Blue Mountains Biodiversity Project comments on the Morgan Nesbit Forest Resiliency Project Draft Environmental Assessment and Finding of No Significant Impact

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Comments on the Draft EA and Finding of No Significant Impact:

The Draft 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 with no summaries of the environmental effects analysis from the specialist reports. This outsourcing of all the analysis into the separate reports leaves the EA turning into a simplified public relations document strongly 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 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.

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. 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.

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. 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.

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.

Re: NEPA significance and need for an EIS

The decision to analyze the Mogan Nesbit timber sale—with 13,900 acres of proposed commercial logging and 74,840 acres of prescribed fire, among other treatments, sandwiched between the Hells Canyon National Recreation Area and the Eagle Cap Wilderness—in a 39-page Environmental Assessment ("EA") rather than an Environmental Impact Statement ("EIS") stretches the definition of "significance" under NEPA beyond its breaking point. Under NEPA, the Forest Service is required to prepare an EIS if a project "is likely to have significant effects…." 40 C.F.R. § 1501.3(a)(3) (as was in effect when scoping for the Morgan Nesbit Project was published, March 2, 2023). "In considering whether the effects of the proposed action are significant, agencies shall analyze the potentially affected environment and degree of the effects of the action." 40 C.F.R. § 1501.3(b) (March 2, 2023). Agencies must consider "the affected area [] and its resources, *such as listed species and designated critical habitat under the [ESA]*." 40 C.F.R. § 1501.3(b)(1). Finally, "[i]n considering the degree of the effects, agencies should consider the following, as appropriate to the specific action:

(i) Both short- and long-term effects.

(ii) Both beneficial and adverse effects.

(iii) Effects on public health and safety.

(iv) Effects that would violate Federal, State, Tribal, or local law protecting the environment."

40 C.F.R. § 1501(b)(2).

The Forest Service has failed to fully analyze the environmental effects of the Morgan Nesbit at a level satisfactory even for an Environmental Assessment. Had it done so, it is highly likely that the Service would have been forced to acknowledge that the short- and long-term effects on a variety of issues that deserve a full analysis in an EIS. Of particular note it's the lack of detailed analysis on effects of the project on ESA-listed species, as was specifically called for in the NEPA regulations. BMBP's comments on the wildlife analysis, including ESA listed species, below, support the need for an EIS. Additionally, the sheer scale of commercial logging proposed, the size of the project in relation to the local area (which includes Wilderness and National Recreation areas), and the proposed treatments within RHCAs and other special management areas, all reinforce the need to fully analyze the significant environemtnal effects of the Morgan Nesbit Project in an EIS.

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.

Historical Range of Variability:

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 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.

The HRV concept has been debunked by Forest Service scientists at the Pacific Northwest Research Station, regarding the HRV concept being largely irrelevant and even "quaint," given unprecedented current and future extreme climate changes. Peterson et al. (PNW Research Station), 2014 at 127–130. Other scientists have also disagreed with the way the Forest Service uses HRV as a rationale for logging. A forest protection activist has discovered that a Forest Service poster child photo for historic open forests actually portrays an already logged Ponderosa pine stand in Montana that has visible stumps from logging if looked at carefully, which allowed the featured horse and carriage to drive through the stand. Yet the Forest Service is not disclosing this significant scientific controversy and has not updated its science accordingly, which are still based on 1980 or 1990 Forest Plans throughout the Blue Mountains region.

The Forest Service use of the Historic Range of Variability has recently drawn greater scientific rebuttal, such as by Forest Service scientists from the Pacific Northwest Research Station and by other independent scientists. See scientific controversy over the Forest Service's use of HRV in the book Smokescreen by Chad T. Hanson, a research ecologist—on pages 57-58, 59-60, and 121-122. The

Smokescreen book includes full scientific study citations supporting assertions in an appendix in the back of the book. The EA fails to disclose this scientific controversy.

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.

Heavy handed silviculture prescriptions and fuels management in the form of biomass reduction does little to nothing to reduce the risk of uncharacteristic stand replacing wildfire. There is substantial evidence across the western states that all the fire risk reduction logging and biomass removal did not significantly reduce fire severity or extent, based on a recent study of "fire risk reduction" management across multiple western states. In fact, these studies show that higher levels of protection (with less-intensive management) burn with less severity than unprotected, more intensively managed areas. Bradley, et al. (2016).

A recent study has found that fire risk reduction-oriented biomass reduction is statistically not likely to be effective when the next fire reaches the location that received the management, as the window of any effectiveness is only for 10 to 15 years. Rhodes and Baker (2008). In fact, weather events and climate change—not the presence of fuels—are the primary drivers of large, high-severity wildfires. Keyser et al. (2017). The EA fails to disclose this scientific controversy.

As already discussed, climate change is impacting and will continue to impact ecological conditions across our national forests, including the Wallowa Whitman National Forest. However, intensive management including logging is scientifically proven to exacerbate these issues. This is not adequately disclosed in the EIS.

Leaving trees, especially large trees, standing on the forest is vital to combatting the climate change, as these trees serve as natural carbon sinks. Mildrexler et al (2020) found that the largest three percent of trees in eastern Oregon national forest store approximately 42% of aboveground carbon, making these vital tools in climate change mitigation. Moreover, the removal of biomass and the opening up of canopies increases windy conditions and ground-level solar radiation that increases aridity, exacerbating conditions that contribute to severe, stand replacing wildfire. Fitzgerald and Bennet (2014). The EA fails to disclose this scientific controversy.

Re: Proposed Actions: See Table 3, EA p. 10.

Re: Commercial logging:

*Drop all steep slope logging on the planned 1,366 acres of commercial thinning and 217 acres of commercial thinning with patch cuts, as well as 14 acres on steep slopes of "Irregular Shelterwood" logging.

*Drop all commercial logging—at least high intensity and moderate intensity—in moist mixed conifer and cold high elevation forest. This reduction of logging would scale down the excessive 10,254 acres of commercial logging.

*Drop all commercial logging in never logged forest. See our survey sheets for helping to locate the commercial sale units that have never been logged.

*Drop all “patch cuts” (clearcuts up to 5 acres and some up to 2 acres) within the 1,034 acres of commercial thinning with patch cuts.

*Drop all “Irregular Shelterwood” logging, planned for 431 acres.

*Drop all commercial logging in RHCAs, with commercial logging of 17 acres in Category 1 RHCA, 31 acres in Category 2 RHCAs, and 265 acres in Category 4 RHCAs.

*Drop all “Shaded Fuel Breaks” in RHCAs, planned for 737 acres.

