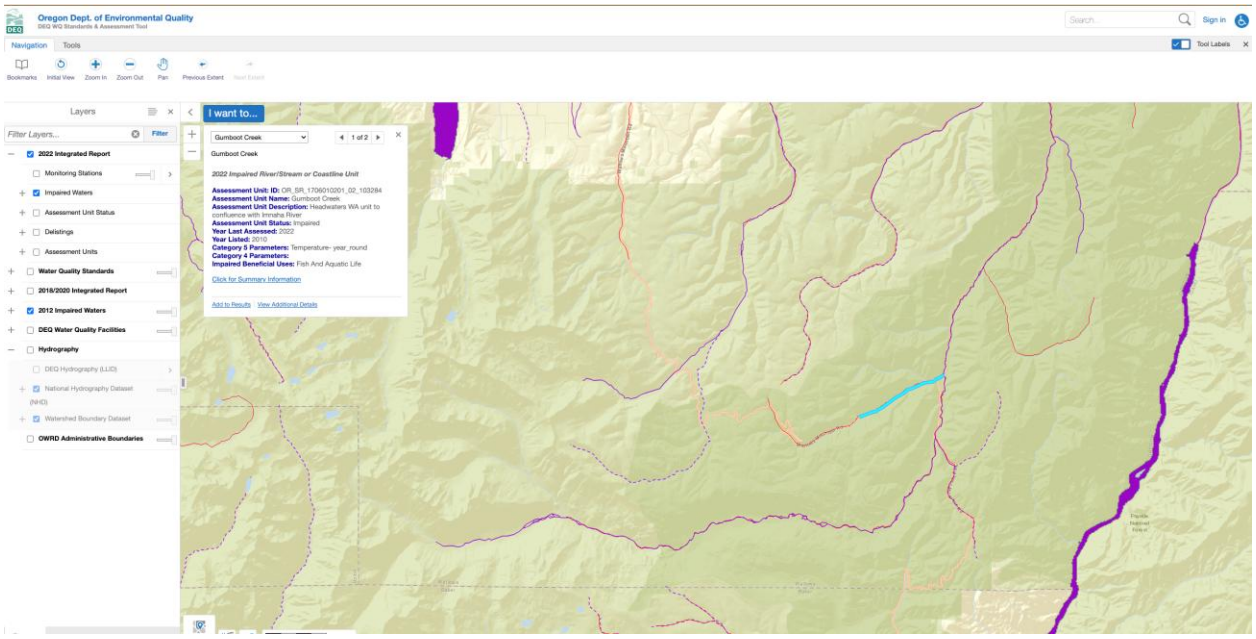
The Forest Service has a legal responsibility to uphold state water quality standards on the federal lands they manage. The Morgan Nesbit Aquatics BE notes that numerous streams within the project area are not meeting water quality standards. Oregon Department of Environmental Quality's (ODEQ) 303d list includes updated streams that are considered (category 5) and are in need of a TMDL. When streams are impaired and included on the 303d list—the agency is then required to ensure that actions such as logging and road-related activities do not raise stream temperatures by more than 0.1 degree Celsius. Further, these TMDLs and restoration plans would include restoration plans with broader cooperation and oversight from ODEQ. The agency should not be planning widespread,

intensive, and risky logging and roading across thousands of acres adjacent to and upslope of these 303d listed category 5 streams that are currently awaiting TMDLs and restoration plans. They should instead be coordinating restoration plans with ODEQ and the public as part of the TMDL process.

The Morgan Nesbit analysis has been updated to include the following paragraph: *"The ODEQ 2022 Integrated Report lists five streams in the project area as water quality limited for temperature under the 303(d) list: Big Sheep Creek, Lick Creek, Grouse Creek, Gumboot Creek, and the Imnaha River (ODEQ, 2022). These streams are in fact covered under the Lower Grande Ronde Subbasin TMDL (ODEQ, 2010). A TMDL is a pollution reduction plan which essentially removes streams previously on the Clean Water Act Section 303(d) list and makes them "Category 4A" which means they are still water quality limited, but with an approved TMDL."*

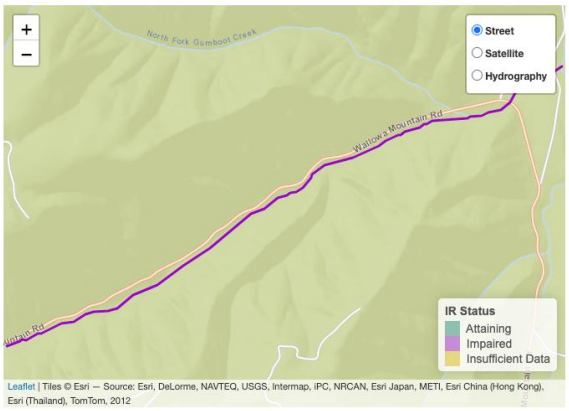
However, the ODEQ database clearly lists these streams, such as Gumboot Creek, as Category 5, which ODEQ defines as needing a TMDL. My understanding is that the old TMDL is severely outdated, and did not include an excessively large quantity of stream temperature data, often dating back a decade or more, that the USFS had not shared with ODEQ. When much of these data were shared with ODEQ in 2018, the streams with updated stream temperature data and outdated TMDLs were then put on the 303d list.

Figures (below) showing category 5 impaired streams on the ODEQ 303d list. We've highlighted Gumboot Creek as an example. However, the map clearly shows that numerous other streams are also designated as 303d streams (impaired. This map was accessed at: https://hdcgcx2.deq.state.or.us/Html5Viewer211/?viewer=wqsa



2022 Integrated Report Assessment Summary

OR_SR_1706010201_02_103284



Assessment Unit overall status

Assessment Unit Overall Status

- **AU Name:** Gumboot Creek
- **AU Description:** Headwaters WA unit to confluence with Imnaha River
- **AU Type:** River / Stream Unit
- **Overall Status:** Impaired
- **Year first listed:** 2010
- **Year last assessed:** 2022

Assessment Unit Overview

OR_SR_1706010201_02_103284 is a River / Stream Unit type assessment unit. Data from all monitoring locations within this assessment unit are pooled together and assessed as a whole.

Overall, this waterbody is **impaired**.

- **Impaired parameters:** Temperature- year_round
- **Attaining parameters:**
- **Insufficient parameters:**

Detailed parameter assessments

In the 2022 Integrated Report, DEQ has 1 parameter assessments. Details of these parameter assessments can be found on the 2022 Assessment Database. A limited selection of that database can be found below:

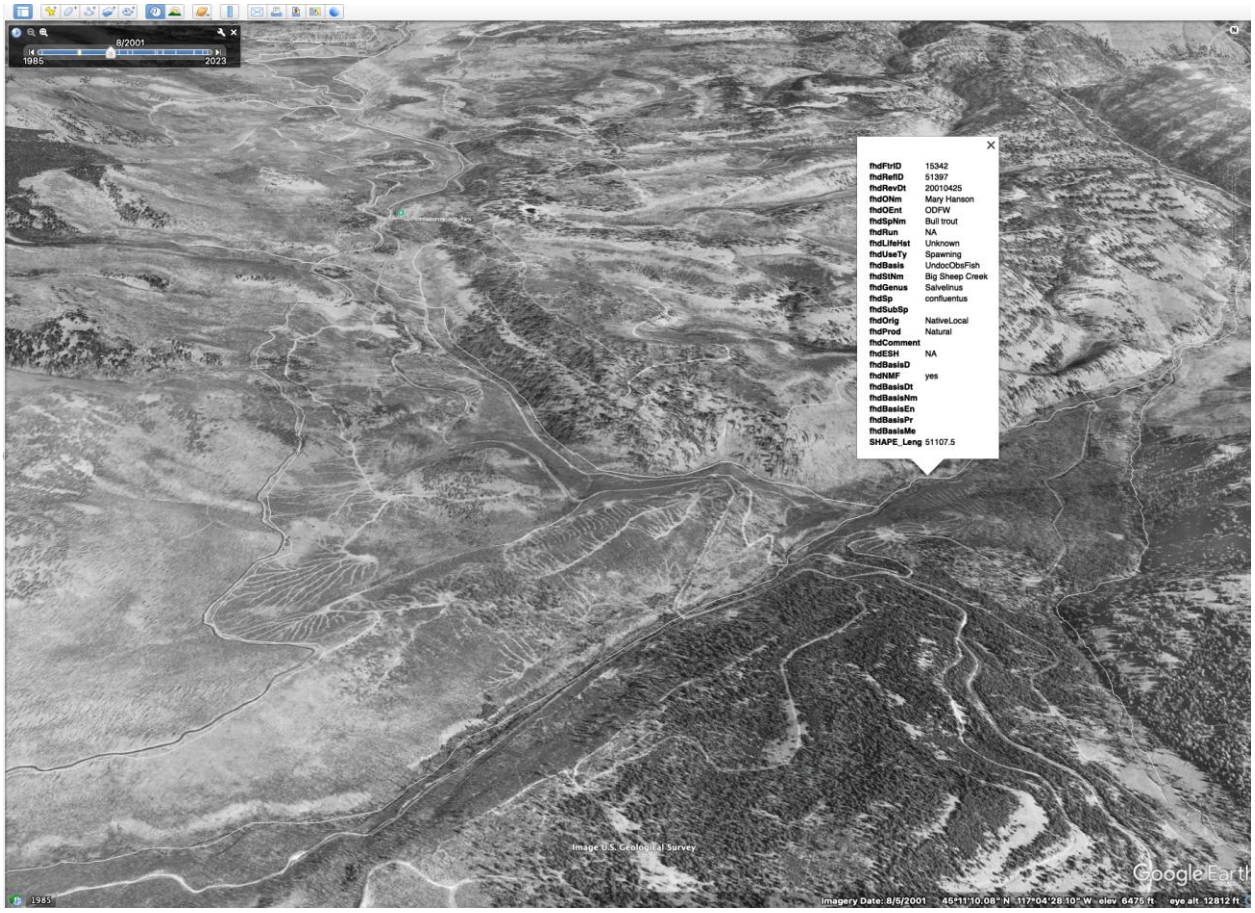
	AU_ID	Pollutant	Assessment	period	DO_Class	stations	Parameter_category
1	OR_SR_1706010201_02_103284	Temperature	Temperature - Numeric	year_round		WWNF-097	5

ODEQ's website notes the stream categories and their meanings: *"Category 1: All designated uses (DU) are supported, no use is threatened; Category 2: Available data and/or information indicate that some, but not all of the DUs are supported; Category 3: There is insufficient available data and/or information to make a DU support determination; Category 4: Available data and/or information indicate that at least one DU is not being supported or is threatened, but a TMDL is not needed; Category 5: Available data and/or information indicate that at least one DU is not being supported or*

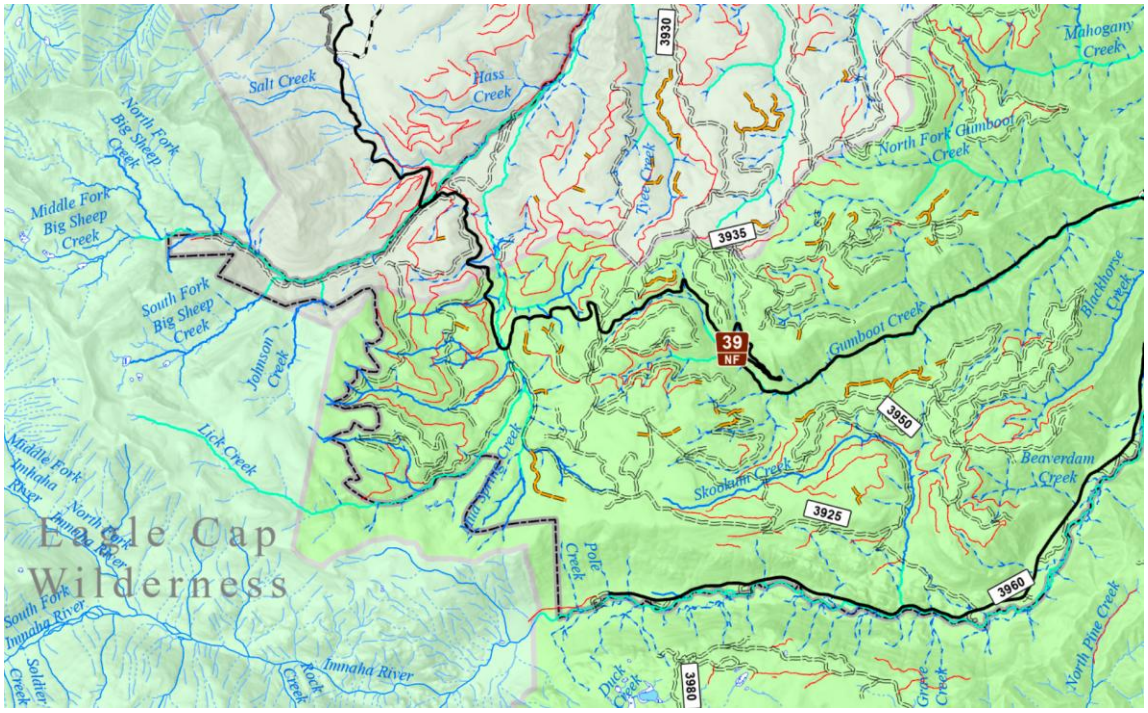
is threatened, and a TMDL is needed. As the above categories show, waters assigned to Category 4 and 5 are impaired or threatened; however, waters assigned to Category 5 represent waters on a State's Section 303(d) list."

The Morgan Nesbit Aquatics BE acknowledges that impaired streams with temperatures that violate stream water quality include Big Sheep, Grouse, Gumboot, and Lick Creeks, as well as the Imnaha River. It is not clear if other streams within the project area are also impaired, and/or if the agency has temperature data for other additional streams. Particularly given the widespread logging in this sale and on public lands across eastern Oregon—having adequate baseline data, ongoing long-term monitoring that is actually implemented, and an appropriate and practical framework for adaptive management is imperative for protecting stream habitats, water quality, ESA-listed and sensitive aquatic species, and drinking water.

The Aquatics BE notes that many streams in the project area exceed RMOs and state water quality standards. However, the BE then dismisses possible correlation with past and ongoing management issues such as heavy logging and high road densities, and the risks they pose to water quality and stream temperatures. For example, the EA states that because Big Sheep Creek and Lick Creek exit Eagle Cap Wilderness and also violate water quality standards, then factors are unrelated to forest management (such as climate change and other factors) are responsible—and seems to imply that may be the case for other streams within the project area that violate temperature standards. From the Aquatics BE: *"...many stream temperatures exceed RMOs and state water quality standards for bull trout (12°C) or salmon and trout core cold water habitat (16°C) during summer (Figure 7). However, these elevated temperatures exist where Big Sheep Creek and Lick Creek exit the Eagle Cap Wilderness (Figure 8), so factors unrelated to forest management actions (e.g., climate, timing and magnitude of snowmelt, geology and hydrology) appear to be primary causes of these high water temperatures."* While these factors might be partly responsible, it is also important for the agency to consider ongoing impacts from logging, roads, and livestock grazing. For example, Sheep Creek, here is a satellite photo from 2001 showing past logging in the upper reaches of the creek, near the Wilderness area:



Here also is the Morgan Nesbit temporary roads map, depicting these streams with high road densities and with roads within their RHCAs—possibility contributing greatly to water quality impairments including stream temperature violations:



The Aquatics BE goes on to state: "[b]ecause streams currently have higher temperatures than are optimal for listed fish, protecting existing cold water refugia, preventing loss of stream shade, and reducing the risk of high severity fire which could reduce shade is essential in order to prevent additional warming and protect critical habitat for listed fish."

However, the agency downplays and fails to analyze the effects of repeated entries in order to conduct repeated "treatments" in order to maintain ostensible effectiveness of logging and burning. There is only a very short window of time that logging "treatments" are ostensibly effective (approximately 10-20 years, before they start to grow back). The USFS acknowledges this in the response to comments, and notes that "treatments" may be repeated and spread out over long timeframes. However, there is then no analysis for corresponding effects of re-entries and re-treatments, such as keeping "temporary" roads open for a decade or more, associated erosion with roads and accessing these remote areas, continued repeated forest fragmentation, and other issues that we've raised in relation to logging, roading, and burning. Further, such "treatments" are not effective against large, climate-driven wildfires. Also, fish stocks are stronger in areas without logging, roads, and livestock grazing, and fish can recolonize burned areas-- even severely burned areas, within 2 years after fires provided that stream habitats have adequate connectivity.

Also important to consider is that the USFS proposed Forest Plan Revision (2014) vol 2. pg 60 notes that Redband trout will recolonize a stream relatively rapidly after experiencing severe fire: *"Redband trout and bull trout have been shown to recolonize severely burned drainages within two years, provided the drainages were physically accessible (i.e., no culvert barriers, and provided that other fish in unburned areas were close enough to*

discover and move back into the recently burned habitat". In addition, Olson 2000 noted: *"Gresswell (1999) notes that local extirpation of fishes is often patchy in the case of extensive high severity fires, and that recolonization is rapid."*

On the other hand, roads and forest management carry documented risks that continue to jeopardize imperiled fish across the region. Fish stocks are stronger and better distributed in areas of little or no management and low road densities, even in fire suppressed areas, and even if severe fires occur. Numerous studies have implicated roads as a primary factor in altering watershed hydrology and/or declines in fish stocks, and show that many benefits are gained by leaving forests unroaded and to their own ecological processes (including processes involving fire, insects, and disease). (Bader 2000; Bradley et al. 2002; Carnefix and Frissell 2009; DellaSala et al. 2011; Frissell and Carnefix 2007; Rieman and Clayton 1997, Rieman et al. 2000, Thurow et al. 2001; Public Lands Initiative/Trout Unlimited 2004; Western Native Trout Campaign 2001; Quigley and Arbelbide 1997).

