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Portland Eugene Bend Enterprise

13 February 2026

TO: Objection Reviewing Officer

VIA: <https://cara.fs2c.usda.gov/Public/CommentInput?Project=62126>

Subject: 36 CFR 218 objection of the Snowy Butte Project EA/FONSI/dDN

Dear Forest Service:

In accordance with 36 CFR 218, Oregon Wild hereby objects to the project described below.

DOCUMENT TITLE: DECISION NOTICE AND FINDING OF NO SIGNIFICANT IMPACT
for the Snowy Butte Landscape Restoration Project Environmental Assessment

PROJECT DESCRIPTION:

- 24,480 acres of silvicultural treatments, mostly logging (mostly VDT <30" dbh)
 - 3,987 acres of logging in LSR, 3,325 acres are >80 yr old.)
- 7,794 acres of fire and fuels treatments, including shaded fuel breaks, and burn blocks.
 - The draft EA said 3,266 acres of shaded fuel breaks, including 1,402 acres in NSO dispersal habitat, and 920 acres of NRF habitat that overlap with 25 NSO home ranges.
 - Fuel breaks will be limited to <8" dbh in LSR
- gaps up to 5 acres
- mostly in municipal watershed (14k ac) + LSR, RR,
- 2,602? acres of thinning in riparian reserves <80 years
- 54 mmbf
- 0.6 mi perm. road construction around Willow Lake for stand access
- 84 miles road maintenance
- 45 miles temp road re-opening
- 4 miles new temporary road construction
- exceeds recommendations of South Cascades LSR Assessment
- amending plan to allow S&M surveys after NEPA (for fungi around Fish Lake)

PROJECT LOCATION (Forest/District): High Cascades Ranger District, Rogue River-Siskiyou National Forest, Jackson County, Oregon.

NAME AND TITLE OF RESPONSIBLE OFFICIAL: Lana Cruz, High Cascades District Ranger.

LEAD OBJECTOR: Oregon Wild

REQUEST FOR MEETING TO DISCUSS RESOLUTION: Oregon Wild hereby requests a meeting to discuss potential resolution of the issues raised in this objection.

NARRATIVE DESCRIPTION OF THOSE ASPECTS OF THE PROPOSED DECISION ADDRESSED BY THE OBJECTION.

Oregon Wild objects to commercial logging and road building in unroaded/undeveloped areas >1,000 acres, late successional habitat, LSR stands >80 years and trees 20" dbh, riparian reserves, habitat for spotted owls and their prey, pond turtle overwintering habitat.

We also object to heavy thinning that will cause significant adverse effects including: greenhouse gas emissions; reduced recruitment of snags and dead wood; increased fire hazard from modified microclimate, rapid fuel drying, increased slash production, and stimulation of surface and ladder fuels; loss of climate change refugia from reduced canopy cover; increased stress on trees caused by increased penetration of warm dry air and increased evaporative demand; and increased ground disturbance leading to soil damage, water pollution, and spread of weeds.

SUGGESTED REMEDIES THAT WOULD RESOLVE THE OBJECTION:

Oregon Wild respectfully requests that the Forest Service withdraw the recommended project and —

Issue a clear decision that avoids logging and road building in roadless and unroaded areas, and protects mature and old-growth trees and stands, and protects important habitat features for native species of terrestrial and aquatic flora and fauna. Our suggestions for avoiding adverse impacts and improving this project are set forth below; or

Prepare an EIS to address the significant impacts and unresolved conflicts and fully complies with the requirements of NEPA and addresses the specific concerns expressed below.

Suggested Project Modifications

Our comments made suggestions to make this proposal less objectionable and more effective at meeting public objectives. These changes would help resolve our objections:

- Avoid logging in roadless areas >1,000 acres.
- Focus on areas accessible from existing roads. Avoid road construction.
- Protect upland habitat for all life functions of pond turtles.
- Make the fire refugia prescription more conservative (more retention) and apply that prescription more broadly. E.g., avoid commercial logging in stands over 80 years old, or apply a 15-18" dbh limit in such stands, in order to mitigate the adverse effects of logging on soil, water, fish & wildlife, climate stability, fuel/fire hazard, recreation, scenic values, weeds, microclimate refugia, etc. There is a severe shortage of suitable spotted owl habitat. We should be doing more to mitigate the significant cumulative effects of past and current logging by thinning more lightly in all suitable habitat, not just the small subset that may be fire refugia. Due to the shortage and fragmentation of owl habitat, and the long time period before owl habitat recovers from past logging, we need to conserve owl habitat that has been accidentally created by fire suppression and ingrowth.