*Scale down “Shaded Fuel Breaks” for a maximum of 50 feet on each side of only four digit major access roads (but not within the Scenic Byway of road 39 and the Imnaha River Wild and Scenic River Corridors.) Restrict the “Shaded Fuel Breaks” to only non-commercial thinning up to 9” dbh with no felling, girdling, or topping of large trees (>/= 21” dbh) except for certified hazard trees. Restrict prescribed burning to dry forest types. Pruning of lower limbs of conifers up to 10 feet high right next to the major access roads could be done. These “Shaded Fuel Breaks” currently extend over 1,722 acres less than 30% slope and 2,334 acres more than 30% slope, so restricting these to only up to 50 feet on each side of major access roads would scale down the excessive “Shaded Fuel Breaks”, which are statistically unlikely to be effective whenever a fire occurs in the same location.

*Limit conifer thinning in aspen enhancement and meadow enhancement to up to 15” dbh to increase the number of mature trees that can grow into large and old trees.

*Drop prescribed burning in moist mixed conifer and cold forest types. Avoid prescribed burning in the spring reproductive season and don’t ignite prescribed fires within RHCAs.

Re: Table 4, Descriptions of types of commercial logging:

We are strongly opposed to taking stands down to the lower limit of the Management Zone and below the lower limit of the Management Zone. The so-called “commercial thinning” would actually be more like virtual clearcutting when logged down to very low basal areas such as 40 to 60 square feet of basal area per acre. High and moderate intensity logging would remove too much forest structure and habitat quality.

There are already many openings and plenty of early seral stages from past logging and wildfires. No patch cuts are needed. Natural openings are usually only up to one to two acres, not five acres unless these are meadows or grasslands.

We are strongly opposed to virtual clearcuts down to only 40 square feet of basal area per acre regarding “Irregular Shelterwood” clearcuts with only retention of 10-20 trees per acre is very stark and virtually biologically sterile, as with a seed tree clearcut. There has already been a lot of logging throughout the Morgan Nesbit sale based on our field surveying and the documented logging in the project area. There is no credible “need” for more logging—especially not for high and moderate intensity logging.

We are strongly opposed to commercial logging within Riparian Habitat Conservation Areas within INFISH and PACFISH riparian buffers, which violates the Eastside Screens.

Re: Non-commercial management: See Table 5, pp. 12-13.

Non-commercial thinning should only include trees less than 9” dbh. This is not specified in Table 5.

We are opposed to post fire logging, which is condemned by a broad consensus of scientists. Post fire areas—especially from high severity fires—have been found to have biodiversity comparable to old growth forests.

We are concerned that there are discrepancies between the EA and the Specialist Reports as to whether the "Shaded Fuel Breaks" would include commercial logging or large tree felling. We are opposed to biomass "fuel" breaks more than 50 feet on each side of only major access roads. These "fuel" breaks should be confined to non-commercial thinning up to 9" dbh only and prescribed burning in dry forest types, with potential lower limb pruning of mature conifers right next to the roads up to ten feet high.

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.

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.

Re: aspen restoration, consider using soil sampling to determine the historic extent of these aspen stands based on dark or black loamy soils from potentially hundreds of years of aspen leaf deposition. Configure aspen restoration based on that historical foot print of the aspen stand, as is done on the Deschutes National Forest. Also implement wider conifer thinning only up to 15" dbh from the aspen stand where this has a south or southwest aspect, with more narrow conifer thinning areas with north, northeast, or east aspects, as the purpose is to allow more sunlight to reach the aspen.

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.

Prescribed fire:

We are wary of prescribed burning in moist mixed conifer forest and cold forest at high elevations or wet to moist conifer near riparian areas, as the more frequent burning could dry out these sites, greatly reducing moisture retention—especially in the context of climate change induced prolonged heat waves and droughts. We would like to know more about the parameters and elevations and forest types burned by indigenous peoples' cultural burning practices for the Morgan Nesbit area and across the Blue Mountains forests.

Riparian vegetation management:

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.

Re: Table 6, see our previous comments.

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.

Please send me information as to where exactly the Big Sheep-Grossman stand is located, so that I can visit it. The stand is likely to have big legacy old growth trees, based on the stand being named.

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.

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.

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.

The brevity of our comments on the EA reflect the lack of effects analysis within the EA. Most of our comments apply to the Specialist Reports that have detailed analysis.

Wildlife Biological Evaluation comments:

Keep in mind that: "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." (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 or result in the destruction or adverse modification of habitat of such species...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.

Re: Wolverine critical habitat

Given that there is a documented wolverine home range that overlaps with the Morgan Nesbit project area, Wildlife BE at 42, the lack of available analysis as to the effects of the Morgan Nesbit project on ESA-Threatened wolverines is alarming. The distinct population segment ("DPS") of the North American wolverine occurring in the contiguous United States was listed as threatened under the ESA effective January 2, 2024. 88 Fed. Reg. 83726. Critical habitat for the contiguous U.S. DPS has not yet been designated. Id. The U.S. Fish and Wildlife Service has up to one year from the publication of the final listing to designate critical habitat for wolverines. 16 U.S.C. §§ 1533(6)(A)(ii) and (6)(C)(ii). This date is rapidly approaching, and yet the Service's Morgan Nesbit NEPA analysis documents provide no consideration for the impacts to potential future critical habitat within the project area.

Section 7 of the ESA requires federal agencies to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat. 16 U.S.C. § 1536(a)(2).

Although critical habitat has not yet been designated, it is likely that it will be designated by the time the Morgan Nesbit project is to be implemented, and therefore management activities approved under the Morgan Nesbit project may result in the destruction or adverse modification of this yet-to-be designated critical habitat.

Although the USFWS established exceptions to the general take prohibitions for forest management activities for a variety of purposes, it is unclear if those exceptions will only apply to the incidental take of wolverines or if it extends to the destruction or modification of designated critical habitat as well. As of now, the Forest Service is taking a big risk that the Morgan Nesbit project's proposed management activities will run afoul of the Endangered Species Act protections for the threatened North American wolverine and its critical habitat. At the very least, more attention and analysis needs to be undertaken with respect to wolverines in an EIS with full opportunity for public review and comment.

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 logging with higher canopy cover and basal area retention at a minimum of 90 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.

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. See the listing of wildlife sign, including species seen or heard on our survey sheets, as well as sample photos of abundant wildlife sign in the commercial logging sale units. Our field survey sheets and sample photo displays for commercial logging sale units are part of our comments but will be sent separately by certified return receipt mail.

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. 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.

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.

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.

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.

For alternative 2, just altering of baseline conditions to meet the stated purpose and need is mentioned with no disclosure of significant scientific controversy over the use of the historical range of variability.

"The Proposed Action alternative reviews how the proposed actions will alter the baseline conditions in order to meet the purpose and need and accomplish the project objectives. The purpose, need, and objectives include moving forest structure closer to historic conditions (known as historical range of variability)…" (Table 2, Wildlife BE, p. 15)

Yet even Forest Service scientists at the Pacific Northwest Research Center have recently publicly stated their conclusion that the use of HRV is not useful under the unprecedented conditions of extreme climate change. There are also problems with the use of inaccurate historical baselines being used that are biased toward logging to greatly open up forest stands through high intensity logging regardless of elevation, forest type, moisture retention levels, and the critical need to preserve wildlife habitat for species that need denser forest, big blocks of unlogged habitat, and multi-strata old growth mixed conifer forest. Thus the Purpose and Need for the Morgan Nesbit timber sale "project" is based on a biased process for rationalizing landscape scale high intensity logging.