The negative effects of roads and stream sediments on stream integrity and aquatic habitats, as well as on imperiled fish such as Bull trout, Steelhead, and others are well recognized. The Federal Registrar, Department of the Interior Fish and Wildlife Service 50 CFR part 17 (2010) Final Rule for Revised Designation of Critical Habitat for Bull Trout also recognizes the ecological threats posed by roads to fish and water quality: *"Sedimentation negatively affects bull trout embryo survival and juvenile bull trout rearing densities (Shepard et al. 1984, p. 6; Pratt 1992, p. 6). An assessment of the interior Columbia Basin ecosystem revealed that increasing road densities were associated with declines in four nonanadromous salmonid species (bull trout, Yellowstone cutthroat trout (Oncorhyncus clarkii bouvieri), westslope cutthroat trout (O. c. lewisi), and redband trout (O. mykiss spp.)) within the Columbia River basin, likely through a variety of factors associated with roads. Bull trout were less likely to use highly roaded basins for spawning and rearing and, if present in such areas, were likely to be at lower population levels (Quigley and Arbelbide 1997, p. 1183). These activities can directly and immediately threaten the integrity of the essential physical or biological features described in PCEs 1 through 6."*

In addition, "treated" (logged) areas having a vanishingly small chance of encountering a wildfire during that 10-15 year window of time (Rhodes and Baker 2008). If the agency is planning on re-entering these areas every 15-20 years to repeat logging, then the agency also needs to be honest about the ecological cost of such plans. For example, road-related activities to access backcountry areas—what of the already out-of-control road system on the Forest? What of the effects to wildlife, and the fragementation and edge effects? What of the ubiquitous high road densities and increased human access—allowing for more human fire-starts? What of the effects of repeated logging and roads on fish, water quality, and wildlife? Such "management" every ~15 years is impractical, expensive, ineffective, and would have catastrophic consequences for fish, wildlife, and water quality.

The most common water quality impairment in National Forest System lands is stream temperature. More than 1,240 stream miles on National Forest lands in the Blue Mountains are listed as not meeting water quality criteria. The most common water quality impairment on National Forest lands is stream temperature (Draft EIS for the Blue Mountains Forest Plan Revision (BMFPR), Vol. 1 pg. 272). This baseline figure from the BMFPR is almost

certainly an underestimate-- the large volume of recent data submissions in 2019 from the Forest Service to ODEQ reflect even more widespread problems with stream temperature violations across the landscape. The agency's 2018 data submissions were the first effort by the Forest Service to share a substantial portion of their data with ODEQ in over a decade.

Elevated stream temperatures are known to negatively impact fish stocks on National Forest lands in the Blue Mountains, including anadromous fish, and listed and at-risk fish such as Bull trout. Water quality standards for temperature, sediment, and other water quality parameters are not being met on hundreds of miles of streams on these National Forest lands.

Unfortunately, TMDLs and WQRPs have not been developed in a timely fashion for many 303(d) listed basins. BMPs have not been adequately re-evaluated or adjusted to assure compliance with water quality parameters such as temperature. WQRPs plans and TMDLs often do not adequately deal with forest management activities, and monitoring is not always followed through on and lacks public transparency.

Monitoring and Baseline Information:

The USFS, despite our persistent inquiries, has not been able to provide us with examples of or data from any BACI or upstream/downstream and before/after monitoring from logging projects in priority watersheds, including logging projects taking place within Riparian Habitat Conservation Areas on eastside forests. It seems that there *may* have been one or two projects that might have had such a targeted monitoring design, but the USFS has not been able to provide us with a location, name of stream, or any data. None of the dozens of USFS staff or specialists I've talked with have been able to say for sure if such monitoring has taken place, or tell me a location or stream where it will take place in the near future. The USFS does conduct subwatershed and watershed scale water temperature monitoring—these monitoring data often reflect high stream temperatures that are in violation of state water quality standards. The necessary follow-up work to figure out what is causing these widespread water quality issues and violations is lacking.

The USFS response to comments notes that *"Before After Control Impact studies are valuable tools for understanding effects, and we review literature and publications using this study design when planning projects."* BMBP notes, however, that monitoring and adaptive management are required. It is clear that the FS has a widespread stream temperature problem across the Blue Mountains, including in the Morgan Nesbit project area. While this very pressing issue that requires restoration is largely ignored, the FS refuses to do the very BACI monitoring that would allow for adaptive management in relation to logging. The agency seems to prefer the seemingly plausible deniability of not doing the very monitoring that is likely to show that logging is correlated with stream temperature increases.

The USFS response to comments goes on to note *"Regarding information and data sharing, I have not received any requests from BMBP for water quality data, but we regularly share data with colleagues at other agencies."* BMBP submitted a FOIA for

water quality data in 2018. I had to appeal the USFS's FOIA response in 2019, as the agency had clearly excluded data for dozens of streams in their FOIA response—I determined this was the case based on stream temperature data that the agency referenced or briefly summarized in their NEPA analyses from previous years (which I looked through and meticulously cited), but that the USFS had not included in their FOIA response. In addition, until recently, the USFS had not shared the vast majority of their stream temperature data from Oregon streams with ODEQ for over a decade. I demonstrated this through comparing what was in the ODEQ database with what was in USFS NEPA documents, and then communicating with both the FS and ODEQ. After these communications, and an ODEQ call for data in 2018, the USFS shared data for hundreds of streams that they previously had not turned over to ODEQ.

The Forest Service has repeatedly demonstrated that it does not have the ability to collect, organize, store, analyze, or share data and monitoring information in an effective or consistent manner. The following are a few examples of issues with monitoring data and information:

- The Forest Service lacks the will or internal organization to share data with outside agencies, such as Oregon Department of Environmental Quality, on a regular basis. Until BMBP wrote letters to Forest Supervisors and ODEQ staff calling attention to this issue, the USFS had not shared the vast majority of their water quality data with ODEQ for over a decade. After we highlighted this issue during the last ODEQ 'call for data' in 2018, the Forest Service shared large amounts of data with ODEQ, finally. However, based on stream temperature data that BMBP received through FOIA, the Forest Service still has not provided ODEQ with existing stream temperature data for some streams, including streams in violation of water quality standards. BMBP had to appeal the first FOIA response we received from the Forest Service in order to finally get the bulk of these data.

- Unwilling to be transparent with the public. The Forest Service has repeatedly made it difficult to obtain water quality information.

- Unable to properly organize data storage or coordinate data sharing among key staff members. For example, water temperature data does not generally seem to be housed in a central location in most instances. Submission of existing data into the centralized database is voluntary for staff members in charge of such data. Once it became clear that the Forest Service was planning to (finally) submit some of their data to ODEQ during the ODEQ 'call for data', it became clear that the Forest Service did not have an adequate internal system or protocol for data storage or organization. Much of this data was housed with individuals who were not required submit it to the centralized database for eventual submission to ODEQ.

- The Forest Service often does not have accurate or consistent water quality data in NEPA documents. We have documented this issue for numerous streams. For a few examples, please see our exhibit with our letter to the Malheur National Forest requesting an SEIS for the Camp Lick timber sale.

- The Forest Service does not conduct an adequate or statistically robust number of site visits to determine BMP and PDC effectiveness in timber sales. This only happens for a handful (or less) of timber sale sites on each forest per year. While the Forest Service claims that BMP monitoring is effective, in reality the agency does not have enough data to make this determination.

- The Forest Service is unable to follow through with monitoring plans and efforts (for example, stream temperature monitoring promises made and broken)

- The agency lacks an appropriate framework for adaptive management. In many cases, the agency lacks baseline data, which is a key component of an adaptive management framework. This is particularly true of data regarding population trends for fish and wildlife.

- When designing monitoring goals, the agency will often narrowly focus on monitoring parameters relative to 'fuels', silvicultural questions, tree species composition, or some other aspect of measuring trees or wood. The Forest Service rarely focuses substantial or widespread effort to systematically or responsibly collect data on and monitor issues such as: water quality response to logging in a before/after upstream/downstream design; wildlife or fish response to logging or grazing; soil compaction; etc.

- Lack of follow-through with long-term monitoring plans and promises, such as those for stream temperature monitoring in the Big Mosquito sale in the Malheur NF.

Based on these and other issues with current monitoring, there is no reason to believe that the Forest Service is able to conduct an adequate or comprehensive monitoring program in relation to the logging—including logging within RHCAs. Furthermore, the monitoring that the Forest Service is narrowly focused on parameters that miss the mark for actually looking for indicators of ecosystem response, or potential effects to wildlife, birds, water quality, riparian habitats, in stream habitats, etc.

In the Morgan Nesbit BE, there is a graph of stream temperature data for a few creeks. It is not at all clear that those are all of the creeks that the USFS has stream temperature data for. In addition, the stream temperature data should also be, at the very least, summarized in a table showing the 7-day max averages for all creeks with available data (and not cherry picked to avoid years with violations).

Excess fine sediments:

The FEA admits that logging such as tethered logging, clearcut-style logging such as group select cuts and shelterwood logging, and logging on steep slopes-- all have the potential to increase erosion *"due to either removal of trees (group select and shelterwood units) or the presence of tracked or wheeled equipment on steep terrain (>30% slope)".* The Morgan Nesbit sale contains large amounts of these logging activities. For example, the FEA proposes clearcut-style "shelterwood" logging = 445 acres; "patch cuts" (mini clearcuts) = 1,522 acres; and tethered logging on 1,597 acres on steep slopes—for a combined total of

3,564 acres of these specific categories of erosion and sediment-producing industrial logging.

This is a huge amount of acreage of intensive, industrial-style logging. Such logging is documented to have significant and negative effects to watershed hydrology, stream habitats, water quality, and imperiled and ESA-listed aquatic species. Also--what is the estimated post-logging ECA for the subwatersheds with heavy logging planned within the Morgan Nesbit sale?

Despite the Aquatics BE's admission that such intensive logging is likely to create erosion, the agency's analysis then goes on to claim that any potential increases of fine sediment in aquatic habitats is insignificant due to the protection of PACFISH RHCA buffers, which were designed to trap most fine sediments generated from upslope logging. From the Aquatics BE (pg. 32): "***PACFISH RHCA widths were designed to provide a sufficient area to trap most fine sediment generated from upslope management activities such as timber harvest and ground-based yarding, and eliminate adverse effects to fish species from these activities (PACFISH 1995). Therefore, potential increases in fine sediment in aquatic habitat from these activities are insignificant."***

This is galling statement, given that the EA also admits that they are not adhering to PACFISH/INFISH buffers. The PACFISH buffers were put in place to, among other important functions, trap fine sediments generated from upslope logging so that excess fine sediments did not reach streams. The Aquatics BE notes (pg. 32) that "***The default PACFISH buffers of 300 ft are well established as sufficient to protect streams from any sedimentation impacts, but less in known about the effects of limited commercial thinning within 150 ft of streams."*** The Aquatics BE also states (pg. 13): *"Note that the Morgan Nesbit project restricts activity and has additional project design criteria within default PACFISH buffers,* ***but does not use default PACFISH no activity buffers (PACFISH 1995)****."*

In violation of PACFISH/INFISH standards, the Morgan Nesbit sale EA proposes commercial logging within RHCAs within only a 25-foot no activity buffer zone Category 1, 2 and 4 streams. If the agency is not adhering to PACFISH/INFISH buffer widths, and it acknowledges that they don't actually know if logging within 150 feet of streams will protect against increased fine sediment in streams from upland logging—then how can it then claim that the buffer widths it's adopting for this sale are in fact going to protect streams from upslope logging?
How can it claim that streams are protected from sediments generated from upland logging by PACFISH buffers, yet also admit that it isn't adhering to PACFISH buffers?

Figure from the Aquatics BE:

RHCA Category	Stream / Feature Type	PACFISH/INFISH Default Buffer	Blue Mountain PDCs & draft PICs Buffer	Morgan Nesbit Proposed Action
1	Fish Bearing Streams	300 ft no activity	100 ft no activity 300 ft limited activity	Big Sheep Grossman Stand: 25 ft no activity 150 ft limited activity Shaded Fuel Breaks: 100 ft no activity 300 ft limited activity
2	Perennial Nonfish Bearing Streams	150 ft no activity	75 ft no activity 150 ft limited activity	75 ft limited activity
4	Intermittent Nonfish Bearing Streams, Wetlands (<1 acre)	100 ft no activity	50 ft no activity 100 ft limited activity	50 ft limited activity

*Also from the Aquatics BE (pg. 32): "**Group Select Cuts, Shelterwood treatments, and Tethered Logging** Several commercial types of proposed commercial treatment have the potential for increased erosion, due to either removal of more trees (group select and shelterwood units) or the presence of tracked or wheeled equipment on steep terrain (> 30% slope). Under the proposed action, 445 acres are proposed to have shelterwood treatments, and 1,522 acres of commercial thinning will have irregular patch cuts (of 2 – 5 acres) in addition to thin from below commercial treatments. If needed, shelterwood areas may be replanted with desired tree species (ponderosa pine or western larch). Tethered logging is proposed on 1,597 acres. Soils design criteria are in place to minimize erosion from tethered logging operations, and these design criteria are informed by an ongoing study that Oregon State University is conducting on tethered logging operations on the Whitman ranger district of Wallowa-Whitman National Forest. These activities will only occur in uplands, no shelterwood, group select cuts, nor tethered logging will occur in RHCAs. These activities will occur only in uplands, and not in RHCAs. **PACFISH RHCA widths were designed to provide a sufficient area to trap most fine sediment generated from upslope management activities such as timber harvest and ground-based yarding, and eliminate adverse effects to fish species from these activities (PACFISH 1995). Therefore, potential increases in fine sediment in aquatic habitat from these activities are insignificant."***

Again-- how can the Forest Service claim that streams are protected from sediments generated from upland logging by PACFISH buffers, yet also admit that it isn't adhering to PACFISH buffers? While the FEA arbitrarily and capriciously determined that intensive, clearcut style upslope logging will not increase fine sediments in streams-- it does admit that planned commercial thinning within a category 1 RHCA may increase sedimentation from logging. Given that the EA admits that these are potentially significant effects-- does that not trigger the need for an Environmental Impact Statement? The Forest Service again claims, with regard to logging within RHCAs outside of category one streams, that because the 1995 PACFISH buffers were designed to protect against sediment from upland logging,

fine sediments will be trapped and adverse effects to fish will be eliminated—but fails to consider that the agency is not planning to adhere to those 1995 PACFISH buffers.

From the Aquatics BE: *"One commercial thinning treatment is proposed within a category 1 RHCA. Approximately 17 acres of commercial thinning are proposed in the Big Sheep Grossman stand near Big Sheep Creek. Commercial thinning will occur only within the outer half of the RHCA. Several characteristics of this site will allow commercial thinning while minimizing impacts to Big Sheep Creek. A road traverses this narrow unit, allowing machinery to access proposed treatment areas while minimizing the distance machinery must travel off road and the need for skid trails. The terrain is flat on the Big Sheep Creek side of the road. Although this thinning will provide long term benefits to riparian health by reducing the risk of high severity fire and releasing large ponderosa pine and western larch from competition with grand fir, commercial thinning, and operating heavy equipment within an RHCA may have short term impacts.* ***The default PACFISH buffers of 300 ft are well established as sufficient to protect streams from any sedimentation impacts, but less in known about the effects of limited commercial thinning within 150 ft of streams.*** *The possibility of increased sedimentation from ground disturbance* ***150-300 ft from the stream is unlikely due to design criteria in place****, and due to flat ground from 0-150 ft from the creek,* ***but is not discountable nor insignificant.***

The agency claims that logging within category 2 and 4 RHCAs will not result in increased sedimentation to downstream fish bearing streams. From the Aquatics BE: *"Commercial treatments are proposed in the outer half of category 2 and 4 RHCAs. Two factors will prevent sedimentation impacts to downstream fish bearing streams. First,* ***most*** *RHCA thinning units are in headwaters areas distant from fish bearing reaches. Second, design criteria in place (e.g., hand noncommercial thinning only within inner half of RHCA, standards for downed wood to leave) will minimize erosion and sedimentation."*

The primary reasons the agency gives for this is that "most" logging is within headwater areas, and because the agency is planning commercial logging for the outer portion of the RHCA and noncommercial logging for the inner portion. However, it's well established that headwater streams are sensitive to the effects of logging and roading, and that these effects are evident in downsteam reaches (see discussion above, with citations). In addition, "most" logging is not quantified by the agency. The agency is also ignoring their own statements regarding full PACFISH 1995 buffers providing needed protection from sedimentation from upslope logging, and their own uncertainty about effects on sediments from logging within 150 feet of streams. They are also ignoring the many scientific studies that provide evidence that logging within RHCA buffers is likely to increase fine sediments in streams.

Logging is likely to increase surface runoff and overland flow, potentially delivering warmer water (and excess sediments) into streams more quickly and with a greater volume. This, in turn, can also cause erosion and alter stream morphology, and potentially affect stream temperatures.

The Forest Service has ignored decades of scientific consensus, research, and expert opinion regarding riparian buffers, including their own. For example, the FS noted that:

"[r]esearch 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" (Draft Blue Mountains Forest Plan Revision vol. 2 pg. 52).

Studies have found selective logging may be associated with increases of instream fine sediments (Kreutzweiser et al. 2005, Miserendino and Masi 2010). Upslope logging, particularly on steep slopes above streams, can increase fine sediment inputs into streams, contribute to stream temperature increases, cause increased variability in water quality and aquatic habitat parameters, and alter stream morphology and watershed hydrology. Additionally, logging on thin soils, ash soils, and rain-on-snow zones greatly increase the risk of soil damage, erosion, and excess fine sediments in streams. Zhang et al (2009) found long-term impacts to macroinvertebrate communities and streambed substrates. These impacts lasted for up to 40 years due to excess fine sediments associated with logging. Effects, such as changes to sediment loading and stream morphology, may not show up for many years after logging. (Beechie 2001; Beechie et al. 2005; Benda and Dunne 1997; Kelsey 1982; Madej and Ozaki 1996).