This was recognized when the NWFP was adopted. Lighter thinning will also mitigate adverse effects on soil, fire hazard, carbon emissions, snags, microclimate refugia, etc.;

- Retain much more live and dead tree structure in all gaps and radial thins. Mimic natural disturbance. Don't create mini-clearcuts that lack structure and diversity.
- Retain clumps in radial thins and variable density thinning. Clumps are a natural part of natural forests. Thinning tends to create unnatural conditions with each tree isolated from its neighbors.
- Use a lower diameter limit to retain medium and large trees for recruitment as future large trees and large snags and dead wood.
- Avoid commercial logging and roads in the municipal watershed and the special interest area.
- Avoid machine piling, because it has unacceptable soil impacts.
- Avoid winter log hauling to protect water quality.
- Focus on treating areas accessible from existing roads.

DESCRIBE HOW THE OBJECTIONS RELATE TO PRIOR COMMENTS:

Oregon Wild's prior comments (dated 5-24-2022, and 11-20-2025) discussed all of the issues raised in this objection.

SPECIFIC ISSUES RELATED TO THE PROPOSED ACTION:

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Klamath Siskiyou Wildlands Objections incorporated by reference

We incorporate by reference the objections of Klamath Siskiyou Wildlands (dated Jan 28, 2026), specifically:

1. Failure to implement seasonal protections for Western Pond Turtles, especially in terrestrial overwintering habitats, recognizing that pond turtles can be found far from water for long periods.

2. Utilization of tethered logging methods on steep slopes, and lack of programmatic or site-specific analysis of untethered logging methods.
3. The undisclosed impacts of the dramatic increase in predicted timber volume that occurred after project scoping. We are concerned that logging prescriptions were made much more aggressive which would have greatly increased trade-offs and adverse impacts on soil, water, fire hazard, weeds, habitat, climate change, and scenic/recreation values.
4. Failure to accurately analyze the effects of the project given the fact that the adverse effects of logging are virtually certain, while the benefits of follow-up prescribed fire treatments are speculative or uncertain.
5. An improper *de facto* amendment to the Northwest Forest Plan standards & guidelines for risk reduction logging in LSRs that allows logging of larger/older trees based on vague and unsupported rationale that does not align with the objective for the LSR land allocation – “protect and enhance conditions of late-successional and old-growth forest ecosystems, which serve as habitat for late-successional and old-growth related species including the northern spotted owl.”

NEPA Objections:

- *Failure to prepare an EIS*
- *Failure to take a hard look at the complex effects of logging and roads*
- *Failure to consider alternatives that better harmonize competing objectives*
- *Failure to consider reasonable opposing views*
- *Failure to document compliance with the forest plan and other substantive requirements*
- *Failure to adequately respond to comments*

Our objection raise numerous concerns with the Snowy Butte NEPA analysis. To avoid excessive redundancy, we incorporate by reference our prior comments and we note that the issues and concerns that we raise in our objection (and prior comments) simultaneously implicate several legal problems including, but not limited to: (i) failure to take a hard look at the effects of the project, (ii) making an incorrect Finding of No Significant Impact based on flawed analysis, (iii) the effects analysis fails to disclose and consider reasonable opposing viewpoints, and (iv) the analysis and alternatives fails to weigh trade-offs between desired and undesired effects of logging and roads.

As explained in our comments, the Forest Service failed to prepare an EIS to consider the significant effects of logging. The FONSI is based on flawed analysis and incorrect assumptions and conclusions as described throughout this objection and our prior comments. The EA also failed to consider important issues that were summarily dismissed in the “resources considered but not analyzed” section of the EA.

As explained in our comments, the EA failed to consider the effects of logging on late successional habitat, riparian habitat, ecologically significant unroaded areas, and failed to

document compliance with substantive requirements related to logging in Late Successional Reserves and Riparian Reserves.