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".

There is also undisclosed scientific controversy over fire regimes and fire condition classes, in conjunction with whether timber sale management practices are actually "enhancing forest resilience to drought and climate change, and reducing the risk of large-scale high severity disturbance such as stand replacing wildfires." (See Table 2, p. 15 of the Wildlife BE.)

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.

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.

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.

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—on 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.

Among the various Specialist Reports and the scanty EA, there seem to be discrepancies in describing specific types of management. In the EA, "shaded fuel breaks" are stated to not be including commercial logging, whereas in the BE, there is a hint that commercial logging of large trees may take place in the "fuel" breaks: "Shaded fuels treatment typically retains larger dominant trees in lower numbers...." (Wildlife BE, p. 17, 2nd to last par., underlining emphasis ours.) This means that there could be retention of "lower numbers" of large trees due to logging of "larger dominant trees" when there is still a 21" dbh limit on logging live trees. No large trees >/= 21" dbh trees should not be removed or killed by girdling or topping. Which is it, commercial logging felling and removing large trees, or girdling or topping to kill large trees (both of which we oppose) or only non-commercial thinning up to 9" dbh? If "Shaded Fuel Breaks" result in reduction of large live trees, we oppose the "Shaded fuel breaks" altogether. If so, it's no wonder that the "fuel" breaks are so expansive and look like commercial logging sale units on the one map that shows these. We can't accept "fuel breaks" more than 50 feet wide on each side of the major roads, since the current plans are to make fuel breaks as wide as up to 1,000 feet, which is absurd. This looks like a deceptive timber grab.

*Drop all "Shaded fuel breaks" if they include reducing the number of large live trees and remain more expansive than 50 feet on each side of only major access roads or include violations of special management guidance, such as implementing these "fuel" breaks in the MA-15 designated old growth areas, in some of the RHCAs, and in the rd. 3900 Scenic Byway. We are also opposed to any commercial logging within the "Shaded fuel breaks."

Re: Wild and Scenic River Report

Per the Wallowa-Whitman National Forest Land and Resource Management Plan, management within the Wild and Scenic River Management area "is intended to preserve the special values of those rivers or river segments (meaning the river plus its associated corridor)…." WWNF LRMP at 4-71. "Management of lands bordering or adjacent to the river (and its associated corridor) will not diminish the special values which caused the river to be included in the National Wild and Scenic River System. Th objective is to maintain the characteristics which contributed to their classification." *Id.*

Although the Wild and Scenic River Specialist Report claims that the Morgan Nesbit Project "is intended to move forest conditions toward their historic range of variability and increase resilience to impacts from wildfire, insects, and disease," the claims that these activities "will benefit Wild and Scenic River values" is objectively untrue. Morgan Nesbit Wild and Scenic River Report at 4. As discussed in these comments, the Forest Service's proposed management activities will not result in sustainable ecological functions and forest resilience. In fact, the proposed management is almost categorically antithetical to such values, more likely to result in degraded ecological functions and uncharacteristically severe wildfire.

Moreover, it is unclear that highly speculative future enhancements to ORVs are a legally valid justification for "minor, short-term changes to some of the ORVs." Wild and Scenic River Specialist Report at 4. This is especially true when there is no concrete information or analysis available as to what those short-term changes may be.

Moreover, after reading through the Project documents it is entirely unclear what section of the Wild and Scenic River the proposed "fifty acres of commercial thinning and riparian vegetation treatments near the mouth of Gumboot Creek" take place in. Wild and Scenic River Report at 4. The WWNF LRMP clearly states that "[n]o commercial timber harvest will occur within wild river segments." WWNF LRMP at 4-72. Is the proposed commercial thinning near the mouth of the Gumboot Creek within a wild river segment or not?

Overall, the more treatment proposed within a Wild and Scenic River segment of any kind is likely bound to only degrade the qualities for which it was originally designated. If the rivers are intended to remain wild, then any sort of management prescription will degrade those wild characteristics. The effects to the Wild and Scenic river segments within the Morgan Nesbit project area need to be fully analyzed in an EIS to ensure such degradation is fully analyzed documented, and ideally would therefore not take place at all.

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.

We are strongly opposed to the Forest Service not using full RHCA INFISH and PACFISH buffers for keeping logging and biomass reduction from taking place and negatively reducing moisture retention, shading, cool micro-climate conditions throughout the RHCA drainages, and reduction of large wood (including mature trees) for long-term large wood recruitment to streams and to form pools for fish refugia and trap sediment.

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.

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.

It's important to remember how commercial logging can unravel ecosystem basic processes and functions: "Commercial treatments [aka logging] can also have a negative effect on nutrient cycling (such as carbon budget of forest ecosystems), habitat complexity, insect and fungi abundance, and other microscopic plant and animal species if adequate green trees, snags, down wood, and microclimates are not retained (Thomas 1979, Wisdom et al. 2000, Daw and DeStefano 2001, Douglas et al. 2013, Muller et al. 2005, Squires and Kennedy 2006, Cater and Diaci 2020, Peng and Thomas 2023)."
(Wildlife BE, p. 24, 1st full 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.

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.

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.

What is the diameter limit of non-commercial thinning in proposed in wet meadows? The limit should be 9" dbh or only with exceptions for up to 12" dbh for conifer thinning. (Re: Wildlife BE, p. 25, 2nd full par.)

Where were these four roadkilled 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.)

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.)

"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.

Environmental Impacts of the Proposed Action:

Proposed, Endangered, Threatened, Sensitive (PETS) Species

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.

*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.

*Specifically, drop all 813 acres of RHCA "shaded fuel breaks"—both the 76 acres of mechanical thinning and the 737 acres of hand thinning, which is excessive.

The Forest Service is disregarding the science showing that "fuel" breaks are not likely statistically to be effective whenever a fire occurs in these locations. There is also no point in implementing them as they won't be able to stop or significantly reduce the intensity or spread of climate change driven fires. Such intense and rapidly spreading climate change-driven fires were exhibited by all the eastern Oregon wild fires that covered the equivalent acres of 12 Oregon counties, which were unstoppable until there was cooling, precipitation, and/or slower wind speeds. The firefighters were able to save some structures and private land, but not able to stop the fires until they had an unprecedented scale of concurrent fires in the summer of 2024.

I am not ignorant regarding stand replacement fires and climate-driven fires as I have now experienced both where I live in eastern Oregon—the Wheeler Point fire in 1996 and the Lone Rock fire in 2024, in both cases losing structures and in the first fire, losing all three of our goats and half of our chickens, along with most of our possessions. I am still supportive as to letting wild fires burn when conditions and locations enable wild fires to be managed rather than suppressed. I also appreciate the benefits of wildfire for the Blue Mountains ecosystems, which evolved with wildfire.