Roads outside of RHCAs can also harm stream water quality. Road networks act as artificial stream channels, greatly increasing the magnitude and timing of peak flows and potentially carrying sediment into streams. Transport can occur through a variety of mechanisms, including roadside ditches, culverts, erosion, and gullies. Small and large landslides increase in frequency in association with roads, providing another mechanism by which fine sediments can be carried into streams—even if these roads and events occur outside of RHCAs.

Excess fine sediments generated by road related erosion or harvest related soil compaction may be carried farther across the landscape because of decreases in water infiltration or runoff rates over damaged soils, which in turn can cause an increase in the distance of overland flow transporting the sediments. Thus, the sediments generated by management activity can reach streams (Croke and Hairsine 2006, Nietch et al. 2005, Wemple et al. 2000). In addition, improper road drainage can cause gullies, landslides, and other erosional features, which in turn lead to sediment generation, increased runoff, and more direct and rapid transport of runoff and sediment to streams (Croke and Hairsine 2006, Wemple et al. 2000). Furthermore, the distance of travel required for sediments to enter streams may be shortened by the artificial extension of stream networks by roads and culverts (Croke and Hairsine 2006, Wemple et al. 1996). Increases in the efficiency of delivery of water and sediment to streams due to road networks and changes to soil infiltration and groundwater inputs can affect the timing, magnitude, duration, and frequency of sediment inputs. Roads increase peak flows by intercepting surface and subsurface flow, and diverting it into culverts and ditches that drain into streams (Wemple et al. 1996). Instream sediment dynamics such as timing and placement of fine sediment deposition, embeddedness, and scour are affected by stream power and flow regimes (Moore and Wondzell 2005, Wood and Armitage 1997).

Ashy soils typically hold more moisture than sandy or poor soils. As a result, they are often associated with mixed-conifer forests. Because RHCAs, steep slopes, and mixed-conifer forests on ashy soils are targeted for logging, and would be at risk of soil damage,

compaction, and displacement, should this proposal be implemented. For example, in a recent Forest Service timber sale, the Upper Touchet sale on the Umatilla NF, the FEA (pg. 47) notes that the *"[e]ffects of ashy soil displacement and compaction by ground-based and cable activities on soil productivity is immediate and will persist on the landscape for up to 20 years or more (Giest, 1989)."* The Upper Touchet FEA also states: *"Ashy soils have low bearing strength and are susceptible to increased soil displacement and compaction by logging activities. When non-mixed ashy soils are disturbed, erosion is greater due to fine particle size and lack of cohesiveness between ash particles.*

General water quality and watershed hydrology

The FS has ignored ample and well-documented evidence regarding the negative impacts logging and associated activities have on RMOs such as stream temperatures, fine sediments, LWD, pool frequency, and others, as well as peak and base flows, watershed hydrology, and other parameters. We are extremely concerned that the FEA and specialist reports downplay or ignore the likely negative impacts on streams, water quality, and watershed hydrology that are well-documented to be associated with roads and logging.

For example, the Tiger-Mill Scoping Notice of Proposed Action does a more transparent job of acknowledging the complex nature of these dynamics: *"Depending on the nature, extent and timing of disturbances, changes in vegetative structure can reduce rainfall interception, water infiltration, and evapotranspiration, which can increase the amount of surface runoff and streamflow, respectively, and can also alter the timing of that flow. Increases in runoff and streamflow can lead to a decrease in water quality from non-point source pollutants through increased nutrient and sediment loads because hillslope erosion transported into streams, as well as increased streambank and streambed scour."*

From the Upper Touchet Hydrology Report: *"The relationship between created openings in forested landscapes and changes in water yield and peak flows has been documented by numerous studies. Changes in forested stand and canopy density caused by harvest, fire, or insect and disease can change the distribution of the snow pack, increase the rate of melt of the snow pack, and cause the timing of the melt to be earlier. These factors may lead to changes in peakflows. In addition, reduction of stocking density reduces the overall vegetative use of water, increasing the amount of water available for runoff. Changes in water yield and in peak flows have the potential to destabilize channels, causing increased erosion and sedimentation in channels. Changes in these parameters would be of concern for aquatic habitat and biota, downstream water users, and for channel morphology."*

The Mill Creek DEA: *"Equivalent Harvest Area (EHA) Water yield is particularly affected by changes in the water budget, which includes changes to precipitation, evaporation, and transpiration from vegetation, infiltration, and runoff. Changes in water yield can influence bank erosion, stream temperatures, stream form, and habitat for fish. Resulting channel incision can reduce connection to floodplains and therefore reduce potential water retention across a valley section. EHA is an assessment required by the Ochoco National Forest Land and Resource Management Plan (Forest Plan) to determine the effects to peak flow from timber harvest activities and forest vegetative Mill Creek Dry Forest Restoration, Watershed and Fisheries Effects Analysis 3 conditions within a watershed. EHA is based*

on the principle that removing vegetation changes hydrologic response characteristics such as runoff, overland flow, peak flow, snow accumulation, timing, and total water yield. Excessive changes in these hydrologic response characteristics can lead to poor riparian conditions such as erosion, lateral scour, channel degradation, aggradation and/or incision resulting in poor water quality."

The FEA's determinations that there would be no adverse impacts to water quality and streams rests in part on BMPs being properly applied. BMPs are largely subjective and voluntary, and it cannot be assumed that they will be implemented to their fullest possible extent. The protective measures intended by BMPs may or may not be applied in most situations, and lack any strong mechanism of enforcement. There is no guarantee or enforcement mechanism to ensure that they will be properly applies.

Studies such as Jones & Grant (1996) found that watersheds with drier conditions and more intense summer droughts were more sensitive to the effects of logging and roads on increased peak flows. We postulate that this may apply to eastside streams. Hicks et al. (1991) found base flows increased for 8 to 9 years after clearcut logging because rainfall is not intercepted, evaporated, and transpired by trees. Instead, most rainfall becomes surface, subsurface, or groundwater flow once the trees are removed, and therefore contributes to base flow increases. However, the author found that base flow rates declined to lower than normal volumes in areas of hardwood riparian re-growth for the following 18 of 19 years in their study. In combination with climate change, unintended negative effects may have severe consequences.

The FEA fails to adequately analyze and avoid impacts to water quality and stream habitats from issues such as past logging and potential indirect, direct, and cumulative impacts from the Morgan Nesbit sale. These impacts are likely to be significant and to pose risks to water quality and aquatic habitats. Such direct, indirect, and cumulative impacts are likely to retard attainment of RMOs, including pool depth and width to depth ratios, and alter hydrology and stream morphology-- which in turn can result in negative impacts to stream temperature, bank stability, and streambed erosion. The FEA fails to take the requisite 'hard look' at the indirect, direct, or cumulative effects of logging on stream water quality, hydrologic processes, or stream morphology.

Large woody debris (LWD) and pool habitat:

The Aquatics BE (pg. 49) notes that ***"[p]ool habitat and LWD levels are likely lower than prior to the start of intensive timber harvest activities in the analysis area.*** *While specific habitat data is not available for the project area, trends in changes in LWD and pool habitat in the Pacific Northwest and adjacent areas have likely occurred in the project area. McIntosh et al. (2000) and Quigley et al (1997) documented a general decline pool habitat since the 1930's. Bilby and Ward (1991) found a significant decrease in LWD in managed streams compared to old-growth streams. Cover et al. (2008) documented increases in fine sediment in streams as the result of management activities in the Klamath Mountains of northern California. Timber harvesting activities (including riparian harvesting) and the development of the current road system are likely causative factors in*

the decline in LWD, pool habitat, and increases in fine sediment compared to the pre-settlement conditions."

Given the information that logging and roading have historically caused declines in LWD and pool habitats, and increases to fine sediment—why is the Forest Service bent on repeating the mistakes of the past? There is ample scientific evidence that even more modern logging and roading practices on federal lands continue to be harmful to streams, water quality, and fish.

We are very concerned that logging, especially within RHCAs, will negatively affect the availability of future large wood recruitment for LWD in streams. We are also concerned about effects on fish-bearing streams, as portions of LWD do come from upstream, and because logging is widespread on adjacent slopes. Wood recruitment and delivery is a crucial cornerstone of ecological integrity for streams, essential for the viability of many native and ESA-listed aquatic species, and a driving force of recovery for stream morphology. Hyporheic flows and groundwater storage and movement depend in part on wood and future large wood recruitment, and are important for maintaining cold water in perennial streams. Groundwater movement and storage is interconnected with a number of complex watershed processes and forest components, and may be negatively impacted by soil compaction and other negative effects from logging.

The Aquatics BE also notes for LWD that **"**Tyee Creek and waqímataw Creek did not meet the PACFISH RMO standard, nor did they meet forest type specific standards for the Big Sheep Creek watershed. Counts of LWD/mile varied from 3/mile in one reach of Tyee Creek, to 124/mile in one reach of the Imnaha River." Logging, roading, and burning will further retard attainment of these RMOs.

We are also concerned about effects to pools from changes to watershed hydrology and increases in sedimentation. Aquatic ecosystems include complex and interdependent interactions. The loss of snags and downed wood along streams negatively affects stream morphology, including pools. The reduction of smaller wood for streams, as well as future recruitment for these components, is already occurring through logging in many timber sales across the landscape.

It is important to highlight that small intermittent streams, as well as perennial streams, would also be negatively affected by logging and the loss of wood for streams, and that those effects are felt downstream. Small streams are crucial to maintaining cold water for downstream perennial waterways, and to creating and ensuring cold water refugia for fish. (Benda et al. 2005; Caissie 2006; Kaufmann and Faustin 2011)

Special-status and at-risk fish and aquatic species:

We are concerned that logging within RHCAs, as well as intensive, large-scale logging in the uplands in this project will negatively affect sensitive, at-risk, special-status, and imperiled riparian and aquatic species and their habitats. We are extremely concerned that logging, roading, burning, and related activities will cause downward population trends and jeopardize the viability of these and other aquatic species.

The Aquatics BE admits that the Morgan Nesbit project determination is *"May Effect, Likely to Adversely Affect"* for ESA-listed Threatened Snake River Steelhead, Snake River Spring Chinook Salmon, and Columbia River Bull trout. The Aquatics BE also states that the Morgan Nesbit project *"Will Impact Individuals or Habitat" "but will not likely contribute towards federal listings or loss of viability to the population or species"* for Sensitive-listed species including Redband trout, Western Ridged Mussel, Shortface Lanx, Pacific Lamprey, and Columbia Pebblesnail. Western Ridged Mussels are also proposed for listing under the ESA.

Further, the Aquatics BE (pg. 54) states that the Morgan Nesbit project *"Would Adversely Affect (WWA)"* Essential Fish Habitat for Chinook salmon due to *"short term negative effects to riparian habitat will occur as a result of thinning within RHCAs."* Also from the BE: "*Additionally…the uncertainty inherent in prescribed burning on a large landscape means that unanticipated effects from prescribed burns are unlikely, but possible."*

From the Aquatics BE:

Region 6 Aquatic Sensitive Species

Two Region 6 aquatic sensitive species, redband trout and Pacific Lamprey, are present in the analysis area. Additionally, the project area may provide suitable habitat for three Region 6 aquatic sensitive species (western ridged mussel, shortface lanx, Columbia pebblesnail) but these species have not been documented in the project area (Table 2).

Table 2. ESA listed and region 6 sensitive aquatic species present on Wallowa-Whitman National Forest, occurrence within the Morgan Nesbit project area, and determinations.

Species	Status	Occurrence		Effects determination
		WWNF	Morgan Nesbit	
Snake River Steelhead (*Oncorhynchus mykiss)*	ESA Threatened, WWNF MIS	Species & critical habitat present	Species and critical habitat present	LAA
Snake River Spring Chinook Salmon (*Oncorhynchus tshawytscha)*	ESA Threatened	Species & critical habitat present	Species and critical habitat present	LAA
Snake River Fall Chinook Salmon (*Oncorhynchus tshawytscha)*	ESA Threatened	Species & critical habitat present	Not Present	NE
Snake River Sockeye Salmon (*Oncorhynchus nerka)*	ESA Endangered	Species & critical habitat present	Not Present	NE
Columbia River Bull Trout (*Salvelinus confluentus*	ESA Threatened	Species & critical habitat present	Species and critical habitat present	LAA
Inland Redband Trout (*Oncorhynchus mykiss*)	R-6 Sensitive, WWNF MIS	Documented	Species and habitat present	MIIH
Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)	R-6 Sensitive	Documented	Not Present	NI
Western Ridged Mussel (*Gonidea angulata)*	R-6 Sensitive, ESA proposed	Documented	Not documented, suitable habitat present	MIIH
Shortface Lanx (Giant Columbia River limpet, *Fisherola nuttalli)*	R-6 Sensitive	Documented	Not documented, suitable habitat present	MIIH
Pacific Lamprey *(Entosphenus tridentatus)*	R-6 Sensitive	Documented	Species and habitat present	MIIH
Columbia Pebblesnail (*Fluminicola fuscus)*	R-6 Sensitive	Documented	Not documented, suitable habitat present	MIIH
California floater (*Anodonta californiensis)*	R-6 Sensitive	Suspected	Not Present	NI

For ESA listed species, possible determinations are LAA (May Effect, Likely to Adversely Affect), NLAA (May Effect, Not Likely to Adversely Affect) of NE (No Effect). For sensitive species, possible determinations are WIIH (Will Impact Individuals or Habitat with a consequence that the action will contribute to a trend toward Federal listing or cause a loss of viability to the population or species), BI (Beneficial Impact), MIIH (May Impact Individuals and Habitat but will not likely contribute toward federal listing or loss of viability to the population or species), or NI (No Impact).

The Aquatics BE acknowledges that *"[i]t is important to avoid stream temperature increases the Morgan Nesbit project area because several streams support bull trout, which are highly sensitive to warm water and require water temperatures < 12.0°C (Rieman and McIntyre 1993). Cold water is also important to Chinook salmon, steelhead, and redband trout, although these species can successfully spawn, rear, and grow in warmer water than bull trout. Additionally, USFS temperature monitoring has documented temperatures that exceed state standards within the project area (Figure 1), so preventing additional warming and maintaining cold water refugia is important to maintain or recover fish populations."*

However, as we show in the temperature and sediment sections of this document, the logging and roading as proposed in the Morgan Nesbit sale is likely to increase temperature and fine sediments in streams, alter hydrology, and negatively affect stream habitats, water quality, and imperiled and special status aquatic species such as Chinook salmon, Bull trout, steelhead, and redband trout. As such, we are extremely concerned that the Morgan Nesbit project would have negative effects on these and other aquatic species, and cause downward population trends and jeopardize the long-term viability of their populations.

The Forest Service attempts to downplay the negative impacts from logging on to the cold, clean water quality and the stream habitats that imperiled fish depend upon. For example, the Aquatics BE states (pg. 51): *"Change in water quantity is unlikely to change as a result of the activities proposed. Where ECA exceeds 15%, water quantity can change (NMFS 1995, USFWS 1998). The proposed thinning activities are unlikely to result in a significant change in the current ECA in the analysis area. It is unlikely that water quantity will change, therefore measurable effects to PBF 7 are unlikely."*

However, we note that the agency fails to quantify the Equivalent Clearcut Area (ECA) in the FEA or specialist reports. What is the ECA for the subwatersheds that include heavy logging planned within the Morgan Nesbit sale? We also note that the Morgan Nesbit sale contains large amounts of these logging activities. For example, the FEA proposes clearcut-style "shelterwood" logging = 444 acres; "patch cuts" (mini clearcuts) = 1,522 acres; and tethered logging on 1,597 acres on steep slopes—for a combined total of **3,563** acres of these specific categories of erosion and sediment-producing industrial logging. This is a huge amount of acreage of intensive, industrial-style logging. Such logging is documented to have significant and negative effects to watershed hydrology, stream habitats, water quality, and imperiled and ESA-listed aquatic species. Given the large amount of logging, roading, and prescribed burning proposed in the Morgan Nesbit sale, as well as the high road densities in numerous subwatersheds—it is unlikely that the ECA will remain well below the 15% threshold the agency has identified.

Given the likely significant increases in stream temperature and fine sediments expected, the Forest Service should cancel or substantially reduce logging-- and at the very least conduct a full EIS. Additionally, please see our discussion in other sections of this document regarding buffer widths and PDCs, and how the Forest Service is inappropriately relying inadequate buffers and voluntary, subjective, and largely unenforceable PDCs to incorrectly assume that impacts will be mitigated to only short-term impacts.

We are extremely concerned about the cumulative impacts from logging, roading, and burning in the Morgan Nesbit sale. The Aquatics BE acknowledges, in relation to cumulative effects, that *"[f]or all species that are confirmed or suspected to be present, there is a moderate risk of cumulative effects to habitat from the proposed activities and ongoing activities in the analysis area. Ongoing activities (grazing, recreation, road use, road maintenance) can result in increases in fine sediment in aquatic habitat. Increases in fine sediment can reduce reproductive success and overall fitness of these sensitive species."*

What is the cumulative impact with other past, current, and foreseeable sales and other management activities on available habitat for Bull trout across the WWNF? Across the Blue Mountains? While this project may affect a small percent of available Bull trout habitat across the Forest, what is the sum of all the recent, current, and reasonably foreseeable projects across the Forest? The Forest Service is ignoring the cumulative impacts of this combined with other projects on ESA-listed and Sensitive-listed fish and their habitat across the Forest. The agency is disingenuously using an improper scale of analysis, and then not looking at the actual cumulative impacts within the scale they have chosen. If viability is determined at the scale of the Forest, how can the agency expect to make such a determination if they utterly fail to look at other projects affecting viability at the scale of the Forest? What about the cumulative effects for other special status, imperiled, and at-risk species in the project area—do they all have similar lack of cumulative analyses?