As explained in our comments, the EA fails to consider alternatives that better harmonize competing values that flow from forests that managed in different ways.

As explained in our comments, the EA fails to consider the complex effects of logging and roads on wildfire hazard and stand resiliency, carbon emissions and climate change, conservation of late successional habitat and riparian habitat, unroaded areas, etc.

LSR Objections:

- *Failure to adopt a purpose and need that complies with the Northwest Forest Plan*
- *De facto amendment to the forest plan without following NFMA and NEPA procedures*
- *Violation of the LSR standards & guidelines for risk reduction in LSRs*
- *Violation of the NFMA population viability requirement for species associated with snags and dead wood.*
- *Failure to: take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

We object to commercial logging in stands >80 years old, and removing trees >20" dbh in LSRs.

We object to adopting a purpose and need for this that conflicts with the standards & guidelines for LSRs. (dDn p 2: "It would not be possible with the LSR Standard and Guideline to achieve the purpose and need ...") The FS is standing NFMA on its head. NFMA (16 U.S.C. § 1604(i)) requires that management activities comply with the forest plan. Here, the FS is violating LRMP in order to conform the desired purpose and need and associated logging prescriptions. Simply put, the FS can't choose a purpose and need that violates the forest plan. The NFMA requirement to follow the forest plan creates an implicit purpose and need for every project to follow the forest plan.

The EA/DN violates Northwest Forest Plan standards & guidelines for risk reduction logging in LSRs, which state:

Silvicultural activities aimed at reducing risk shall focus on younger stands in Late-Successional Reserves. The objective will be to accelerate development of late-successional conditions while making the future stand less susceptible to natural disturbances.

Much of the LSR logging in this project is not in young stands, and will retard, not accelerate late successional habitat development, in particular by significantly delaying optimal levels of snags and dead wood.

The Northwest Forest Plan says that risk reduction logging in older stands in LSRs may be appropriate in rare cases where certain conditions can be clearly met:

While risk-reduction efforts should generally be focused on young stands, activities in older stands may be appropriate if: (1) the proposed management activities will clearly result in greater assurance of long-term maintenance of habitat, (2) the activities are clearly needed to reduce risks, and (3) the activities will not prevent the Late-Successional Reserves from playing an effective role in the objectives for which they were established.

Logging in LSR stands over 80 years must meet all three of these requirements. The EA fails to make any these findings. The EA fails to show that logging large (>20" dbh) trees in older (>80 yr old) stands is clearly needed and will clearly provide greater assurance of habitat maintenance, and will not prevent LSR objectives. The word "clearly" appears twice in the relevant standards, which emphasizes the need for the Forest Service to make a clear and compelling case that these conditions are met.

EA Appendix K, the LSR Consistency Analysis, does not provide the required showings that the LSR standards will be met. Appendix L almost never compares logging to not logging, which is necessary to determine whether the project will clearly provide greater assurance of late successional habitat maintenance. Most of the figures in Appendix L show only the effects of logging, but fails to show the effects of conservation. The EA ignores the fact that trees would continue to grow in these forests even if they are not logged, and there would be more trees available to meet various habitat functions. Appendix K (p 23) says:

When compared to no action, the proposed thinning options can produce an increase in diameter growth over the next 50 years. Thinning accelerates the growth of the remaining trees and promotes tree vigor by providing more growing space and resources (Tappeiner et al 2015). ... By raising the diameter limit to 30" DBH we are better able to reduce density and accelerate diameter growth which promotes a healthier forest, better able to withstand changes in climate and insects and diseases while removing a fuel component that could exacerbate the effects of fire if left on the landscape.

Diameter growth and tree vigor are forestry terms, not ecology terms. The analysis never discloses that lots of habitat trees would be sent off-site and denied any future role in the natural development of these late successional forests. Diameter growth and tree vigor basically means fewer faster growing trees, but this is simply not a meaningful proxy for quality late successional habitat.

It's worth noting that the EA uses OGSi as an indicator of late successional habitat, but Appendix K does not use OGSi to compare the development of late successional habitat over time in treated and untreated stands. Since, OGSi has some recognition of the value of large tree abundance and dead wood abundance, maybe this would be helpful to show that logging does not provide greater habitat assurance (if this analytic tool was used honestly.)