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.

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.

Re: Table 3 Summary of PETS 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.

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?

*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.for 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). <u>This is due to limited records</u> 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. These negative impacts could include loss of suitable elk habitat (as scavenging food) in denser moist mixed conifer, including a large block of occupied elk habitat midway north up rd. 3930, near an obvious hunting camp with a spur road to the east of 3930, as well as originally proposed commercial sale units west of Lick Creek in wet mixed conifer that could be overlapping 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.

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.

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.

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 risky 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.

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.

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.

Comments on the Wildlife Specialist Report:

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.

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.

* Drop all planned commercial logging within the RHCAs.

“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.)

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.

Re: Late and Old Structure (LOS), Old Growth, and Connectivity Corridors:

"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.

* 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.

The Blue Mountains Forest Plans, including the Wallowa-Whitman National Forest plan are hopelessly outdated and in need of revision. After two previous Forest Plan revision drafts being abandoned, the process was re-started, which took about 12 years or more for one of the revision attempts. This starts looking like a delaying tactic to retain outdated Forest Plans standards, guidelines, and goals which are not based on updated best available science or changed conditions, such as climate change. For instance: "The Forest Plan states to '(p)rotect all raptor nest sites in use. Protect other nesting sites, important roosting, or special foraging habitats <u>where it can be accomplished without adversely affecting long-term timber production or unreasonably complicating timber sale preparation and related activities</u>." (Wildlife Report, p. 24, underlining emphasis ours) Statements like this show how outdated the Forest Plan is, when the timber industry is no longer a major part of Oregon's economy at only about 3%. The Forests are already devastated from about a century of overlogging. To continue the timber sale rotation (now at only up to about 30 years before the next timber sale in the same area) regardless of ecological outcomes would foreseeably lead to disruption and loss of ecological processes and ecosystem functioning. Protection of forest ecosystems from logging, roading, and livestock grazing impacts is now more critical than ever in the context of the human-caused Sixth Mass Extinction and extreme global warming, which will likely diminish much of the existing forest cover through unprecedented heat waves, prolonged droughts, and more intense wildfires.

Environmental Impacts:

Potentially Affected Environment

Management Indicator Species:

Rocky Mountain Elk

Some relevant habitat parameters established by scientific studies:

"...motorized and non-motorized winter activities have increased in recent years, resulting in an increase in wildlife harassment and disruption of wildlife habitat use (Cook et al. 2004, Rowland et al. 2005, Wisdom et al. 2004, Wisdom et al. 2018).

"Preferred cover includes pole-timber stands with greater than 50 percent canopy (Irwin and Peek 1983). Elk were also more likely to occupy an area that was further from areas with motorized use and openings greater than 1 ha (Irwin and Peek 1983, Rowland et al. 2005, 2018; Wisdom et al. 2018; Ruprecht et al. 2023)." (Wildlife Report, p. 26. See other elk habitat parameters on pp. 26-27.)

"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.

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.)

*Drop all "Shaded fuel breaks" and commercial logging, including in RHCAs, that overlap the planned wildlife connectivity corridors.

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)..."they 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.

"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) We support reducing open roads to less than 1.0 mile per square mile since that would benefit Gray wolf, elk, wolverine, and marten population viability and other species—at least wherever this is possible.

*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, large blocks of core wildlife security habitat, or any undeveloped lands or never logged forest.

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.

*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.

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.

American goshawk:

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).

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)

*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.

“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.

*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.

“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.

* The Forest Service needs to stop felling trees with mistletoe brooms, which are important for goshawk nesting and Blue grouse roosting.

“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)

*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.

“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.

Pileated woodpecker:

“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.

“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.

*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 American marten.

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)

"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)

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.

*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.

Late and Old Structure (LOS), Old Growth, & Connectivity Corridors

Actually, on the ground in the Morgan Nesbit sale area, there is a great deal of variation of forest types based on elevation, topography, and moisture retention. The natural composition of tree species that existed historically regenerate. There is a spectrum from dry Ponderosa pine with some Douglas fir at lower elevations, on ridge lines, and on south aspect lower slopes, as well as on clay soils and in proximity to grassy openings. The moist mixed conifer evidently had (and has) a dominant overstory of Grand fir, Western larch, and Engelmann spruce with some Douglas fir or Subalpine fir at higher elevations, north aspect slopes, and on ashy or loamy soils, as well as in proximity to riparian areas. 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. The tree species composition there includes Engelmann spruce and Grand fir dominance, but also areas of Lodgepole pine and Western larch, and inclusions of drier old growth Douglas fir stands, generally on ridges, and probably based also on soil type. These varied tree species compositions do not seem to be out of place or unnatural, based on varying elevation, slope aspect, topography, and proximity to riparian areas. The only distorted areas regarding tree species composition are the logged areas where Grand fir, spruce, larch, Douglas fir, or Ponderosa pine were selectively removed, based on our field surveying. Thus we are opposed to continued tree species conversion of historically moist mixed conifer tree species diversity to just Ponderosa pine and/or Douglas fir and Western larch.

The lower numbers of Ponderosa pine, Western larch, and Douglas fir—especially of large and old trees-- reflect timber industry logging selection for those species for decades.

There have been recent wildfires in the Morgan Nesbit project area. We witnessed a fire in and near the Eagle Cap Wilderness Area. What is the wildfire frequency and the severity and extent of the fires? Logging seems to be the major distorting influence for forest structure and tree species composition.

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.

Neotropical Migratory Bird Species and Landbirds:

The Forest Service has played a major role in contributing to the declines in the populations of Neotropical migratory songbirds through habitat loss, wildfire suppression, and attempts to eliminate natural forest disturbances from insects and disease.

*Allow the forest to develop naturally by leaving most forest unlogged and managing wildfires as much as possible instead of suppressing fires. Stop creating homogenous plantations and diversify the plantations through creating small openings and letting other tree species seed into the stand or at first plant some of the unrepresented tree species that were there historically. Keep cattle out of riparian areas completely and remove them if they are not meeting grazing standards.

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.

Noncommercial and "Fuels Treatment":

*Leave more small trees in groups and don't thin trees to wide spacing from each other. Provide for hiding and thermal cover.

*Conifer felling in wet meadows should be limited to up to 9 to 12" dbh young trees. Don't remove felled trees.

*Stop removing so much biomass through "fuel treatments", which effectively removes organic matter nutrients needed for soil fertility and productivity, and removing woody debris that provides small mammal, bird, and insect habitat and contributes carbon to the soils. Forest Service soil scientists are becoming more concerned about such intensive removal of forest litter and down wood.