Forest Service should also include cumulative effects analyses regarding livestock grazing. For example, logging is likely to make upslope areas less appealing to livestock on hot days, and at the same time make riparian areas more open and accessible—thereby creating a situation where they are even more likely to congregate in and trample sensitive riparian areas and creeks?

The agency plans to commercially log within RHCAs along streams that support Chinook Salmon and their Critical Habitat. The agency also admits that this logging will cause short-term impacts to riparian vegetation that will adversely affect Critical Habitat. However, the agency then claims that the small no activity buffers and limited activity buffers-- much smaller than those designated in PACFISH buffers—will adequately protect Chinook Critical Habitat to a NLAA standard.

Aquatics BE: *"EHF (6) Riparian Vegetation: There will be effects to riparian vegetation. Chinook Salmon critical habitat includes 300 ft on either side of critical habitat streams, so riparian thinning in category 1 streams will remove vegetation from Chinook salmon critical habitat. In the Big Sheep Grossman stand, noncommercial thinning (< 9" DBH) will occur from 25-150 ft from the stream, and commercial thinning will occur > 150 ft from the stream….this thinning will cause short term impacts to riparian vegetation that will adversely affect habitat."*

The Morgan Nesbit sale EA proposes logging within RHCAs within only a 25-foot no activity buffer zone for fish bearing stream reaches (category 1 RHCA), and no setback

zone (a zero foot no activity buffer) for category 2 and 4 streams. No activity buffers for fuel breaks next to category 1 streams are larger (100 ft.), but commercial logging will still take place just 25 ft. from category 1 fish-bearing streams.

Aquatics BE pg. 8:
"Category 1 (fish bearing) stream RHCAs:
For Commercial Thinning Units (Big Sheep Grossman Stand)
a. 0-25 ft. from channel: No Activity.
b. 25-150 ft. from channel: Limited Activity, no ground disturbance.
c. 150-300 ft. from channel (outer half): More Activity."

Aquatics BE pg. 49: *"In shaded fuel breaks near category 1 streams, a 100 ft no activity buffer will protect streams, and noncommercial hand thinning will occur 100 – 300 ft from streams. These buffers and design criteria have been documented to be adequate to protect Chinook critical habitat to a NLAA standard in past and upcoming programmatic consultations (Blue Mountain PDCs, draft Blue Mountain PICs)."*

We note that the agency, in its attempt to rationalize logging within category 1 RHCAs, they repeatedly ignores the findings of the same scientific studies they cite, such as Janisch et al. 2012. For example, the Janisch et al. 2012 study found statistically significant increases in stream temperature as a result of all logging treatments within RHCAs. Comparable increases in stream temperatures in the Morgan Nesbit sale area—even if they were to be substantially lower than many of those found in the Janicsh et al. 2012 study—would still result in measurable increases that would be detrimental to ESA-listed fish such as Chinook Salmon and other ESA-listed fish. The Janicsh et al. 2012 study found that: *"[s]tatistical analyses indicated that* ***all treatments resulted in significant (α = 0.05) increases in stream temperature.*** *In the first year after logging, daily maximum temperatures during July and August increased in clearcut catchments by an average of* ***1.5 °C (range 0.2 to 3.6 °C****), in patch-buffered catchments by* ***0.6 °C (range −0.1 to 1.2 °C),*** *and in continuously buffered catchments by* ***1.1 °C (range 0.0 to 2.8 °C)."***

Streams within the Morgan Nesbit sale also include the parameters that the Janisch et al. 2012 study identified as correlated with increased stream temperatures in response to logging, including northerly aspects, relatively longer surface flow, adjacent wetlands, and fine substrates. For example, while most streams within the project area meet RMO standard for fine sediments (<20% particles <6.33mm), many are at the upper end of compliance.

The Aquatics BE admits that water quality may be negatively affected: *"…due to the thinning and prescribed fire ignitions proposed within RHCAs in this project, there is some uncertainty as to the extent of effects on water quality. Therefore, although we have designed PDCs to protect stream habitat and the analysis in the aquatics specialist report determined that effects to water quality would be small impacts would not exceed identified thresholds, this possible effects of this project do not meet the "insignificant or discountable" standard necessary for a NLAA determination.* Similarly, the Aquatics BE admits that stream temperatures may be negatively affected: "…*due to the thinning and*

prescribed fire ignitions proposed within RHCAs in this project, there is some uncertainty as to the extent of effects on water temperature. Therefore, the possible effects of this project do not meet the "insignificant or discountable" standard necessary for a NLAA determination."

We note that even localized increases at the subwatershed or reach scale can jeopardize already ESA-listed fish—especially if the problem is repeated in multiple stream reaches across the landscape. At-risk aquatic species such as Bull trout are already suffering from fragmented and small populations. Creating additional negative impacts across the landscape as a result of logging extremely risky at best. Small and isolated populations make for fragile populations (that are subject to declines due to localized events, genetic drift, and other factors). Reiman et al. (2001) noted that: ***"…vulnerable aquatic species could be impacted in the short term in ways from which they could not easily recover…"*** even in cases where the management actions resulted in long-term benefits in later years. The negative effects on water quality parameters such as stream temperature from proposed logging within this sale and from ongoing logging throughout the region are already putting Bull trout, Chinook, Steelhead, and other imperiled and Sensitive species at risk of downward population trends and loss of viability.

The Forest Service manages much of the land that encompasses core and critical habitats for spawning and rearing for numerous listed fish species. Spawning and rearing habitat quality is a limiting factor in the continued viability of these species, due in part to the widespread problems with high stream temperatures and excess fine sediments across National Forests in eastern Oregon (Middle Fork IMW Working Group 2017). High stream temperatures are already a limiting factor for at-risk and special status aquatic species in many areas. Threatened fish stocks are struggling due to high stream temperatures and increased fine sediments. Stream temperature increases, especially in areas that are already in violation of state and Forest Plan stream temperature standards, are especially dangerous to ESA-listed Threatened Bull trout and steelhead populations. The increased stream temperatures that would result from the proposed logging and roading in this EA would exacerbate the already dire situation for water quality and imperiled aquatic species across eastside Forests.

The Aquatics BE seems to contradict earlier admissions regarding measurable effects to aquatic habitats in order to determine that the Morgan Nesbit sale is unlikely to affect Bull Trout Critical Habitat. The Aquatics BE (pg. 50) states: *"[a]ctivities proposed under the Morgan Nesbit Project are unlikely to have measurable effects to aquatic habitat and will not affect the potential food base for bull trout. Therefore measurable effects to PBF 3 are unlikely." (Note PBF 3 is: "[a]n abundant food base, including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish.").* However, we note that the Aquatics EA admits to changes in stream temperature, which would indeed affect macroinvertebrates and other food sources for Bull trout. Changes to macroinvertebrate communities as a result of elevated stream temperature is a well-established response. Macroinvertebrate communities are often monitored precisely to detect water quality impairments such as elevated stream temperatures.

The Forest Service admits that the Morgan Nesbit sale is "Likely to Adversely Affect" Snake River Steelhead. There are 84.3 miles of steelhead critical habitat within the project area which will be negatively affected, jeopardizing key habitat for this struggling species. The logging, roads, and other sale-related activities are much greater threat to this species compared to the wildlfires that the species evolved with—including high-severity wildfire. Snake River Steelhead are currently rated as being "at moderate risk of extinction". They are not reaching the minimum threshold of spawner abundance for recovery, and are well under this threshold. (Aquatics BE pg. 14).

The Forest Service admits that the Morgan Nesbit sale is "Likely to Adversely Affect" Snake River Spring Chinook Salmon. The Aquatics BE (pg. 19) also notes, alarmingly, that *"[t]he Big Sheep local population is currently rated as functionally extinct due extremely low natural-origin abundance and outplanting of Imnaha River spring-summer Chinook hatchery fish into this population. The Imnaha River supports runs of both wild and hatchery Chinook salmon. However, Chinook salmon abundance is depressed relative to historical numbers and recovery targets, and has declined over the last 10 years following temporary increases around 2010 (Simmons et al. 2022). Progeny-per-parent estimates show that natural origin Chinook salmon in the Imnaha River are not replacing themselves. Chinook salmon spawning and rearing occurs in Big Sheep Creek, Lick Creek, and the Imnaha River in the analysis area (Figure 5)."*

The BE goes on to state that *"[t]he Imnaha local population is currently rated as at high risk of extinction by NOAA Fisheries. The proposed minimum abundance and productivity thresholds for recovery of the Imnaha MPG is an abundance of 1000 and minimum productivity of 1.45 (NMFS 2022). Redd counts are conducted annually by ODFW and Nez Perce Fisheries to monitor the Imnaha population. Since 2000 there has been an average of 560 redds with a low of 235 redds in 2006 and a high of 1111 redds in 2002 (Table 11)."....."The Big Sheep local population, which includes salmon spawning and rearing in Lick Creek, is*
currently rated as functionally extinct by NOAA Fisheries due extremely low natural-origin abundance and outplanting of Imnaha River spring-summer Chinook hatchery fish into this population. The NMFS recovery plan states that the Big Sheep…. The majority of spawning Big Sheep Creek and Lick Creek is attributed to hatchery outplants as few unmarked salmon have been observed in Big Sheep Creek or Lick Creek since 1993."

It is unconscionable that the Forest Service is planning extensive logging upslope of these vulnerable and struggling fish populations, often on steep slopes, as well as logging within RHCAs adjacent to ESA-listed fish and their Critical Habitats, including for Chinook. The Forest Service has a legal and ethical responsibility to safeguard these populations from logging and roading—it does not have a legal requirement to manage tree species for HRV, using fear of fire and myopic use of controversial strategies and science.

The Aquatics BE notes (pg. 21) that *"[t]he Imnaha local population of Bull trout is considered by USFWS to be a stronghold population with multiple life history strategies, primary spawning areas located in roadless/wilderness areas, and few nonnative species*.

It goes on to state that *"[t]he Imnaha River basin currently contains one of the healthiest and most stable bull trout populations in the recovery unit and should be managed to maintain these populations and prevent introduction of new threats (USFWS 2015). The Imnaha basin provides habitat suitable to support bull trout, and is free of nonnative brook trout which can hybridize with bull trout.*"

The 5-Year Status review rated the Imnaha River population as stable with "potential risk" of extinction (USFWS 2008). The Aquatics BE notes: *"[t]here are 36.5 miles of bull trout critical habitat in the project area, and both spawning and rearing habitat and migration habitat is present. Bull trout occupy critical habitat in the Imnaha River, Big Sheep Creek, Lick Creek, and several small tributaries of these streams….Implementation may cause short term negative impacts, including temporary increases in fine sediment from thinning and prescribed burning, possible but unlikely reductions in shade from unintentional tree mortality during prescribed burning, and shade reductions in Category 2 and 4 streams that may affect temperatures in fishless streams but are not anticipated to effect downstream Category 1 streams. Although….negative impacts will be minor and short term, project effects to critical habitat are not discountable nor insignificant, and therefore the Morgan Nesbit project is Likely to Adversely Affect critical habitat for bull trout. Buffers and PDCs will mitigate the effects of project activities on bull trout and habitat."*

The Forest Service has not provided any credible evidence to suggest that negative impacts would be limited to the short-term. Conversely, there is a wide range of scientific evidence to suggest otherwise, as discussed throughout these comments. Please see our comments on the Janisch 2012 and Wondzell 2019 papers, our discussion of studies investigating water quality impacts and altered hydrology in response to logging and roads, the FS's reliance on subjective, voluntary, and unenforceable PDCs, and other comments.

The determination for Redband trout is *"May Impact Individual redband trout and their Habitat (MIIH), but will not likely contribute toward federal listing or loss of viability to the population or species."* The Aquatics BE goes on to state that: *[t]his is because negative project impacts to redband trout habitat are expected to be small and short-term, long-term project effects to redband trout habitat will be positive, and because the redband trout occupied habitat within the Morgan Nesbit project area (91.5 miles) represents only 4.7% of the 1,924 miles of redband trout streams on Wallowa-Whitman National Forest."*

If the Forest Service has not bothered to determine the amount of Redband trout habitat affected by recent, current, and near-future projects across the Forest (at the Forest Scale), then how can it assume that this project, in combination with other projects, will only have insignificant effects on Redband trout at the Forest Scale? Also, what evidence does the FS have that 4.7% of Redband trout streams is insignificant for this struggling species? Given the downward population trends for this and other sensitive species overall, negatively impacting almost 5% of their habitat is not necessarily insignificant at all, and may well affect species viability at the Forest scale. The FS also does not have any evidence or sound rationale to suggest that impacts will only be short-term, especially given their lack of baseline data for this species and the often long-term impacts on water quality and watershed hydrology associated with logging and roading.

The determinations for Western Ridged Mussel, Shortface Lanx, Pacific Lamprey, Columbia Pebblesnail "May Impact Individuals and Habitat but will not likely contribute toward federal listing or loss of viability". We have very similar concerns for these species as the one raised for Redband trout—including lack of baseline data and a plethora of scientific evidence showing that logging as proposed in the Morgan Nesbit sale will negatively affect stream habitats, water quality, and watershed hydrology.

The lack of baseline data is a serious issue for Redband trout and other species in the project area. Adaptive management is impossible without adequate baseline data. We are also concerned that the public do not have an opportunity to review or comment on the consultation for ESA-listed aquatic species during the NEPA process.

The USFWS 2010 Bull Trout Final Rule notes that "*Over 30 years of research into wildlife population sizes required for long-term viability (avoiding extinction) suggests that a minimum number of 5,000 individuals (rather than 50 or 500) may be needed in light of rapidly changing environmental conditions, such as accelerated climate change (Traill et al. 2009, p. 3).*" Even in areas with comparatively high numbers, current population numbers are still low when compared to historic norms and to numbers needed for successful recovery.

We are extremely concerned that widespread upslope logging and roading activities will negatively affect Bull trout and other ESA-listed aquatic species and their habitats, and cause them to have downward population trends and jeopardize their species viability. Fish, amphibians, and macroinvertebrate communities may be negatively impacted by excess fine sediment inputs resulting from logging and roads (Bryce et al. 2010, Nietch et al. 2005). Increases in fine sediment loading can cause simplification of 6 complex habitats and channel structure either through settling on or scouring out the streambed (Cover et al. 2008, Nietch et al. 2005). As a result, habitats such as pools, riffles, and side channels required by stream organisms for egg laying, resting, hiding, and rearing of young may be degraded or eliminated (Bryce et al. 2010, USEPA 2006). In addition, excess fine sediment loading, particularly in combination with the alteration of flow regimes and hydrologic processes, may negatively impact stream channel stability, limit hyporheic exchange, and alter groundwater inputs, potentially degrading conditions for stream organisms by further increasing sediment loading, decreasing necessary physical habitat, and altering stream water volume which can affect temperature and dissolved oxygen, and limit resources (Croke and Hairsine 2006, Moore and Wondzell 2005, Nietch et al. 2005, USEPA 2006). Fine sediment inputs exceeding natural background levels may bury and smother fish and amphibian eggs or young, decrease dissolved oxygen (DO) levels, interfere with behaviors such as mating, feeding and predator avoidance, cause shifts in macroinvertebrate community structures, and increase macroinvertebrate drift rates (Bryce et al. 2010, Nietch et al. 2005, USEPA 2006). For example, Coho salmon egg survival and fry emergence were negatively correlated with embedded fines of greater than 10%. In addition, when fines exceeded 20%, average survival decreases dramatically (Cederholm 1980). Macroinvertebrate drift rates increased significantly when exposed to suspended sediment concentrations of 8 mg/L for 5 hours, though ephemeroptera and plecoptera drift more rapidly upon exposure to sediments compared to those not exposed to sediments. Some

ephemeroptera species, when exposed to concentrations of suspended sediments greater than 29mg/L for 30 days, 7 will disappear entirely. Longer exposure durations and smaller particle sizes caused increased rates of drift (IDEQ 2003).

Dynamics between stream temperatures and sensitive aquatic species may be far more complex, and often more delicate, than agencies are taking into account—including for ESA-listed species. The study *Key findings for Stream Temperature Variability: Why It Matters To Salmon* by Steele and Beckman (2014) found that: *"Commonly used degree-day accumulation model is not sufficient to predict how organisms respond to stream temperatures. Changes in how the degree days are delivered have the potential to alter the timing of life history transitions in Chinook salmon and other organisms. Emerging from the gravel a few days earlier or later could directly affect their survival due to changes in available food resources, competition for feeding grounds, or strong currents".*

Also, evidence suggests that current BMPs and/or Project Design Criteria may not be sufficiently protective of sensitive aquatic species such as Bull trout. For example, the Fish and Wildlife Service Final Rule for Bull trout (Department of the Interior Fish and Wildlife Service 50 CFR part 17 2010) states that: *"Special management considerations or protection that may be needed include the implementation of best management practices specifically designed to reduce these impacts in streams with bull trout, particularly in spawning and rearing habitat. Such best management practices could require measures to ensure that road stream crossings do not impede fish migration or occur in or near spawning/rearing areas, or increase road surface drainage into streams."*

The Forest Service must take responsibility for their part in the continued viability of fish that use key habitats on national forest lands, rather than downplaying and refusing to acknowledge the impacts from Forest Service Management, including logging, grazing, and roading. Logging on National Forests continues to cause ongoing negative affects to anadromous and resident fish populations that have important consequences for long-term trends and continued viability. Logging as proposed in the FEA will greatly exacerbate these negative impacts to ESA-listed species, harm ESA-listed aquatic and riparian species, jeopardize their recoveries, cause downward trends in their populations, result in local extirpations or extinctions, and losses of viability.