Noncommercial thinning should not be planned to maintain 20 to 30 foot spacing between small trees. This creates a completely unnatural situation as most tree species regenerate in groups. Naturally many regional tree species grow into maturity as groups, with individuals close togethers and sometimes fusing the base of two trees' trunks as they mature. The Forest Service should let natural patterns persist. Widely spacing of trees disrupts mycorrhizal fungal communities essential to nutrient and carbon sharing between trees and using chemical signals to warn other trees in a stand of insect epidemics, so that the trees can raise chemical defenses. See Suzanne Simard's science findings with citations in her book, Finding the Mother Tree, Discovering the Wisdom of the Forest.

*Don't masticate shrubs. Don't use mastication except along major access roads, directly adjacent to the roads.

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.

We are strongly opposed to retaining "large sized dominant trees in lower numbers", 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. We don't want the forest to be as sterile and look as unnatural as Figure 16 on Wildlife Report p. 51. The Morgan Nesbit sale area is mostly moist, high elevation mixed conifer, which is naturally more productive and denser and should look more like the "untreated" forest in Figure 16. Figure 17 shows a relatively acceptable completed "shaded fuel break" near the road, although we are wary that the background trees look mostly smaller. We are opposed to starkly barren areas from over 50 feet to 500 feet on each side of a road, which could overlap other "fuel" breaks on winding roads, making huge barriers to elk habitat based on their avoidance of roads for up to 300 feet on each side of the road. Such wide open areas by roads could increase poaching.

We much prefer non-commercial thinning up to only 9" dbh and prescribed burning only in dry forest types. We are less supportive of non-commercial thinning in RHCAs unless the conifers are competing with or excluding riparian hardwoods where they would naturally grow, as in a meadow system or by a river or major creek.

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.

The proposed "fuel" breaks should be abandoned or greatly minimized in size, extent, and intensity, since the likelihood of these "fuel" breaks being effective is extremely low within the 10-20 year window post management is highly unlikely to encounter a fire during that period of possible effectiveness. Further climate change-driven fires have been routinely jumping over major control lines such as major two digit gravel Forest Service roads. Recent fires in Oregon have jumped the Columbia River (up to a mile wide of water) during the Eagle Creek Fire and another fire jumped the McKenzie River.

* "Fuel" breaks (biomass reduction) should not take priority over the Wild and Scenic Imnaha River corridor or the Scenic Byway designation for Forest Service road 3900. Nor should these "fuel" breaks be implemented in MA-15 designated old growth or in RHCAs, including the Big Sheep-Grossman stand. Drop all "fuel" break implementation in the wildlife connectivity corridors.

We support the following science-based recommendations for wildlife, soils, and water retention, which should still apply to any "fuel" breaks:

"An analysis of the down wood requirements of the various species emphasizes the retention of larger pieces of down wood because it provides more cover and increases the prey base for the various management indicator and Partners in Flight focal species (Bull and Hohmann 1994, Torgersen and Bull 1995, Bull and Heater 2000, DecAID 2023e). Moreover, larger pieces of down wood will absorb and retain greater amounts of moisture during hotter times of the year... which is beneficial for certain sensitive wildlife species and soils (Bos et al. 2011, Kappes 2005, 2006, Parmenter and Losleben 2023)..it is recommended that larger pieces of noncommercial and fuel treatment thinned trees be retained to meet down wood needs of wildlife and soils."

“To minimize impacts to various wildlife species, down wood should be retained in its existing location...retain at least down wood in log decomposition class 2-5 (i.e., limited branches and starting to sag or in contact with the ground (Torgersen and Bull 1995) to avoid inadvertently killing sensitive snails, ants, and mycorrhizal fungi (Marcot 2017).”

*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.

*Drop all “fuel” breaks along Forest Service 3900, that is designated as a Scenic Byway and drop all the “fuel” breaks within the Imnaha Wild and Scenic River corridor, in both cases these “fuel” breaks would violate Forest Plan standards for those two Management Areas for visual quality and scenic views and would violate the Wild and Scenic River management guidelines and standards. The Wild and Scenic River designation sections have the Visual Quality Objective of “Preservation”, which would not be met with implementation of a “fuel” break that involves biomass reduction, heavy equipment use, and/or obvious ground disturbance. A “Shaded fuel break” would not “protect and enhance Outstandingly Remarkable Values within the Imnaha Wild and Scenic River corridor.” (Wild & Scenic River Effects Analysis Report, p.3)

Commercial Logging:

We are strongly opposed to 13,500 acres of high intensity logging to the lowest amount of canopy cover, number of trees per acre, and very low basal area retention. We are also opposed to the 4,000 acres of “moderate” intensity logging, as it is taken down to the low end of the management zone. This is outrageous. There is no need to go down to the lower management zone level and below that with the high intensity logging. This is not really commercial “thinning” but virtual clearcutting.

*Drop all high and moderate intensity logging.

*Drop the 50 acres of commercial “thinning” and “riparian vegetation treatments” near the mouth of Gumboot Creek, which is a Category 1 RHCA with Threatened and Sensitive fish species.   (See p. 4 of the Wild and Scenic River Effects Analysis).

We are opposed to logging in the moist mixed conifer, as it is the best and most wide spread habitat for MIS American marten, MIS Pileated woodpecker, MIS Northern goshawk, MIS Rocky Mountain elk, and MIS Primary Cavity Excavators, as well as for Threatened wolverine and Sensitive Pacific fisher, as well as many other species represented by the four individual Management Indicator species and the group of Primary Cavity Excavator Management Indicator species. Further, moist mixed conifer retains the most moisture for plants and wildlife during droughts and heat waves, other than the cold wet forest type and riparian areas, which also should not be logged. Both water sources, such as fens, springs, headwater streams, and major creeks and rivers and high elevation habitat will become refugia for migrating species that had to abandon their previous suitable habitat due to climate change.

“The goal of an irregular shelterwood treatment [logging] is to alter the species composition from more shade-tolerant species (e.g., grand fir) to shade-intolerant species (e.g., ponderosa pine and western larch). Following harvest [clearcutting], saplings of mostly ponderosa pine and western larch...will be planted.” (Wildlife Report, p. 55, 1st par.) Contrary to the claim that irregular shelterwood virtual clearcutting would “create greater heterogeneity”, there is little diversity left in clearcuts of either plants or wildlife and the claim that such high intensity logging would “break up the forest canopy to reduce the chance of crown fires”, when in fact, such heavy logging removes virtually all of the mature trees, which with large trees, are the most fire resistant. Further, such virtual clearcutting leaves a lot of highly flammable slash, and with the loss of most shading canopy, the microclimate of the stand will dry out, also intensifying fire. The usually densely planted seedlings or saplings will also carry a very intense wildfire.

*Drop all 445 acres of “Irregular Shelterwood cuts” (i.e. clearcutting down to only 40 square feet of basal area retention.) We are strongly opposed to tree species conversion via clearcutting and the establishment of virtually biologically sterile even age, mostly single species plantations.

*Drop all planned logging at the lower limit of the Management Zone or below that zone.

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.