Climate change:

Logging within RHCAs, as well as extensive upslope logging, is likely to exacerbate some of the negative effects of climate change on riparian and stream ecosystems. Stream temperature is a primary concern. Actions that minimize increased water temperatures are important for maintaining cold water refugia. The Independent Scientific Advisory Board (2007) states: *"Adequate protection or restoration of riparian buffers along streams is the most effective method of providing summer shade. This action will be most effective in headwater tributaries where shading is crucial for maintaining cool water temperatures. Expanding efforts to protect riparian areas from grazing, logging, development, or other activities that could impact riparian vegetation will help reduce water temperature increases. It will be especially important to ensure that this type of protection is afforded*

to potential thermal refugia. Removing barriers to fish passage into thermal refugia also should be a high priority."

Salmon face serious threats to their continued existence due to climate change, and are predicted to suffer significant habitat loss**.** The Independent Scientific Advisory Board (2007) notes that according to some research predictions: ***"****[T]emperature increases alone will render 2% to 7% of current trout habitat in the Pacific Northwest unsuitable by 2030, 5%-20% by 2060, and 8% to 33% by 2090. Salmon habitat may be more severely affected, in part because these fishes can only occupy areas below barriers and are thus restricted to lower, hence warmer, elevations within the region. Salmon habitat loss would be most severe in Oregon and Idaho with potential losses exceeding 40% by 2090.****"***

Bull trout may lose over 90% of their habitat within the next 50 years due to increased stream temperatures as a result of climate change. Bull trout require very cold headwater streams for spawning, and so are likely to be disproportionately affected by stream temperature increases due to climate change. Recent projections of the loss of suitable habitat for bull trout in the Columbia Basin range from 22% to 92% (ISAB 2007). The US Fish and Wildlife Service notes that: "[g]lobal climate change threatens bull trout throughout its range in the coterminous United States…..With a warming climate, thermally suitable bull trout spawning and rearing areas are predicted to shrink during warm seasons, in some cases very dramatically, becoming even more isolated from one another under moderate climate change scenarios….Climate change will likely interact with other stressors, such as habitat loss and fragmentation; invasions of nonnative fish; diseases and parasites; predators and competitors; and flow alteration, rendering some current spawning, rearing, and migratory habitats marginal or wholly unsuitable."

Logging in riparian corridors is likely to decrease connectivity, especially connectivity in mixed-conifer areas that currently serve as important corridors and are among the last remaining areas that can provide connectivity for species that are associated with LOS, mixed-conifer forests, denser forests, etc. Increasing connectivity is the most commonly recommended strategy for preserving biodiversity in the face of climate change, according to a review of 22 years of scientific recommendations (Heller and Zavaleta 2009). Increasing connectivity includes actions such as removing barriers to species dispersal, locating reserves near each other, and reforestation. Other commonly recommended connectivity-related actions include creating "ecological reserve networks [i.e.,] large reserves, connected by small reserves, stepping stones"; "protecting the "full range of bioclimatic variation"; increasing the number and size of reserves; and creating and managing buffer zones around reserves (Heller and Zavaleta 2009). Large blocks of habitat that are well-connected to each other are important for the long-term survival for many species in the face of climate change.

It is essential that we preserve core habitats and connectivity corridors because these areas are very important for maintaining genetic diversity, facilitating movement and migration, and providing for range and habitat needs. Connectivity corridors also allow for species to colonize new areas or recolonize after disturbances, which will help species adapt to shifts in geographic range due to climate change. Many species are already facing threats to their

viability due to fragmentation and a lack of connectivity; climate change threatens to severely exacerbate risks to their continued survival by further fragmenting habitats.

In particular, in areas that have extensive past logging and roading, the remaining wildlife habitat and connectivity corridors are extremely important and serve essential functions such as providing nesting, roosting, and foraging, thermal cover, and more. Units that support high-quality or usable wildlife habitat, but are surrounded by widespread cumulative impacts from past/ongoing logging and roading, should be dropped. This is especially true of planned logging in units in or adjacent to RHCAs, and also if those units are remote and require building or maintaining roads to access.

The EA also failed to adequately consider the importance of carbon sequestration and storage, or to include the best available science on this issue. Intact, unmanaged forests sequester the most carbon. Logging is the largest source of carbon emissions in Oregon. (Law et al. 2018). The Forest Service failed to analyze how logging in this sale would further increase carbon emissions, or to consider alternatives that instead prioritize carbon sequestration. Reducing CO2 emissions is the most effective way to combat climate-driven wildfires—not more logging, which increases carbon emissions.

ROADS:

There is overwhelming evidence based on peer-reviewed science, discussed throughout these comments, that logging, roading, and other activities proposed in the project harm water quality and imperiled aquatic species– particularly at the scale and intensity which the Morgan Nesbit sale is proposing.

Road-related activities and increasing the already high road densities in the Morgan Nesbit project area would be harmful to water quality and to aquatic habitats, as well as to terrestrial and avian species that are sensitive to forest fragmentation and road-related disturbances. Note: “temporary” roads are not temporary, and the FS loses credibility and public trust every time the agency attempts to claim otherwise, despite evidence and common sense. ESA-listed fish and aquatic species continue to be jeopardized and face downward population trends as a result of high road densities across eastside forests. As a result, it is all the more important NOT to build or rebuild roads in the few areas that aren’t already overburdened with a high density of roads.

The Aquatics BE acknowledges that “temporary” roads may be constructed in the RHCA—it merely suggests “avoiding” road construction within RHCAs, but still allows such construction to occur. In fact, these “temporary” roads may be new roads that were not planned or included in NEPA analyses or public review. In addition, in intermittent streams, activities such as installing temporary culverts and then removing them, as well as altering and then reshaping stream banks at stream crossings, may take place. Furthermore, doing such activities in dry conditions is only suggested, not required. The agency also failed to consider movement of the resulting displaced soils and fine sediments in fall and winter, even if such work takes place in dry conditions (if it’s convenient, of course).

From the Aquatics BE (emphasis ours): *"Temporary Roads: a.* ***Avoid*** *constructing in RHCAs.* ***Any new (not mapped) temporary roads within RHCAs*** *will be approved by the sale administrator in consultation with the hydrologist prior to construction. b. Install suitable storm water and erosion control measures (water bars, out-sloping) to stabilize disturbed areas before seasonal shutdown of project operations or season ending precipitation event. c. Install temporary culverts on intermittent streams* ***during dry conditions when possible****. After project completion, remove and haul these structures from the project area.* ***Reshape stream banks at crossing locations to match upstream and downstream stream banks****. Seed and mulch disturbed areas."*

The FEA is also not clear about how many miles or road-related maintenance and "temporary" road building, will be taking place within RHCAs. The PDCs, BMP, and other criteria that the FEA relies upon for determinations that negative effects to aquatic resources will be limited are, in fact, almost entirely voluntary and discretionary, and rest on subjective and unenforceable guidelines such as "avoid", "when practical", etc.

For example, from the Aquatics BE: *"Road Maintenance: a. No side-casting of maintenance-generated debris within 100 feet of streams to* ***avoid*** *excavated materials entering waterbodies or riparian areas. b. Use suitable measures to* ***avoid*** *direct discharges from ditch drainage structures to nearby waterbodies. c.* ***Avoid*** *impacting live or dead trees associated with temporary roads, culverts, or* ***maintenance on existing roads in RHCAs****. If hazardous trees are observed during implementation, fall the tree toward, or place the tree in, the stream."*

The bloated road networks on National Forests lands threaten the long-term viability of imperiled and ESA-listed fish such as Snake River steelhead and Bull trout, and other imperiled or sensitive aquatic species. The Forest Service notes (USFS 2015) that "*[t]he most important road related environmental issue is the effects of roads on aquatic resources in general, and specifically Threatened, Endangered and Sensitive aquatic species (bull trout, mid-Columbia steelhead, and Columbia spotted frog).*"

Increased road densities have been correlated with low population levels and declines in bull trout and other aquatic species that rely on clean, cold waters (USFWS 2010). Of particular concern are roads that interact with stream channels. Such roads are likely to have disproportionately negative effects on water quality and sensitive fish (USFS 2018). Sedimentation from roads is known to be one of the largest contributors for degradation to water quality as well as a source of degradation to fish habitat and spawning areas. Roads in disrepair create safety issues and conflicts with protection for natural resources, especially for those such as water quality, aquatic species, and functioning wetland processes.

Carnefix and Frissell (2009) discussed impacts from roads, and show that significant negative impacts to sensitive aquatic species are present at road densities greater than one mile per square mile: *"Multiple, convergent lines of empirical evidence summarized herein support two robust conclusions: 1) no truly "safe" threshold for 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., threats 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."

The NOAA 5-Year Review of Snake River Salmonids notes the synergistic negative effects of both logging and roads occurring in watersheds: *"Information from the [PACFISH Biological Opinion Monitoring Program] PIBO monitoring program indicates that unmanaged or reference reaches (streams in watersheds with little or no impact from road building grazing, timber harvest, and mining) on Federal lands in the Interior Columbia basin (including the Snake River basin) are in better condition than managed streams (Al-Chockhachy et al. 2010b). In particular, managed watersheds with high road densities or livestock grazing tend to have stream reaches with worse habitat conditions than streams in reference watersheds.*"

Other National Forests acknowledge the risks that roads and high road densities have on fish and water quality, not only when limited to roads directly within the RHCAs. For example, in the Upper Touchet sale on the Umatilla NF, the FEA states: *"Road density is used as an indicator of potential for affects to hydrologic function (extension of the stream network) and water quality (sediment delivery to surface waters). Stream crossings are used as an indicator of the degree of connectivity between the road system and the drainage network. To the degree that roads are connected to the drainage network the risk of road sediment reaching surface waters is increased, the drainage network is lengthened and the potential for precipitation to drain more quickly, with less residence time in the watershed is increased. Roads have the potential to intercept surface and subsurface water, reducing infiltration and increasing the delivery of water to channels. Roads which are hydrologically connected are a risk to water quality. Sedimentation may be increased by surface erosion from roads and the ability of road drainage to route sediment to channels."*

Also from the Upper Touchet DEA: *"Roads have the potential to intercept surface and subsurface water, reducing infiltration and speeding the delivery of water to channels. Sedimentation may be increased by surface erosion from roads and the ability of road drainage to route sediment to channels. Road density alone does not indicate slope position, another critical factor. Valley bottom roads have the most direct effect on streams and riparian areas because of accelerated erosion and loss of streamside shade. Mid-slope roads intercept subsurface runoff, extend channel networks and accelerate erosion, and ridge top roads can influence watershed hydrology by channeling flow into small headwater swales, which may accelerate channel development. McCammon (1993) assigned three watershed risk classes based on road density (mi/mi2) to assess the potential of road impacts to adversely affecting hydrologic function and water quality: low (< 3), moderate (3.1-4.5) and high (> 4.5). The Upper North Fork Touchet SWS road density is 1.4 mi/mi2."*

Another example the USFS's Draft EA for the Mill Creek sale in the Ochoco NF*: "Roads are a major source of erosion and stream sedimentation on forested lands. Roads can increase erosion rates and turbidity three orders of magnitude greater than the undisturbed forest condition (Megahan 1974). Sediment eroded from the road prism can be delivered to a forest stream, resulting in increased turbidity, sediment loads, and degraded habitat for fish. Research has shown that roads have the greatest effect on erosion relative to other forest management practices (Megahan and King 2004)."*

The FEA states that planned roading includes construction of 18 miles of "temporary" roads. Additionally, 367 miles of road maintenance is proposed as part of the Morgan Nesbit sale. How much of this road construction or maintenance is within RHCA's? How many miles of roads will log haul take place on? We are extremely concerned about the construction of "temporary" roads and skid trails, extensive road maintenance, cable corridors, and haul routes, and the well-documented negative effects on streams, water quality, and watershed hydrology that will result from these activities.

We are also concerned about the potentially massive amount of felling and logging of large trees as "danger" trees, and for construction of these road and haul related corridors.

For example, the Morgan Nesbit sale proposes tethered logging across 1,597 acres, which can result in extensive cutting of trees, including large and old trees. What is the FS's estimate of number of large trees cut due to designation as "hazards" or felled along roads (including roads that are not major routes, closed or overgrown roads, or temporary roads)?

Felling of trees for "temporary" roads, skyline logging or cable-assisted corridors, and other similar actions may result in excessive and widespread logging of large trees (even if these trees are not officially "targeted" for logging). Allowing large trees to be sold in these circumstances incentivizes cutting them, and inappropriately sidesteps environmental analyses and public transparency. We have similar concerns about logging within fuel breaks and ember reduction zones. Will fuel breaks be treated similarly to roads or haul routes, and result in the felling of large trees in and adjacent to the fuel break?

BMBP's recent post-logging field surveys in Forests in Eastern Oregon, such as the Malheur NF, suggest that the felling of large and old trees in relation to hazard trees and clearing road beds, skid trails, haul corridors, etc. can be very extensive. The pictures below are of recent felling of large and mature or old Ponderosa pine trees, most of which were felled as "hazard" trees or for road, haul, skid trails, or cable corridors in the Big Mosquito and Camp Lick timber sales. Dozens of large mature and old Ponderosa pines were felled in the Big Mosquito sale. Logging in the Camp Lick sale has only just begun, and already BMBP found legacy Ponderosa pines felled as part of either "hazard" tree felling or "temporary" road and other road-related work. The FS confirmed that many of the trees depicted in the pictures below were sold at the mill.


Big Mosquito sale (Malheur NF)


Photo credit: Daniel Howland 2021; all other pics from BMBP
Big Mosquito sale (Malheur NF)

Should the Morgan Nesbit sale move forward, what is the agency's estimate for the number of large trees that would be logged, felled as "hazards", or cut down in relation to roads or haul or transport corridors?

The Forest Service often builds or rebuilds "temporary" roads (that have impacts for decades or centuries on the landscape), as well as rebuilds "existing temporary roads" to access logging units. Roads that the agency terms "temporary" are not in reality "temporary". This is made evident by the repeated re-use of 'existing roadbeds' and the use of 'existing disturbance areas' for creating roads with each new timber sale. The Forest Service continues to repeatedly re-use these areas of permanent disturbance on the landscape as roads in current timber sales (and the USFS regularly uses these roads as reasons for disqualifying areas for IRAs or Potential Wilderness). Yet the USFS repeatedly claims that these roads won't actually continue to exist beyond each new timber sale's completion. These roads remain as scars on the landscape and show signs of erosion, compaction, or other impacts for years if not decades to come. "Temporary" roads which were not decommissioned or recontoured are ubiquitous on the landscape. They are also not well-documented or monitored, and they are often not included in road density calculations.

Road densities that exceed standards are a regular problem in watersheds and across eastside forests. Existing road density in many areas of the Wallowa-Whitman National Forest is well above the 2-miles/square mile NOAA (1996) threshold for watersheds to be considered "properly functioning". NOAA (1996) notes: properly functioning: 2 miles/sq mile; at risk 2-3 mi/sq mi; not properly functioning >3mi/sq mile. The widespread, chronic

negative impacts to watersheds and streams caused by the bloated, unsustainable, and badly managed road network across public lands must be addressed by the agency.

Furthermore, the Wallowa-Whitman National Forest has not yet completed Travel Planning as required by the 2005 Final Rule for Travel Management. The Wallowa-Whitman National Forest currently has existing road densities at levels that are recognized as threats to water quality, fish, and watershed health, and exceed Forest Plan standards for road density in many watersheds, including those designated for prioritizing the protection of water quality and fish. Wilderness and Roadless areas occupy a small percentage of National Forests in the Blue Mountains, and the excessive road density outside of these areas has serious and ongoing negative ecological consequences for the majority of watersheds on these forests. Wilderness areas, for example, occupy approximately 17.1 percent of the combined area of the Malheur and Wallowa Whitman National Forests, and only four percent of Oregon's total land area.

The bloated and sprawling road systems on National Forest lands, including the Malheur and Wallowa-Whitman National Forests, are fiscally burdensome as well as ecologically harmful. In discussing budget shortfalls, the Forest Service notes, for example, that on the Wallowa-Whitman National Forest, it would take approximately $64 million dollars to bring the entire road system back up to standard, and approximately $6.8 million dollars to keep it that way (US Forest Service (2015). Malheur National Forest Forest-Wide Travel Analysis. Pg. 28.)

Across Oregon and Washington, the USFS manages approximately 90,000 miles of roads. The agency notes that it is "a challenge to maintain all roads to proper safety and environmental standards to increased use, aging infrastructure, and decreasing budgets. Many roads, built between 1950 and 1990, have exceeded their designated lifespan and require costly repairs. Unmaintained roads and infrastructure can impact water quality and wildlife habitat, especially fish-bearing streams. Backlog maintenance projects top $1.2 billion, and funds available for road maintenance are only about 15% of what is needed to fully maintain the current road system." (US Forest Service. Webpage. Accessed at: https://www.fs.usda.gov/detail/r6/landmanagement/?cid=fseprd485439])

The Wallowa-Whitman has 4,633 miles of open roads and 4,486 miles of closed roads for a total of 9,119 miles of existing roads. One could drive from the northwestern tip of Washington state to the farthest northeastern tip of Maine, down to Miami, Florida, over to San Diego, California, and back up to the northwestern tip of Washington state, and still not have traveled as many road miles as are contained within the Wallowa-Whitman National Forests. The USFS notes that "of the 90,000 miles of Forest Service roads in Oregon and Washington, about 2/3 of those are currently open and maintained for both public and administrative uses." The USFS estimates that approximately 12% of the overall road network is "likely not needed", with many of these unneeded roads already being "closed or stored", and only about 20% or 2,000 miles being currently open to the public. (US Forest Service. Travel Analysis Report. Wallowa-Whitman National Forest. Table 3, page 19. Accessed online at: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd486098.pdf)

What is the over-arching plan with road access for such repeated management for this and other projects on the Wallowa-Whitman National Forest? Does the Forest Service intend to maintain the bloated and expensive road network that exists, which the FS has admitted it does not have the funding to maintain or fix? And which the agency has admitted are causing detrimental impacts to fish and water quality, as well as negative impacts to species such as elk and other animals sensitive to roads?