*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 <u>will retain all trees over 21 in. DBH</u>” (Wildlife Report, p. 56, underlining emphasis ours), not kill them, which is not retaining them as live trees.

The mitigations listed to reduce the negative effects from logging and biomass reduction still do not retain natural levels of forest litter and down wood and do not address the cumulative loss of mature and large/old trees and the subsequent large snags and logs those removed trees would otherwise become. There are the additional impacts that are not restored from the proposed mitigations of depleted soils, loss of moisture retention, and mostly low quality wildlife habitat that only supports common habitat generalists or edge species. (See p. 57 of the Wildlife Report, par. 1) Proposed mitigations on p. 57 of the Wildlife Report also do not account for the fate of declining species that require more complex forest structure; more large structure; greater forest density; more snags and logs; or tree species that were mostly removed.

While we support non-commercial thinning or prescribed burning to maintain natural meadows and openings due to wildfire suppression, commercial logging and biomass reduction further sterilize forest stands, reducing wildlife and plant diversity.

We prefer lop and scatter non-commercial thinning over mastication to allow for more down wood and complex ground level habitat.

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.

*Drop the 310 acres of commercial logging within the connectivity corridors and drop the 153 acres of “fuel thinning”, which is not defined. “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.

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.) What is this, retribution from a silviculturist for a wildlife biologist convincing the rest of the Forest Service staff that an unmanaged, extensive wildlife connectivity corridor is needed? 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

Prescribed burning:

So the Forest Service is dropping and leaving plastic sphere dispensers for prescribed burning? Plastic degrades only very slowly and would contaminate food sources and water used by wildlife, with bioaccumulation of micro-plastic particles. This is a worldwide problem of toxic micro-plastic pieces that can cause cancers and other health impairments. The U.S. probably produces the most plastic pollution and toxins in the world or second only to China. Stop using and leaving plastic dispensers for prescribed burn ignitions. Instead of following indigenous people's cultural practices, this involves polluting the forest and harming wildlife. The 'payloads' terminology is disturbing, as with a war against Nature.

We are opposed to prescribed burning during the spring reproductive season, as it is a very unusual season for a fire and could harm young mammals in burrows, eggs and fledglings in nests, and sensitive plant reproduction, as well as drying out the soils before the hot, dry summer season. The Heppner District of the Umatilla National Forest has had success with doing prescribed burning in early spring before the reproductive season, while there is still some snow on the ground.

We are opposed to igniting fires in RHCAs but not opposed to fire backing into RHCAs.

We are concerned that prescribed burning would be more unnatural for moist mixed conifer and cold forest, as these forest types evolved with infrequent high severity fire, not with frequent, low intensity fire that prescribed burning is supposed to mimic. The wild animals and plants in these forest types also evolved with infrequent, high severity fire. We are concerned that using prescribed burning in moist or wet forest would reduce moisture retention, which is critical to retain under extreme climate change effects.

As with using less or no logging rather than relying on often ineffective mitigation, it is better to manage wild fires as much as possible to avoid suppressing wildfires so that less prescribed fire is needed. Inevitably, prescribed burns will not completely reflect the effects of natural wildfires.

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)

Considering how much logging and non-commercial thinning and biomass reduction has already been done cumulatively in the Morgan Nesbit sale area, 25.8% more biomass reduction and canopy loss with repeated commercial thinning, non-commercial thinning, and biomass reduction ("fuels thinning'), this is excessive. This is clear from the extent of sale units from field surveying and there is still extensive management planned with a lot of more intensive logging to very low basal area retention—after changes were made to the proposed action.

Rocky Mountain elk

The Forest Plan is outdated in only requiring 30% of forest land to be forest cover for elk. There should be a higher percentage remaining of satisfactory cover as many other wildlife species need higher canopy closure, such as marten, goshawk, Pileated woodpecker, many Neotropical migratory songbirds, and many others.

Road management

Table 14 shows only three subwatersheds that are not exceeding road density standards. All the yellow highlighted subwatersheds have the potential to reduce road density to within the road density standards. (See Wildlife Report table on p. 64.) This suggests the need to not re-open any closed roads (or "stored" roads) and so-called "decommissioned" roads which may be only blocked, not fully decommissioned. There should be no construction of "temporary" roads being planned for this timber sale. Non-system tracks should be effectively blocked and obliterated, preferably with effective barriers and down wood to start the decomposition process to allow trees and shrubs grow into the routes. The goal should be to not add to the current road system by dropping sale units that would require "temporary", closed, or "stored" roads or non-system track routes. Funding should be sought to fully decommission existing closed roads or non-system tracks. Funding could also be diverted from plans to construct or re-open "temporary" roads. Project design criteria or just signing to close roads or decommission roads are not always implemented or fully effective. Human disturbance would likely continue on "temporary" roads that are still used by ATVs, firewood cutters, etc.

*Drop all 18 miles of "temporary" roads and block and obliterate non-system tracks.

*Fully decommission existing closed roads, new roads planned for closure, and non-system tracks, including concealing the entrances, re-contouring slopes, and putting logs or boulders to block access. For administrative seasonal road closures, metal gates and locks should be used to stop entry.

Habitat Effectiveness

This HEI analysis doesn't make much sense, as it contradicts itself regarding increase or decrease in cover versus openings. It is also outdated and the Forest Service on some Forests are now retaining large blocks of elk security habitat away from roads instead. Distance banding consideration can discourage proliferation of roads and ATV trails in order to preserve good elk habitat.

The Forest Service should prioritize elk and deer for high quality forage over livestock, which are more ecologically destructive and more manageable.

Most of the public and indigenous treaty rights and cultural uses highly prioritize having an abundant population of elk in the Morgan Nesbit sale area. Elk are also important prey for the resident Gray wolf pack and for scavenging by wolverine. More forest cover should be retained, as a lot of the commercial logging sale units are targeting some of the best elk habitat in the moist mixed conifer forest and post fire moist to wet mixed conifer next to the Eagle Cap Wilderness Area. The Morgan Nesbit timber sale is also targeting more remote elk security habitat with good cover to forage ratios off spur roads from roads 3930 and 3935, much of which has never been logged or only very selectively logged a long time ago. These areas also provide downhill access to water sources, including tributary streams, seeps, and a fen. We consider these good habitat for elk based on abundant elk sign or hearing or seeing the elk.

Logged openings often don't have the high forage values of natural meadows, grasslands, and openings in unlogged forest.

*Drop all good elk habitat in sale units slated for commercial logging. See our survey sheets and sample photos.

There is about 93% of the project area being less that 0.5 miles from any motorized use routes, the excessive human disturbance needs to be addressed by closing and decommissioning a lot of little used spur roads. This would benefit elk, wolves, wolverines, and other wildlife.

The low ratios of elk bulls to cows and of calves per 100 cows is disturbing, as it could forewarn a potential population crash, possibly due to over-hunting of trophy bulls, who are the most mature breeding bulls.

Pacific marten:

Marten 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)

*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 or 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.