Also, prescribed fire is not the same as wildfire. Prescribed burns can and do cause ecologically important damage to crucial wildlife habitat, particularly if done in ecologically inappropriate areas such as fire and climate refugia. We are also concerned about the loss of snags and downed logs, and note that prescribed burns do not necessarily mimic the same dynamics as wildfire. In addition, timing of prescribed burns, such as those done in spring, potentially interrupts delicate life cycle rhythms of wildlife, such as egg laying and hatching and can harm insects, butterflies, nesting birds, and other species. and that prescribed fire can cause lasting, long-term negative reductions in snags, logs, and dead wood habitats (Arkle and Pilliod, 2010; Pilliod et al. 2006).

Another concern we have that much of the prescribed burning in the project area could be comprised of burning slash, including slash piles in RHCAs. Such burning can severely damage soils, and often supports some of the highest concentrations of invasive weeds on Forests. The USFS notes that prescribed fire units would include jackpot burning, and pile burning within RHCAs. Such burning often damages soils and fosters a concentration of invasive plants.

Given that riparian corridors are disproportionately relied upon by many species for connectivity, key habitat, thermal refugia and shade, and other parameters provided by these often denser, complex forests—what effect will repeated prescribed burning every 10 years have on the species that rely on riparian corridors for at least part of their life cycles?

Large severe fires are climate driven, and are expected to increase as a result of climate change. Fuels reduction activates have little to no impact on large, climate-driven fires. While logging and burning forests sometimes correlates to reduced fire severity or altered fire behavior— this is only true for fire events that are not weather and climate driven, and only for a very short period of time before these logged and burned areas start to grow back and “fuels reduction treatments” are no longer effective. Forests often grow back more densely and homogenously than before they were logged, creating an even more flammable situation. Heavy, industrial-scale logging increases fire risk.

There is a very short window of time that “treatments” will be effective, usually ~10-15 years. “Treated” (logged) areas having a vanishingly small chance of encountering a wildfire during that 10-15 year window of time (Rhodes and Baker 2008). However, the FS appears to be planning to repeatedly “manage” forests (i.e., logging, burning, and roading) on a 10-15 year cycle across the project area and perhaps across much of the region in numerous timber sales. Such “management” is impractical, expensive, ineffective, and would have catastrophic consequences for fish, wildlife, and water quality.

The FS fails to acknowledge that logging and "fuel reduction" does little to nothing to stop climate change related wildfires, which are overwhelmingly driven by drought, heat, and wind. Logging in the backcountry will not make communities safer—working near communities, home hardening, and emergency preparedness are far more effective in keeping people safe. Please see the research of Dr. Jack Cohen, a Forest Service researcher who has done decades of work on this topic.

Radeloff et al. 2023 found that most homes that burned in the US were destroyed by grass and shrub fire, not forest fire. This dynamic highlights the realities of climate-driven wildfire and lack of efficacy in logging to control fire behavior. Reporting from CNN about the study notes: "*Over the last three decades, the number of US homes destroyed by wildfire has more than doubled as fires burn bigger and badder, a recent study found. Most of those homes were burned not by forest fires, but by fires racing through grass and shrubs."… "The West is most at risk, the study found, where more than two-thirds of the homes burned over the last 30 years were located. Of those, nearly 80% were burned in grass and shrub fires."*

Further, most large fires in eastern Oregon in 2024 were grass fires.

We also want to note that recent research found that the majority of fire ignitions that cross jurisdictional boundaries start on private lands, not public, and that most fires are started by human activity. OSU Newsroom coverage discussed the Downing et al. 2022 study:*"The study area covered almost 141 million acres across 11 states and included 74 national forests"… "Of all ignitions that crossed jurisdictional boundaries, a little more than 60% originated on private property, and 28% ignited on national forests. Most of the fires started due to human activity."*

We are concerned that repeated building and reopening roads will further increase human access to these and other timber sale areas, which in turn increases the risk of human-caused ignitions. In addition, we note that this study counters the common narrative that fires are going to 'pop out' of National Forests to affect nearby communities. Home hardening is the most effective strategy for keeping communities safe.

Forests are important for carbon storage and for carbon sinks—they store carbon in both the soils and the vegetation, and are important for mitigating the impacts of climate change. Harvesting wood "represents the majority of [carbon] losses from US forests...." (Harris et al., 2016). Additionally, (Achat et al., 2015) has estimated that intensive biomass harvests could constitute an important source of carbon transfer from forests to the atmosphere. Pacific Northwest forests hold live tree biomass equivalent or larger than tropical forests. (Law and Waring, 2015). "Alterations in forest management can contribute to increasing the land sink and decreasing emissions by keeping carbon in high biomass forests, extending harvest cycles, reforestation, and afforestation." (Law et al., 2018). The FS omits an honest carbon accounting of the carbon outputs of this project.

Importance of riparian forests for amphibians, birds, wildlife, and general biodiversity:

Should logging be implemented as proposed in the FEA, riparian habitats, water quality, and fish would be directly and negatively impacted by logging. **Approximately 75% of eastside terrestrial species depend upon riparian habitats for their life cycle needs or use these habitats more than others (Henjum et al. 1994).** The EA fails to acknowledge the key ecosystem functions of mixed-conifer forests dominated or co-dominated by Grand fir, and the need to protect fir forests for wildlife habitat. The EA fails to adequately protect or consider the importance of multistory forests for wildlife species and their habitat needs.

The Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basin (Quigley et al. 1996) includes summaries of their finding. The "Highlighted Findings" note that **there has been a 27 percent decline in multi-story old forest structures** (Chapter 8, Findings, pg. 181). Given the extensive portion of forests that have already been logged on the landscape, mature and old forests (and the trees, snags, and logs within them) often provide some of the last high-quality wildlife habitat and connectivity corridors in and adjacent to timber sale areas.

Young and mature fir are also needed for future recruitment of old and large fir. Bull et al. 1997 highlights the importance of large fir with cavities, as well as the importance and rarity of the multilayer stands that produce this habitat, notes: *"**In northeastern Oregon, grand fir and western larch make up most of the hollow trees used by wildlife.** Bull et al. 1997 goes on to note that "[l]arge, hollow trees are uncommon in managed landscapes and typically are found only in late- and old-seral stands of grand fir and western redcedar. Although isolated hollow trees in young stands have significant value to wildlife, these young stands cannot reproduce this type of structure for at least 150 to 200 years. **The late-seral, multilayer stands that produce hollow trees comprise less than 3 percent of the forested landscape in the interior Columbia River basin**."*

The Forest Service Region 6's Response to Blue Mountains Biodiversity Project's Freedom of Information Act request (2016-FS-R6-001106-F) included the "Eastside Screens Enclosure; Recent Science Findings and Practical Experience: Implications for the Eastside Screens September 2015". This Enclosure also recognizes the importance and rarity of large hollow firs. The Enclosure noted (emphases added): *"Implementation of the Screens has substantial species management implications. For example, the white-headed woodpecker, Lewis's woodpecker and several species of bats are Regional Forester's Sensitive Species that rely on large snags and defective trees for part of their life history. **Large, defective grand fir trees and snags provide critical roosting and denning habitat for black bears, Vaux's swifts, pileated woodpeckers, American marten, and bats** (Bull et al., 1997). **These legacy trees, especially large, hollow grand fir, are rare on the landscape and have declined from historical conditions on the eastside of Oregon and Washington".** The enclosure also states: "These findings reinforce the importance of retaining and recruiting large, old trees in dry, mesic and moist mixed conifer forests on the eastside of the Region. It is critical that silvicultural prescriptions provide for **large** snags and defective trees in adequate numbers through time….**large, hollow grand firs take 150 to 200 years to develop (Bull et al. 1997): adequate numbers of smaller trees need to be left to allow for the processes that create replacement hollow trees."***

In recent years, numerous studies have raised alarms regarding habitat loss, climate change, and decline of fauna and biodiversity across the planet. Warnings have been sounded by scientists regarding the declining bird populations we are seeing, and the projections of far greater losses to come. For example, the Rosenberg et al. (2019) study *Decline of the North American Avifauna* reported a *"staggering decline of bird populations, and found "wide-spread population declines of birds over the past half-century, resulting in the cumulative loss of billions of breeding individuals across a wide range of species and habitats. They show that declines are not restricted to rare and threatened species—those once considered common and wide-spread are also diminished. These results have major implications for ecosystem integrity, the conservation of wildlife more broadly, and policies associated with the protection of birds and native ecosystems on which they depend."*

Given the urgent need to address the biodiversity and climate crises, which includes species and habitats in the Blue Mountains, the agency needs to focus on protecting wildlife, clean water, high-quality habitat, and ecosystem integrity. Birds are an integral part of forested ecosystems on the Blue Mountains, and were not adequately considered in the FEA. These structural components and forest types include: mixed-conifer forests, fir dominant or codominant forests, and mature and late old structure forests. The EA did not adequately analyze or avoid the negative effects to birds that would occur under the action alternatives.

The following is a summary of birds in the Blue Mountains of Oregon and SE Washington rely on mature and old forests, mixed-conifer forests, and fir-dominant or co-dominant forests. For additional detail and citation information, please see the detailed notes and spreadsheet that compliments this section. These documents include additional detail about BBS population trends, Langham et al. (2015) climate threat determinations, and habitat descriptions from Csuti et al (1997), Thomas et al. (1979), Miller (personal communication), and Marshall et al. (2006).

Association with mature and old forests, mixed-conifer forests, and fir dominant or co-dominant forests: Many of the birds that are associated with mature forests, old growth forests, mixed-conifer forests, and/or Grand fir or Doug fir during a key portion of their life history. These include:

Birds that rely on mixed-conifer forests, mature and old forests, and Grand fir: Birds that rely on mixed-conifer forests, mature and old forests, and Grand fir for at least part of their life histories (such as reproduction and feeding) include: Harlequin duck; Bufflehead; Barrow's goldeneye; Hooded merganser; Wood duck; Red crossbill; White-winged crossbill; Brown creeper; Vaux's swift; Evening grosbeak; Pine grosbeak; Hermit thrush; Swainson's thrush; Varied thrush; Pine siskin; Cordilleran flycatcher; Golden-crowned kinglet; Ruby-crowned kinglet; Black-capped chickadee; Chestnut-backed chickadee; Mountain chickadee; MacGillivray's warbler; Townsend's warbler; Yellow-rumped warbler; Mountain bluebird; Calliope hummingbird; Rufous hummingbird; Red-breasted nuthatch; American three-toed woodpecker; Black-backed woodpecker; Downy woodpecker, Hairy woodpecker, Lewis' woodpecker; Pileated woodpecker, Williamson's sapsucker; American kestrel, Winter Wren, Western Tanager, Hammond's flycatcher, Boreal owl; Flammulated owl; Great grey owl; Long-eared owl; Northern saw-whet owl; Northern pygmy owl, Bald eagle; Golden eagle; Osprey; Merlin, Peregrine falcon, and

Northern goshawk. (Marshall et al. 2003; Csuti et al. 1997; Thomas 1979; Miller 2020 personal communications).

Birds that have also seen declining populations according to the BBS, and/or are considered climate endangered or climate threatened by Langham et al. (2015) include Bufflehead; Barrow's goldeneye; Hooded merganser; Wood duck; Red crossbill; Brown creeper; Vaux's swift; Pileated woodpecker; American three-toed woodpecker; Black-backed woodpecker; Lewis' woodpecker; Williamson's sapsucker; Great grey owl; Boreal owl; Long-eared owl; Flammulated owl; Northern saw-whet owl; Bald eagles; Golden eagles; and Osprey.

Langham et al. 2015 *Conservation Status of North American Birds in the Face of Future Climate Change* identified 314 birds at risk of losing more than half of their current geographic ranges under climate change scenarios. In addition, 126 of these are not expected to see gains in their geographic ranges. The authors note: *"Our results demonstrate the need to include climate sensitivity into current conservation planning and to develop adaptive management strategies that accommodate shrinking and shifting geographic ranges. The persistence of many North American birds will depend on their ability to colonize climatically suitable areas outside of current ranges and management actions that target climate adaptation."* The authors also note: "*We suggest that the 126 species in this category be considered by conservation entities for immediate monitoring beyond existing programs such as BBS and CBC."*

The habitat requirements of birds imperiled by declining populations and/or climate change should have been considered and analyzed in the EA. The Forest Service cannot protect the viability of these species without analyzing the effects of this proposal on their habitats, ranges, connectivity, and needed forest components and structures.

Thomas (1979) also highlights several wildlife species that rely on mixed-conifer, mature and old forests, and Grand fir for at least part of their life histories (such as reproduction and feeding) include: Canada lynx, bobcat, Snowshoe hare, White-tailed deer, Northern flying squirrel, numerous bats, Rubber boa, Malheur shrew, Vagrant shrew, Dusky shrew, Heather vole, Long-tailed vole, Gapper red-backed vole, Black bear, Short-tailed weasel, Jumping mouse, and mule deer.

Numerous studies have found negative impacts on wildlife habitats from thinning in riparian areas, even when snags removal is not intended. For example, Pollock et al. (2012) found that selective logging may cause riparian forests to develop characteristics outside of normal late seral conditions in reference stands. Pollock and Beechie (2014) study found that: *"Because far more vertebrate species utilize large deadwood rather than large live trees, allowing riparian forests to naturally develop may result in the most rapid and sustained development of structural features important to most terrestrial and aquatic species".*

The August 2017 "Science Findings" from the PNW Research Station discussed the importance of snags and wildfire, and found that many more snags are needed than current regulations or standards provide for. Riparian forests are disproportionately used by

wildlife and birds, and so these findings are particularly relevant to Riparian Reserves. The following quotes are from August 2017 "Science Findings" from the PNW Research Station:

- *In dry forests, a mixed-severity fire that kills trees is an important but underappreciated strategy for providing enough snags for cavity-dependent species. Low-severity prescribed fires may not provide enough snags for these species.*

- *Suitable snags are limited, such that snag availability drives landscape-level habitat selection by some species. For example, white-headed woodpeckers selected severely burned patches for nesting, which was initially puzzling because this species does not characteristically forage in burns.*

- *Within burns used by at-risk woodpeckers, the majority (86 to 96 percent) of seemingly suitable trees contained unsuitably hard wood; wood hardness limits nest site availability for these declining species.*

- *This suggests that past studies that did not measure wood hardness counted many sites as available to cavity-excavating birds when actually they were unsuitable. "By not accounting for wood hardness, managers may be overestimating the amount of suitable habitat for cavity-excavating bird species, some of which are at risk," Lorenz says.*

- *Based on their results, Lorenz and her colleagues see the critical role that mixed-severity fires play in providing enough snags for cavity-dependent species. Low-severity prescribed fires often do not kill trees and create snags for the birds. "I think humans find low-severity fires a more palatable idea. Unfortunately or fortunately, these birds are all attracted to high-severity burns," Lorenz says. "The devastating fires that we sometimes have in the West almost always attract these species of birds in relatively large numbers."*
- *Many studies have shown that a severely burned forest is a natural part of western forest ecosystems. Snags from these fires attract insects that love to burrow beneath charcoal bark. And where there are insects, there are birds that love eating these insects. Lorenz and her colleagues stress that providing snags that woodpeckers can excavate is crucial for forest ecosystem health in the Pacific Northwest, where more than 50 wildlife species use woodpecker-excavated cavities for nesting or roosting.*
- *Currently, the best solution we can recommend is to provide large numbers of snags for the birds, which can be difficult without fire. According to the researchers' calculations, if one of every 20 snags (approximately 4 percent) has suitable wood, and there are five to seven species of woodpeckers nesting in a given patch, approximately 100 snags may be needed each year for nesting sites alone. This does not account for other nuances, like the fact that most species are territorial and will not tolerate close neighbors while nesting, or the fact that species like the black-backed woodpecker need more foraging options. Overall, more snags are needed than other studies have previously recommended.*

We also have concerns about prescribed fire, particularly landscape-scale prescribed fire in sensitive or remote areas (including RHCAs) that historically burned with mixed severity, including high severity. The FS also does not seem to account for the dynamic nature and natural variability and complexity of the landscape, or for fire refugia. Also, prescribed fires should not take place in the spring, as the potential to harm nesting birds, butterflies, and other species who are nesting or reproducing at that time is high.

Pilliod et al. 2006 examined potential unintended negative effects on wildlife and habitats due to thinning and prescribed fire. We are concerned that similar negative effects on wildlife and habitats will occur in the widespread logging in riparian corridors. For example, we are concerned about possible losses of snags and dead wood (both in direct response to the project and decreased future recruitment), negative effects on density-and closed canopy-dependent species, negative effects on alpha and beta biodiversity, declines in mammal populations, and other unintended negative effects on the flora and fauna and habitats in the project area. Highlights from their study include:

- *"Large-scale prescribed fires and thinning are still experimental tools in ecological restoration (box 1), and unanticipated effects on biodiversity, wildlife and invertebrate populations, and ecosystem function may yet be discovered (Allen and others 2002; Carey and Schumann 2003)."*
- *"Species that prefer closed-canopy forests or dense understory, and species that are closely associated with those habitat elements that may be removed or consumed by fuel reductions, will likely be negatively affected by fuel reductions. Some habitat loss may persist for only a few months or a few years, such as understory vegetation and litter that recover quickly. The loss of large-diameter snags and down wood, which are important habitat elements for many wildlife and invertebrate species, may take decades to recover…."*
- *"Wildlife and invertebrate species that depend on down wood, snags, dwarf mistletoe (Arceuthobium spp.) brooms, dense forests with abundant saplings and small poles, and closed-canopy forests for survival and reproduction are likely to be detrimentally affected by fuel treatments that alter these habitat elements"*
- *"Implementation of any thinning or prescribed burning is likely to result in loss of snags, future snags, and down wood that are important stand attributes of healthy forests and critical components of wildlife and invertebrate habitat"*
- *Loss of large-diameter snags and down wood can take years to decades to recover, as indicated by wildland fire research (Passovoy and Fule 2006)."*
- *"There is a great need for long-term observational and preferably experimental studies on the effects of a range of fuel reduction treatments at multiple spatial scales (stand or larger)."*

Biodiversity in headwater systems can be significant, but is not well characterized and may be underestimated (Pearl et al. 2009). We are concerned that biodiversity will be severely negatively impacted by the FS's non-compliance with PACFISH/INFISH buffers in the Morgan Nesbit sale. For example, stream-associated amphibians require clear, cold water and species such as Columbia spotted frogs and tailed frogs would benefit from the 300' buffers or larger protective riparian buffers. (Corn & Bury 1989, Cushman 2006, Olson & Weaver 2007, Pearl et al. 2009, Semlisch & Bodie 2003, Welsch and Olliver 1998). Corn

and Bury (1989) found that amphibian diversity decreased in lower order streams adjacent to logging. Semlisch and Bodie (2003) found that riparian-associated amphibians utilized and depended upon large areas of upland terrestrial habitat (approximately 300 meters for most amphibians), and so require core habitats well beyond the traditional buffers afforded to the headwater riparian areas (Semlisch and Bodie 2003, Olson et al. 2007). Cushman (2006) suggested management strategies include headwater areas and/or patches that are prioritized for core habitats and maintain connectivity between some watershed areas (Cushman 2006). In general, amphibians in headwater areas may not receive sufficient protections in relation to land management projects (Corn & Bury 1989, Janisch et al. 2011, Semlisch & Bodie 2003). The FS is unfortunately going in the opposite direction, and attempting to decrease or altogether eliminate (such as in small streams) the already buffer protections under Forest Plan standards.

Because forests within RHCAs have been somewhat more protected in the last few decades, these forests often have comparatively more mature and old forests and high-quality wildlife habitat compared to upland forests. As a result, they are providing even greater and disproportionately important wildlife habitat to fauna that rely on mature and old forests, multi-story canopies, denser forests, and fir dominated or co-dominated forests. Riparian forests often encompass these types of forests, but unfortunately riparian forests have become increasingly targeted for logging in recent years. Logging in mixed-conifer forests within and adjacent to riparian corridors will negatively impact wildlife. For example, Northern goshawk and other accipiter hawks, American marten, Great gray owls, Black-backed woodpeckers, Three-toed woodpeckers, Pileated woodpeckers, Olive-sided flycatchers, and other species that rely on denser forests, mature or old growth mixed conifer forests, and/or will be negatively affected by logging in riparian corridors. The Forest Service's narrow focus on the logging also ignores mycorrhizal networks, sharing resources among trees; windthrow; or other situations in which nearby trees and tree cohorts benefit each other and promote biodiversity.

In the USFS's response our comments, the agency notes that "information was added for Columbia spotted frog and Rocky Mountain tailed frog locations and possible areas where the proposed actions may affect these species (see Wildlife Biological Evaluation, page 43-44)." The USFS Wildlife BE notes (emphasis added) that *"[o]verall, studies indicate that in areas with low and moderate levels of timber harvest, there was no significant differences in tadpole nor adult frog populations* ***though there was a downward trend as thinning intensity increased*** *(Bull and Carter 1996, Patla and Keinath 2005).* So, the USFS admits that research has shown a downward trend has been shown in frog tadpoles in relation to forest thinning, especially as thinning intensity increases. However, the FS then totally glosses over the risk of downward population trends for Columbia spotted frog and Rocky Mountain tailed frogs and goes on to state: " *As such, lower intensity thinning within RHCAs is unlikely to reduce habitat suitability for amphibians as long as important habitat characteristics are retained such as streamside shade, hydrological function, and microhabitat."* However, there is no guarantee whatsoever that stream shade, hydrological function, or microhabitats will be retained. Further, it is not clear where these frogs have been documented in relation to planned logging. The agency says they have conducted surveys, but it is completely unclear where these surveys were conducted, or how long ago.

The Wildlife BE notes that *"Serves were conducted to determine the presence or absence of species that may be impacted by RHCA thinning including, but not limited to, collecting environmental DNA (eDNA) for harlequin duck, Rocky Mountain tailed frogs, and Columbia spotted frogs."* However, it is not clear if surveys have been conducted for these species in the majority of areas where NCT or CT will be conducted within RHCAs. The FS should give a clear summary of where surveys took place, what the population trends are, and what sort of logging and road-related activities overlap with these and other special-status species. If there is not baseline data for these species where logging and roading activities are being conducted, then all logging should be dropped.

The Wildlife BE states that Rocky Mountain tailed frogs and Columbia spotted frog are believed to be stable and widespread, and that, for example, Rocky Mountain frogs are widespread in Wilderness areas and immediately adjacent forests. There is no evidence given to support the belief that they are widespread. There is also plenty of evidence to support the concern that sensitive species that rely on cold water and intact habitats and have particularly strong populations in Wilderness are likely to struggle in habitats that have been negatively affected by logging, roading, and burning.

The Wildlife BE goes on to note that *"Roads, culverts, and other factors degrading stream quality are potential threats to Rocky Mountain tailed frogs (Olson 2011).* ***The conversion of wildlands to roads reduces the amount of available wildlife habitat and the quality of the neighboring areas. In addition, roads create noise and vibration that interfere with the ability of reptiles, birds, and mammals to communicate, detect prey, or avoid predators. Roads also increase the spread of exotic plants, increase sediment transport into streams, create barriers to amphibians, pollute water sources with roadway chemicals, and increase light pollution*** *(Bull 2005, Bull and Carter 1996, Hwang et al. 2019, Lázaro-Lobo and Ervin 2019)."* The Wildlife BE also states: "In total, there will be ***404 miles of streams affected by the proposed treatments within the analysis area*** (Table 3). ***Current monitoring indicates that stream temperatures in some areas exceed 20 degrees within the project area*** (see Aquatics BE and specialist report). As such, preventing additional warming and maintaining cold water refugia for aquatic and semi-aquatic species such as waterfowl, Rocky Mountain tailed frog, and Columbia spotted frog is important to maintain viable populations across the Forest (Bull and Carter 1996)."

It is clear that logging and roading will harm these species and are likely to cause negative population trends. It's also clear that the FS does not have adequate baseline survey data on these and other sensitive and imperiled species. In addition, many stream temperatures in the project area currently in excess of 20-degrees on a regular basis, and so are already potentially limiting or harmful to these species. Even very small increases in stream temperature can have significant, negative, and long-term effects on these species and their habitat.

The Wildlife BE notes that "*Columbia spotted frogs were historically documented within the project area along Big Sheep Creek and Lick Creek. Surveys are ongoing including the collection of environmental DNA (eDNA) to help better understand their full range within the project area pre-treatment. There are RHCA treatments being proposed adjacent to these historically occupied streams near Lick Creek Campground. The severity of impacts*

(negative and positive) to frogs from thinning depends largely on the retained microhabitat and effects to hydrologic processes (Patla and Keinath 2005). This is because treatment within the inner half of the RHCA will be lower intensity and have greater restrictions along perennial streams (i.e., hand thinning only)."

A 25-ft no cut buffer is wholly inadequate for maintaining the conditions the Wildlife BE states are needed to protect Columbia spotted frogs. For example, decreasing the canopy cover by 50% will be a huge loss of canopy cover, and seems squarely in line with science that the FS cites, showing that such logging can cause a downward population trend. Again, how many areas that are planned for logging has the FS conducted surveys for Columbia spotted frog and Rocky Mountain tailed frog? We have similar concerns for other special-status species such as Western ridged mussels, Blue Mountains snail, and others.

Increasing road access in the general project area, and to these sensitive riparian habitats, will create additional pressure to imperiled species that cannot afford more direct and indirect negative impacts to themselves and their habitats. For example, the Wildlife BE notes that "[d]irect mortality from vehicle collisions can have a measurable effect on a wide variety of species including wolverines, gray wolves, wild ungulates, migratory birds, and amphibians. For instance, in 2018 there were at least four wolverine mortalities due to vehicle collisions (USDI 2023). Over the last four years (2019-2022), ODFW reported eleven wolf mortalities from vehicle strikes." We are extremely concerned about these and other effects (documented throughout our objection) to riparian species, including amphibians, birds, wolverine, wolves, and others.

Riparian corridors provide particularly important habitat that is used at disproportionately high rates by many species of wildlife. The negative ecological impacts associated with logging in mature and old mixed-conifer forests, multi-story and complex habitat are particularly concerning in relation to riparian forests and the streams they protect. Streams and riparian forests are impacted by what occurs in the uplands as well as within riparian corridors, and can be affected by actions in neighboring creeks and waterbodies. We are concerned about the effects to streams and riparian corridors from upland logging and roading, in addition to being very concerned about such activities within RHCAs.

Crucial wildlife habitat such as snags and downed wood are vitally important, particularly in RHCAs as they see disproportionally high wildlife use and serve as connectivity corridors. Unfortunately, the FS increasingly sees this key wildlife habitat as "fuels" and logs such habitat or destroys it as part of the collateral damage of logging. In addition, managed stands have fewer snags than unmanaged stands (Cline 1997).

In addition, we are concerned that the combined effects of logging and prescribed fire can also be severe for sapling recruitment. In addition, logging down to very low basal areas, followed by prescribed burning, may end up with severely open canopies-- especially if burns run larger or hotter than intended. Opening up forest canopies to a low basal area can cause forests to be substantially drier and hotter, and cause habitat loss for species that rely on multi-layered and dense canopies. Shrubs may extensively colonize such open areas, making it difficult for forests to recover from logging. Also missing from the FS's cumulative effects analyses are the past and possibly ongoing/future effects from fire lines,

backburns, and other fire suppression efforts. We are also extremely concerned about the potential severe impacts associated with logging within fire lines and ember reduction zones, and the lack of adequate analyses surrounding these activities.

Olson 2000 and Harley et al. 2020 studies:

While the Morgan Nesbit FEA and analyses documents do not make any direct references to Olson 2000 or Harley et al. 2020, those are usually the studies that the Forest Service points to in order to justify artificially portioning off the "inner" and "outer" zones within RHCAs, and then claiming they need to be logged. We did not see any citations to justify the "inner" and "outer" zones, or to generally justify logging within RHCAs in the Morgan Nesbit project.

The USFS's response to comments notes that *"[p]roposed treatments in RHCA areas were not determined by fire history studies. See responses to comments L29.A1.C10-11.*" I was unable to find comment "L29.A1.C10-11. It is unclear what evidence or justification the USFS is relying on to log within RHCA buffers, or to create artificial "inner" and "outer" delineations within RHCA buffers.

Since fire scar analyses have been used in every other project we've commented on in the past 8 years that proposes logging within RHCA buffers, we are including the following concerns about the Olson 2000 and Harley et al. 2020 papers in the assumption that they are implicitly being used by the Forest Service (or similar papers are being used, with similar issues), in the justification for inner/outer zones and logging within RHCAs.

The Olson 2000 research mapped fire years for "every year there was clear evidence of fire scarring" (Olson 2000 Appendix E. pp. 181- 237), and show data from 1428 through 1972. In our review of the Olson 2000 maps, we note that there are substantial portions of the these areas had no evidence of any fire, including the headwaters/upper watersheds of Mill, Marble, and Salmon Creeks. The Olson fire maps show a distinct absence of fire, and so suggest that these areas have infrequent (and likely high severity) fire with long return intervals, and have been acting as fire refugia for centuries. Such forests provide important habitat for species that rely on mature and old forests, and dense and complex canopy forests, and will be instrumental for providing habitat and connectivity in a changing climate. However, the complex mosaics of fire history become lumped together, essentially erasing the very real, on-the-ground results that depict an extremely variable landscape that includes very long fire return intervals.

We want to note some finer scale detail from those maps that we observed. ***Olson 2000 data shows <u>no evidence of fire</u> in higher elevation areas within the Baker study location, such as the upper portions of Mill, Marble, and Salmon watersheds portions of the study area:***

- There appears to be no evidence of fire scars shown on the maps for the upper portions of high elevation watersheds such as the Mill, Marble, and Salmon watersheds. The lack of fire scars suggests that these forests are likely to have experienced infrequent, high severity fires historically.

- The maps also show no evidence of fire for these more incised, steep watersheds between 1428-1529 (~100 years).
- Between 1529 and 1645, there are only isolated incidents of evidence of fire scars at single sites in these watersheds, with the exception of 1581 when there was a second location that had "probable" fire evidence. So, between 1428 and 1646 there was no evidence of more than one isolated small fire until 1646 for the three watersheds (~218 years), with the exception of the "probable" other single location.
- Mill Creek had only isolated evidence of fire scars at single sites, with two exceptions, one with 2 sites showing evidence and the other with five (in 1783 and the other in 1828, respectively). So, aside from single isolated locations showing evidence of fire scarring within Mill Creek, there was no evidence of fire in Mill Creek between 1428 and 1782 (352 years); between 1784 and 1827 (43 years); or between 1829 and 1972 (143 years).

Several of the locations in the Olson 2000 that show repeated fire included those along the mid and lower portions of Mill and Marble creeks appear to have very isolated and small-scale fire activity, possibly suggesting only extremely small fires such as those related to lighting strikes that burn less than one acre. I.e., it is likely that those locations are attracting repeated fire strikes at the same ridge tops and topographic high points.

We also note that the Harley et al. 2020 paper only sampled riparian plots at lower elevations in the Baker plots. The Harley et al. 2020 study notes: "At Dugout, we sampled riparian plots along the major streams throughout the extent of the upland plots. However, at Baker ***we only sampled riparian plots at low elevation along the major streams*** (below 1770 m) ***because visible fire scars did not occur at high elevations at this site."*** (Emphasis ours). Wouldn't those higher elevation sites with no apparent/visible fire scars indicate either fire refugia/no fire and/or stand replacement fire in those areas—contrary to how the agency has characterized them and based their plans for logging?

The Harley et al. 2020 paper goes on to state: "*All the riparian plots were installed more than 46 m and downslope from existing upland plots (range 49 - 939 m, mean = 316 m; Heyerdahl et al 2001)* ***where fire scars were visible on either lie or dead trees and within the riparian buffer.****"* (Emphasis ours). It would seem that the targeted selection of sampling plots within areas where both upland and riparian forests showed clear signs of fire scars potentially skew the results and/or bias the conclusions about widespread low intensity fire. I.e., if it was a randomized selection, would there not be more potential evidence for infrequent and high severity fires within the project area?

The only data collected in higher elevation riparian areas was from the Olson 2000 study, which—again-- shows no evidence of fire in significant portions of higher elevation areas within the project area. The authors of the Harley paper stated that they left out possible sites in riparian areas at higher elevation because no visible fire scars were not present. Of course, this biases their findings towards detecting low severity fire regimes, because they left out the very areas that lacked fire scars which would suggest infrequent and/or high severity fires.

The Harley et al. 2020 study also states: "As elevation increases and terrain becomes more dissected at Baker, ***longer and more variable fire intervals also occurred. This is likely a***

result of forest composition changes related to both topography and elevational changes in temperature, as well as aspect controls on varying insolation levels (Olson 2000); Heyerdahl et al. 2001). ***When forests occur within interaction zones of climate and topography, such that riparian forests contain greater variety in vegetation composition relative to upslope forests, then fire intervals differ, suggesting that forest composition is important as landscape dissection increases.*** Compared with Dugout, ***riparian valleys at Baker are more incised and therefore receive less insolation, resulting in a north-facing slope and riparian forest composition that is more mesic compared with adjacent south-facing upslope forests.***" (Emphasis ours).

We note that the authors found longer and more variable fire intervals DESPITE sampling at only lower elevation locations along major streams.

In addition, an overwhelming majority of sample sites in both the Dugout and Baker locations are predominantly on south or west facing slopes. The predominance of south or west facing slopes in the Harley et al. 2020 paper study may also have skewed the results towards more frequent and lower intensity fire being more common in riparian forests (and similar to uplands). If one is looking for statistical differences between riparian and uplands—then predominately choosing sample sites most likely to burn more frequently may dampen any statistical signals one might have found with a more robust sampling protocol. Any possible statistical signal from a small sample size with this composition is likely to be muted or overwhelmed by the larger number of sites that are drier, at lower elevations, and have more gentle and open topography. This is especially the case as the Harley study has an extremely small proportion of sample sites in locations that would be more likely to be more moist and have longer fire intervals (i.e., north, northeast, or east facing slopes; higher elevations; and more incised valleys and gulches).

- The Baker study area plots have a total of 35 upland sites. Twenty of those appear to be primarily on south-facing slopes. Of the 15 sites that have more of a northern or eastern slope orientation, five appear to also include strong southern or western influences, as they are somewhat northwest or southeast facing. Of the 35 upslope sites in the Baker study area, only 10 appear to be clearly on slopes that have a strong north, northeast, or east orientation.

- In the Dugout study area, there appear to be a total of approximately 75 upland sites. Only 12 of those sites appear to be on slopes with strong and predominant north, northeastern, or eastern facing. Of these, four are on ridgetops.

- Riparian sites are almost entirely situated all on the larger order streams within the study area, which tend to be less incised and more open. Only eight suites were situated on smaller tributaries, and only one of these sites faces N/NE.