*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.

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.

*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".

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.

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.)

*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" in LOS, marten habitat, and in general.

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.

"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.)

*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.

American goshawk

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.

Wildlife Connectivity Corridors and Old Growth Forest

*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.

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

Comments on the Soil Resource Report:

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.

*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.

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.

Re: Aquatics-focused comments

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 DEA 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 DEA'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.

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 category 1 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 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 that 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:

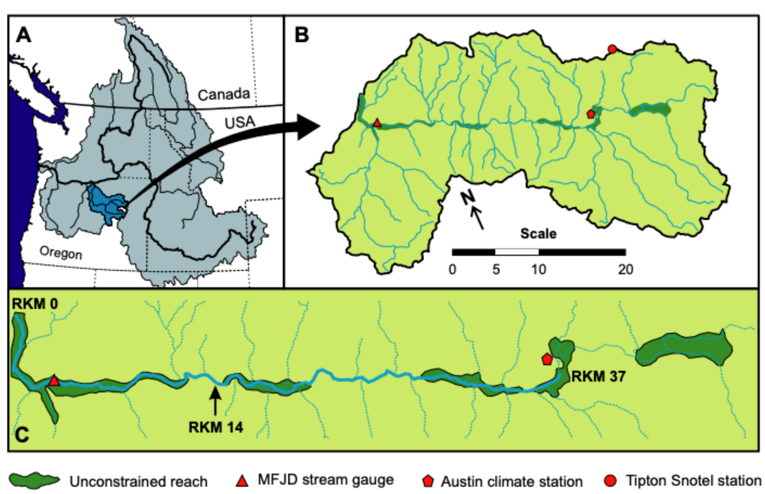


FIGURE 1. Site location map. (a) The location of the upper Middle Fork John Day (MFJD) catchment (white fill) within the John Day catchment (bright blue fill) and its location within the Columbia–Snake River catchments (gray-blue fill) of northwestern USA and southwestern Canada. (b) The upper MFJD with 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.

JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION 117 JAWRA

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 would have failed 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 DEA also proposes to 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)…."*

First of all, what percentage of shade removal is planned for these category 2 and 4 streams in the Morgan Nesbit project area? This information did not seem to be apparent in the NEPA analyses documents available for public review (please point me to the document/page numbers if we are incorrect on this point). We were unable to find silvicultural prescriptions in the Morgan Nesbit DEA or specialist reports with details about size of patch cuts, amount of shade and canopy reductions post-logging, etc. The Morgan Nesbit analyses simply puts forth statements about logging in RHCAs such as: "It 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." However, the analysis does not appear to quantify these statements, even in the Silvicultural Specialist report.

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 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*

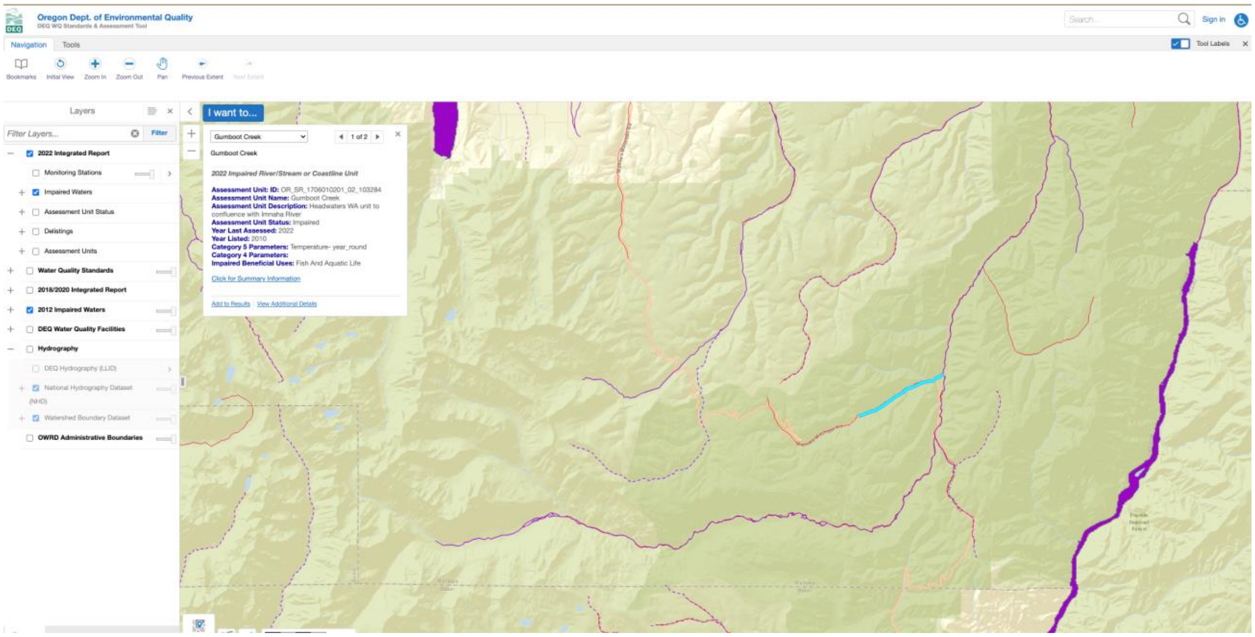
fine substrates being thermally responsive. Conversely, our measure of stream shade was not a strong predictor of stream thermal response.

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."

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

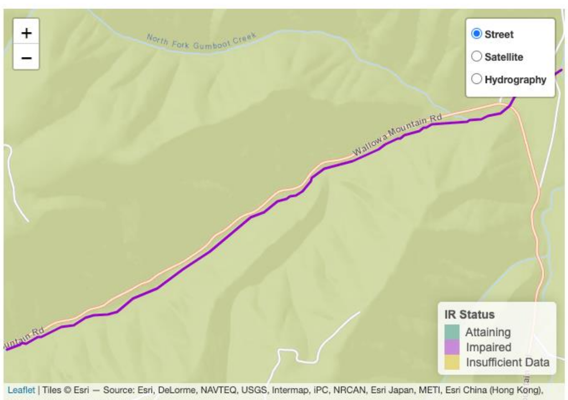
The Forest Service has a legal responsibility to uphold state water quality standards on the federal lands they manage. The Morgan Nesbit Aquatics BE notes that numerous streams within the project area are not meeting water quality standards. However, the analysis documents appear to entirely omit any mention that many streams within the project area are listed on the Oregon Department of Environmental Quality's (ODEQ) 303d list (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.