Figure from the Harley paper:

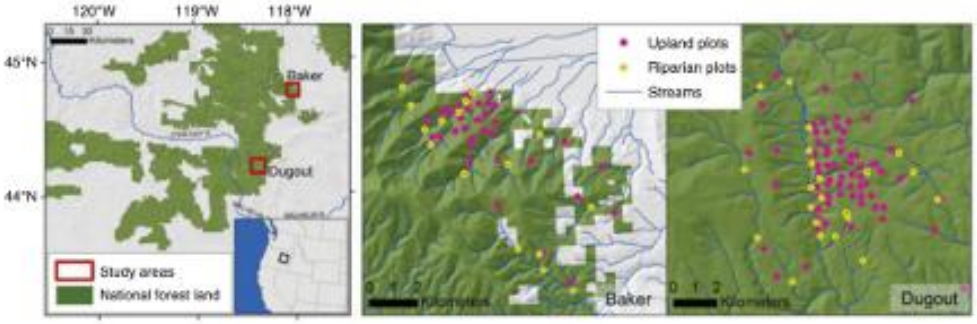


Fig. 1. Location of Baker and Dugout study areas and riparian and upland plots in the Blue Mountains of eastern Oregon, USA. Most of the riparian plots were sampled for this study and most of the upland plots were sampled for an existing study (Heyerdahl *et al.* 2001).

The Harley paper also states: *"[i]n the two study sites in the Blue Mountains of eastern Oregon during the period 1650–1900,* ***historical fires burned more frequently in upland forests compared with adjacent, downslope riparian forests.*** *However, the difference between riparian and upland fire intervals at both Baker (5 years) and Dugout (3 years) was not statistically significant (P . 0.10) and* ***likely not ecologically relevant."*** (Emphases added)

Lack of statistical significance does not necessarily mean lack of data patterns or trends. Lack of statistical significance can be due to a variety of factors, including small sample size. In this instance, the sample size for sites representing north/northeast facing sites was an even smaller proportion of an already small sample size, and seems to have constituted far less than half of the sample sites. While statistically significant differences were not found between upland and riparian forests, there was a clear trend pointing to a difference between the two-- even with the small data sets in this one study. Choices and/or limitations in statistical analyses can also mute variation and complexity, especially when working with small sample sizes, large elevation gradients, and other confounding factors. The Forest Service's standard conclusion for timber sales across the region when applying this research is that most, if not all, forests are dry forests with historically low intensity and frequent fire regimes. This contradicts the data trends-- including the reality of very long fire intervals in large portions of the project area, such as the higher and mid elevation portions.

The Harley et al. 2020 authors also dismissed any ecological importance in the data trend of more frequent fire in uplands compared to the riparian areas (see quote from Harley et al. 2020 above). However, the authors provide no evidence to support this claim, and do not attempt to substantiate their declaration that this very important data trend would lack ecological importance.

The Harley et al. 2020 paper notes that an average of five trees (range 2 - 9 trees) were sampled per hectare by removing fire-scared partial cross-sections. These cross sections were sanded and looked at with a microscope, and were used to assign calendar years to

tree rings through cross dating and against existing ring-width chronologies. This small sample size of trees at each plot then means that the study's already small sample size in riparian forests, especially in the Baker location, is an even smaller sample size for areas most likely to have infrequent and/or stand replacement fire. If the smaller end of the sample range was present at the more northern/eastern slopes and/or in the higher elevations and more incised valleys– then this is potentially only a couple of handfuls of samples in these locations.

Also, evidence of fire at a specific location(s) does not necessarily mean that the fire was widespread, or part of a larger fire regime. For example, lightning strikes may result in only a very small area burning, sometimes even one to several trees. Lightning can and does tend to strike certain ridges and areas repeatedly, also an important factor to consider. In addition, a relatively few trees were sampled at any sample site, potentially leaving room for misinterpretation of fire scars. I.e., some small fires may have been from lightning strikes (not widespread low intensity fires). It could also be the case that some of these fire scars were the result of high severity fire mosaic patterns that include low intensity fire within the fire perimeter.

The Harley et al. 2020 authors also state that for smaller fire years that *"[s]maller fires were likely characterized by a mosaic of varied fuel dryness across the study area. Hence, fuel moisture levels may have varied enough within and between riparian forests and upslope forests, resulting in smaller fires and greater variations in burn severity."* This suggests that there was at least some mixed or high severity fire within riparian zones. High severity fire has specific dynamics and processes that are crucial for certain species and for the ecological integrity of forests that evolved with it. Managing the mixed-conifer forests-- especially those on north/northeast/east facing slopes and at higher elevations-- for a frequent and low-severity fire regime artificially homogenizes them, and degrades or entirely destroys the wildlife habitat and connectivity they provide, as well as greatly impairs their ability to support clean and cold water for fish and people.

The actual data from both the Olson and Harley studies suggest that the topographically and ecologically diverse areas than are recognized by the Forest Service, and are actually more varied in terms of fire intensity and frequency than the usual FS claims. The statistical conclusions of the Harley et al. 2020 paper are based on analyses of sample sites that are more likely to have frequent and low severity fires (lower elevation, west and/or south facing locations, gentle and open topography, etc.). Areas with less frequent and higher intensity fire were sampled in only a handful of locations, or excluded entirely (as with higher elevation sites at Baker in the Harley paper). These sampling biases, as well as the lumping in of data from higher elevations, steep and incised valleys, and N/NE/E facing slopes with data from lower elevations, open topography, and S/SW/W facing slopes— are very likely to have overwhelmed any possible statistical signals of variation, and skewed results towards overgeneralizations of frequent and low severity fire regimes. Lumping all forests in the area together as "*dry forests adapted with low severity fire"* reflects the agency's failure to take a hard look at the data, and the potential limitations of sampling, methodology, and analyses. The data from the Olson thesis fire maps clearly reflects very, very long fire return intervals (and/or stand replacement fire) in the upper and mid elevations of the project area.

Fire scar analysis:

Use of composite fire intervals tend to shorten the time between fires and give a false interpretation of the past fire history. For example, personal communications from George Wuerthner, in our communication regarding limitations of fire scar analyses used in research with similar methodology, include:

> *"Take a hypothetical situation: Let's say you have a 1000 acre study area. You note a fire someplace in that 1000 acres every single year over a hundred year period. However, for argument's sake, each of those fires burns less than a single acre. So you have a total of 100 fires and a fire interval of 1 year. I.e. the fire scar history suggests there is a fire every year. But because each fire is less than an acre, you have only burned 100 acres in a hundred years or only 10% of the 1000 acre study site. Even at a fire every year, it would require 1000 years to get to the fire rotation.*
>
> *This is why it's important to note how large the fire is. You can do this in a number of ways including using air photos, fire atlas, or Government Land Office survey notes as Baker has done.*
>
> *Using fire scars, the best way to do this is to only include fires that burn a significant amount of the study area. In other words, again using the 1000 acres. You would ignore all the fires that are only recorded at one or even a few sights and assume they are small fires of no consequence. After all we are trying to get to the notion of how important fire was in any area and the kind of fire that burned. The only fires you would include would be the years when the majority of the study sites burned, preferably across much of the 1000 acres. You could also note the occurrence of even-aged stands across large areas that might indicate regrowth after a stand replacement blaze. That would give you the real fire rotation."*

Similarly, personal communications from William Baker, in our communication regarding limitations of fire scar analyses used in research with similar methodology (and so are also relevant here), include:

> *"There are no estimates of historical fire rotations, the essential rate parameter of historical fires. Composite fire interval estimates are done within each site, not across sites, which is OK. But, there is little correction to remove small fires, so their MFRI is close to a mean CFI-all fires in the Baker (2017) terminology. Using Baker (2017 Table 2), to estimate fire rotation, for mean CFI--all fires, we would multiply MFRI by 2.44. For the range of MFRIs in their Table 1, which is 10.6-21.2 years, the estimated range of historical fire rotations would then be 25.9 to 51.7 years.*
>
> *Based on these fire rotations, these were not frequent-fire forests with fire rotations < 25 years that would have kept fuel loads generally reduced, since fuels can recover within about 10-20 years usually. Instead, historically there would have been ample time for fuels to fully recover between fires, including plenty of fully*

regrown shrubs, many small trees, lots of small wood, some larger wood etc. and some stands with higher tree density. It is important to estimate fire rotations because it is well accepted now in the scientific fire community that the MFRI used in Johnston et al. does not estimate historical rates of burning and should not be used to guide restoration programs (Baker 2017). See the quotes in this paper from well fire historians that make this very clear.

Also, in the intro Johnston et al. suggest fire regimes would have been mixed severity, but then they did no reconstruction of fire severity, which of course is essential where fires where historically mixed in severity. The paper doesn't say so explicitly, but seems to assume that all fires were low-severity, and the final paragraphs even imply that higher-severity fires did not occur. Of course, what would be expected is that in moister forests, more of the fires that occurred would be higher-severity, including substantial patches of high-severity fire, whereas in ponderosa of course more of the fires would have been low-severity, with fewer that were higher-severity, as has been shown nearly everywhere that fire severities have been reconstructed in these kinds of forests. Showing, as they do, that MFRI did not differ between dry and moist forests has little meaning, since it is not the occurrence of fires, but instead fire size and fire severity that would be expected to differ. They have no data on the essential fire-severity parameter of historical fire regimes in ponderosa pine and mixed-conifer forests in their study areas, and certainly cannot conclude that historical fire regimes would have been similar in these two types of forest.

Also, their historical basal area estimates are based on just extant (live) historical trees, not dead trees present on the forest floor. Although fires may have been suppressed, there are many other sources of continuing tree mortality that could have killed and even removed many of the smaller trees present in the late-1800s (e.g., bark beetles, drought, competition, root rots etc.). They did not compare their basal area estimates to early historical reports, such as Munger 1917 to see whether extant live historical trees even approximately estimate basal area, tree density, and tree diameter distributions in the late-1800s to early 1900s. It is well known that smaller trees present in the late-1800s would likely have burned, died from competition or other mortality agents, and decomposed since then, particularly in moister forests. Since logging is often aimed at smaller trees, and they have no validation at all that smaller trees are correctly reconstructed by using just extant live trees that happen to still be present, this study does not provide a sufficiently sound basis for any restoration logging program."

The Forest Service claims that Douglas and Grand firs and other less fire-resistant trees are present in larger numbers and higher densities across the landscape than they were historically, as a consequence of fire suppression. However, the Forest Service abuses this rationale by applying it overly broadly and aggressively, and uses it as an excuse to extensively log old growth and mature forests– including in ecologically inappropriate areas such as forests with ample evidence of historic mixed-conifer and high-density forests, on north and east facing slopes; deep gulches and narrow valleys; forests on soils

that hold more nutrients and moisture (such as ash soils); and other areas that show historic evidence of supporting mixed-conifer forests in general and Grand fir in particular.

A study from Bradley et al. (2016) challenges USFS assumptions about the fire risk associated with more protected areas—those area that have been less-managed or less-logged, but may still have experienced some degree of fire exclusion (such as Wilderness areas. riparian corridors have also, of course, seen much more protection than upland areas). The authors state:

> *"There is a widespread view among land managers and others that the protected status of many forestlands in the western United States corresponds with higher fire severity levels due to historical restrictions on logging that contribute to greater amounts of biomass and fuel loading in less intensively managed areas, particularly after decades of fire suppression. This view has led to recent proposals—both administrative and legislative—to reduce or eliminate forest protections and increase some forms of logging based on the belief that restrictions on active management have increased fire severity. We investigated the relationship between protected status and fire severity using the Random Forests algorithm applied to 1500 fires affecting 9.5 million hectares between 1984 and 2014 in pine (Pinus ponderosa, Pinus jeffreyi) and mixed-conifer forests of western United States, accounting for key topographic and climate variables.* **We found forests with higher levels of protection had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading. Our results suggest a need to reconsider current overly simplistic assumptions about the relationship between forest protection and fire severity in fire management and policy"**
>
> **"Protected forests burn at lower severities: We found no evidence to support the prevailing forest/fire management hypothesis that higher levels of forest protections are associated with more severe fires based on the RF and linear mixed-effects modeling approaches. On the contrary, using over three decades of fire severity data from relatively frequent-fire pine and mixed-conifer forests throughout the western United States, we found support for the opposite conclusion—burn severity tended to be higher in areas with lower levels of protection status (more intense management), after accounting for topographic and climatic conditions in all three model runs. Thus, we rejected the prevailing forest management view that areas with higher protection levels burn most severely during wildfires."**

In addition, recent research suggests that Grand fir forests are more fire resistant than generally assumed by the agency. Moris et al. 2022 found:

> *"The grand fir forest type had severity values at the same level of forest types dominated by fire-resister species despite grand fir was classified as a fire-avoider species. … In many ponderosa pine forests maintained historically by a high frequency, low-severity fire regime, the transition towards denser forests dominated by Douglas-fir and grand fir would explain why ponderosa pine and Douglas-*

fir still compose a significant proportion of basal area in the grand fir forest type, and many maintain large, old, fire-resistant ponderosa pine trees (Johnston et al. 2021; Merschel et al. 2021). Therefore, the particular structure and composition of these "recent" grand fir forests (e.g., Merschel et al. 2014), with an important presence of large-diameter trees of fire-resistant species, may provide latent fire resistance (Larson et al. 2013)."

Conclusion

Thank you for your consideration of these objections. We look forward to meeting with you to work on a resolution to our concerns. Many other remedies for resolution were suggested throughout our comments.

Sincerely,

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EXHIBIT A – LOGGING IS A FALSE SOLUTION TO WILDFIRE AND COMMUNITY SAFETY

Available at: https://bluemountainsbiodiversityproject.org/2025/04/27/logging-is-a-false-solution-to-wildfire-and-community-safety/

LOGGING IS A FALSE SOLUTION TO WILDFIRE AND COMMUNITY SAFETY

Logging in the backcountry will not make communities safer.
Working near communities, home hardening, and emergency preparedness are far more effective strategies for keeping homes and communities safe (Calkin et al. 2023; Cohen 2000; Gibbons et al. 2012; Syphard et al. 2014).

The primary threat to homes is from grassfires, not forest fires.
Most homes that burned in the US in recent years were destroyed by grass and shrub fire, not by forest fires (Radeloff et al. 2023). This highlights the realities of climate-driven wildfire and lack of efficacy in logging to control fire behavior. Reporting from CNN about the study notes: "*Over the last three decades, the number of US homes destroyed by wildfire has more than doubled as fires burn bigger and badder, a recent study found. Most of those homes were burned not by forest fires, but by fires racing through grass and shrubs."… "The West is most at risk, the study found, where more than two-thirds of the homes burned over the last 30 years were located. Of those, nearly 80% were burned in grass and shrub fires."*

Most homes are burned by large, fast moving fires.
Fast-moving wildfires comprise less than 3% of all U.S. fire events– but they account for 89% of all structures damaged or destroyed. Fires move fastest in ecosystems that have low wind friction due to sparse or absent tree cover, which is associated with a dominance of grasses. Firefighters quickly become overwhelmed by fast-moving fires (Balch et al. 2024).

Large, fast-moving wildfires are primarily driven by climate.
Large, fast moving fires are primarily driven by drought, heat, and wind– **not** by "fuels". In addition, climate change is increasing the frequency and severity of wildfires, as well as the amount of area burned. (Abatzoglou & Koldon 2013; Abatzoglou & Williams 2016; Abatzoglou et al 2021; Balch et al. 2024; Jain et al. 2022; Keeley & Syphard 2019; Keyser & Westerling 2017; Kirchmeyer-Young et al. 2019; Littell et al. 2009; Miller et al. 2012).

The majority of fire ignitions that cross jurisdictional boundaries start on private lands, not public lands.
The Oregon State University Newsroom discussed the Downing et al. 2022 study: *"The study area covered almost 141 million acres across 11 states and included 74 national forests"…* "*Of all ignitions that crossed jurisdictional boundaries, a little more than 60% originated on private property, and 28% ignited on national forests. Most of the fires started due to human activity."*

Most fires are started by human activity.
The Balch et al. 2017 study found that *"[h]uman-started wildfires accounted for 84% of all wildfires, tripled the length of the fire season, dominated an area seven times greater than that affected by lighting fires, and were responsible for nearly half of all area burned"*. Furthermore, increasing road access– which is an essential part of logging– will further put large swaths of forests at risk for the most common fire ignitions– human-caused fire starts.

Protecting forests from logging does not increase their fire risk.
Protected forests do not burn more severely or with greater frequency compared to logged forests (Bradley et al. 2016; Odion & Hanson 2008). In fact, logging may increase fire intensity and risk (Cruz et al. 2014; Evers et al. 2022; Zald and Dunn 2018). For example, logged forests become more susceptible to solar radiation, winds, and drying– thus becoming more flammable after logging in many situations (Achat et al. 2015; Countryman 1956; Leismeister et al. 2021; Platt et al. 2006; Summary of the Sierra Nevada Ecosystem Project Report 1996). Heavy, industrial logging results in homogenous forests can increase fire risk and burn more severely (Zald & Dunn. 2018). In addition, there is a very short window of time that "treatments" are ostensibly effective, usually ~10-15 years (Rhodes and Baker 2008). The authors found that "treated" (logged) areas have a vanishingly small chance of encountering a wildfire during that 10-15 year window of time.

Logging increases carbon emissions compared to unlogged forests, and compared to wildfire.
Forests store vast amounts of carbon, and are a key part of the climate solution if they are left unlogged. Pacific Northwest forests alone hold live tree biomass equivalent or larger than tropical forests (Law and Waring, 2015). Conversely, logging is a major source of carbon emissions (Hudiburg et al. 2018, Law et al. 2018), greater by far than CO2 emissions from wildfires (Bartowitz et al. 2022), and represents the majority of emissions from US forests (Harris et al, 2016; Campbell et al. 2011). Logging is the largest source of carbon emissions in Oregon (Law and Harmon 2018). Additionally, intensive biomass logging– which is becoming increasingly widespread in the US with industry plans for expansion– could constitute an important source of carbon transfer from forests to the atmosphere (Achat et al. 2015). Increasing emissions intensifies climate change, and further exacerbates wildfires and the negative effects of climate change to ecosystems.

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