Figure (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 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:

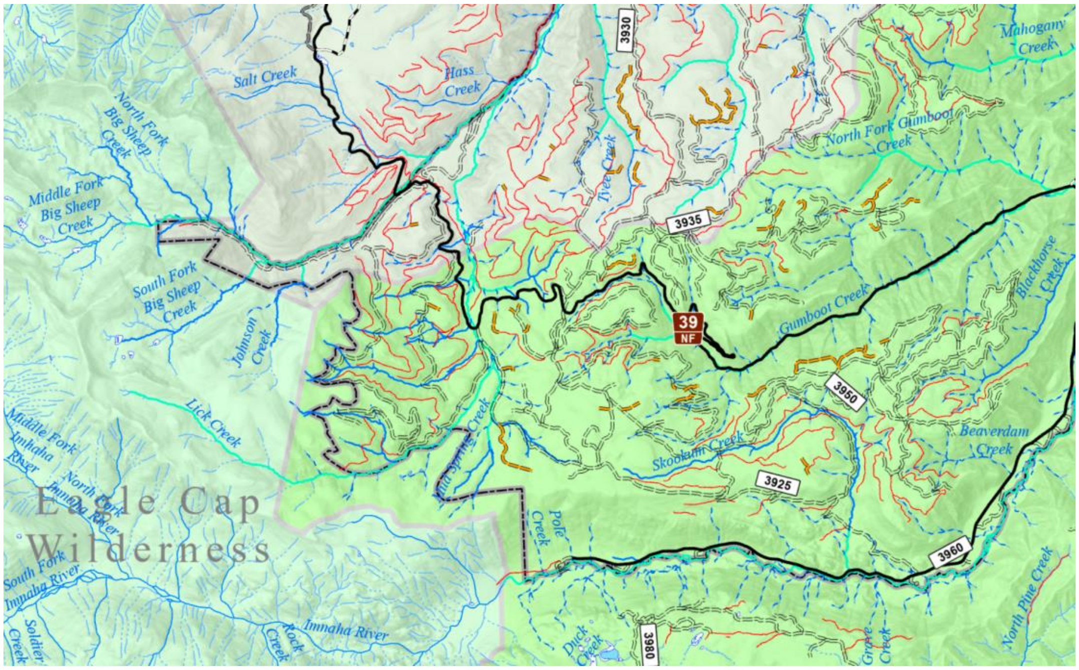
	AU_ID	Pollutant	Assessment	period	DO_Class	stations	Parameter_categor
1	OR_SR_1706010201_02_103284	Temperature	Temperature - Numeric	year_round		WWNF-097	5

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 fails to acknowledge that 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); that such "treatments" are not effective against large, climate-driven wildfires; that fish stocks are stronger in areas without logging, roads, and livestock grazing; and that fish can recolonize burned areas, even severely burned areas, within 2 years after fires provided that stream habitats have adequate connectivity.

For example, 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 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.

Excess fine sediments:

The DEA 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 DEA 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. 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 for fish bearing stream reaches (category 1 RHCA), and no setback zone (a zero foot no activity buffer) for category 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, 444 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 DEA arbitrarily and capriciously determined that intensive, clearcut style upslope logging will not increase fine sediments in streams-- it does actually 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 DEA 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 DEA'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 DEA 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 DEA 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 waqímatáw 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 DEA 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 DEA 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 seems 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 ignore 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).

We also note that Table 9 in the Aquatics BE seems to have some mistakes. Specifically, in 2014, Gumboot Creek is shown as having 291 Redds across 9.6 km. This would equal 30.3 Redds/km (not 3.3 as the chart suggests). Also in Gumboot Creek, in 2017, 7 Redds over 3 km would equal 2.33 Redds/km (not 0.4 as shown in the chart). In Mahogany Creek, 4 Redds per 0.9 km would equal 4.4 Redds/km (not the 0.9 shown in the chart). There may be other errors in this chart too. We are also worried about possible errors in data that we were not able to detect in population trends for other species, since raw data was not included in the NEPA analysis (we have the same concern for stream temperature data).

Table 9. Steelhead Redd Count Data for Upper Imnaha River Tributaries in the Morgan Nesbit analysis area. Data Source: Nez Perce Tribe

	Grouse Creek			Magogany Creek			Gumboot Creek		
Year	km	Redds	Redds/ km	km	Redds	Redds/ km	km	Redds	Redds/ km
2022				0.9	3	3.3	9.6	13	1.4
2021	16.3	48	2.9	0.9	0	0	5.6	20	3.6
2020	11.0	5	0.5	0.9	4	0.9	6.0	19	3.2
2019	10.8	8	0.4	0.9	1	1.1	6.0	4	0.7
2018									
2017	14.9	16	1.1	0.9	0	0	3	7.0	0.4
2016	13	24	1.8	0.9	2	2.2	7	6	0.9
2015	16	92	5.7	0.9	0	0	7	16	2.3
2014	16.8	109	6.5	1.9	3	1.6	9.6	291	3.3
2013				2	0	0	10.2	25	2.5
2012	2.7	9	3.3	2	3	1.5	10.2	25	2.5
2011				2	1	1	8.5	15	1.8

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, 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 will not have a chance to review the consultation for ESA-listed aquatic species, or to comment on such consultations 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 DEA 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.

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 CO_2 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 DEA 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 DEA 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 DEA 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)


Camp Lick sale in 2021 (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 DEA, 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.

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 DEA 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 genrally justify logging within RHCAs in the Morgan Nesbit project. So, 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:

Eastern Oregon riparian versus upland fires *Int. J. Wildland Fire* 603

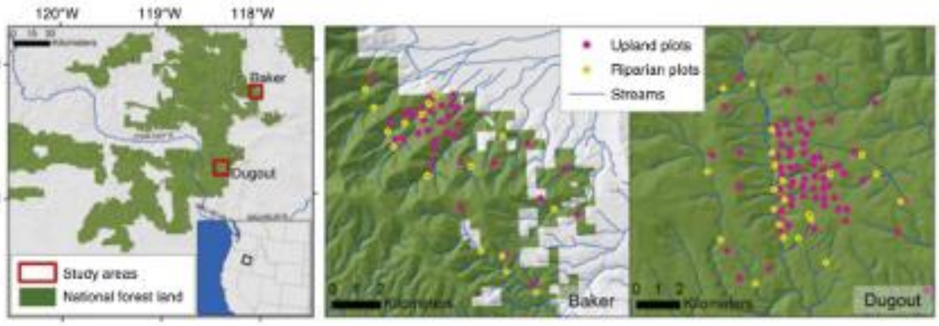


Fig. 1. Location of Baker and Dugout study areas and riparian and upland plots in the Blue Mountains of eastern Oregon, USA. Most of the riparian plots were sampled for this study and most of the upland plots were sampled for an existing study (Heyerdahl *et al.* 2001).

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-- may 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)."

Thank you for your consideration of these comments. We look forward to the issues raised in these comments being addressed being addressed in an EIS published for public comment to remedy the deficiencies identified in the current EA.

Sincerely,

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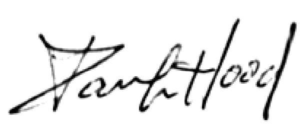
Please use my winter address from November until April: 5323 NE 28th Ave., Portland, OR 97211
Please keep me updated on all developments for the Morgan Nesbit Project



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