The analysis in Appendix K fails to account for the fact that these >20" dbh trees are currently providing late successional habitat values, and removal of large numbers of trees 20-30" dbh will not only remove currently valuable large trees, but if allowed to remain those trees will continue to grow and become even more valuable over time. Importantly, logging will also cause long-term depletion of large trees needed for future recruitment of dead wood habitat that is a defining feature of late successional habitat.

Even if there is some value in increased tree growth and vigor, the NEPA analysis never weighs those alleged benefits against the significant and long-lasting adverse effects of logging on late successional habitat features.

The Northwest Forest Plan says that LSR Assessments must include “criteria for developing appropriate treatments,” but in this case the Forest Service is proposing activities that deviate substantially from the criteria for risk reduction in the South Cascades LSR Assessment. The criteria for risk reduction in the South Cascades LSRA (SCLRSA, p 165) include:

- use of prescribed fire to reduce fuels,
- “Remove competing vegetation not exceeding 24” diameter near important dominant and predominant [overstory] pines.” Trees may be removed “to the drip line plus 20 feet.”
- individual trees greater than 24” diameter, may be killed and left standing.

And, there are several conditions for such treatments, including:

- “owl home ranges will generally be avoided.”
- “Follow the ‘Guidelines to Reduce Risks...’ portion of the ROD standards & guidelines ...”
- This treatment is “important in landscapes where pines provide important, possibly the only, large tree structure (e.g. Oregon White Oak Series).” (implying that this treatment is less important in stands that have large trees of other species).
- Focus treatments where “expected mortality would significantly reduce the functionality of the stand as habitat for late-successional forest related species in the short and long-term,”
- Focus treatments where “the mortality is not needed to contribute to a current snag deficit.”
- “Follow applicable portions of the 7/9/96 REO exemption criteria for commercial thinning.”
- LSRA Table 48 shows a 200 acre treatment limit for LSR 227 on the Rogue River Siskiyou NF, but this project involves 3,987 acres of treatment in LSR 227.

Appendix K tries to justify logging in the LSR by linking the natural mortality of true firs to increasing fire hazard, saying “mortality of true firs and their elevated density on the landscape increase the risk of stand replacing fires, result in the loss of LSR stands.” As explained in our comment letter, this is not supported by science. *Wildfire effects are often more ecologically beneficial than logging.* The 2017 Fuels Report for the 130,000 acre East Hills Project on this Fremont-Winema NF admits that wildfires are expected to have beneficial effects even under the no action alternative - “Overall expected value of fire effects is moderately beneficial. This assumes that fires burn throughout the range of conditions – actual current practice is to suppress fires that are most likely to be beneficial.” <https://usfs-public.app.box.com/v/PinyonPublic/file/933489880976>.

The EA analysis keeps referring to “modelling” to demonstrate that logging produces beneficial fire effects but that assumes a 100% likelihood that fuel logging will interact with wildfire and

provide fire-moderating benefits. However, in the real world, no one can predict where or when wildfire will occur so the vast majority of fuel logging will degrade habitat without ever interacting with wildfire or providing any fire benefits.

As explained in our comments, logging is not clearly needed, because mature forests are relatively resilient to wildfire, and most wildfires are still burning with a characteristic mix of mostly low and moderate severity, resulting in fire effects mostly within the natural range of variability, providing ecological diversity, and beneficial ecological trajectories. Logging is also not needed because it is mostly ineffective at modifying wildfire effects.

Appendix K advances a second argument that logging large trees in the LSR is “needed” in order to favor certain native tree species over another, saying -

“Treatment below 20” does allow for establishment of species in the understory.

However, the closed canopy still favors shade tolerant true firs rather than the less shade intolerant Douglas-fir and pines.”

The problem here is that heavy thinning that allows establishment of light-loving tree species is also more damaging to late successional habitat, so it’s hard to identify clear benefits that outweigh the significant harms.

In addition, shifting species composition is not a disturbance risk that the LSR standards & guidelines (or the South Cascades LSR Assessment) was intended to address, i.e. “Large-scale disturbances are natural events, such as fire, that can eliminate spotted owl habitat on hundreds or thousands of acres.” Shifting species composition does not eliminate spotted owl habitat. It may change it but it doesn’t eliminate it. Appendix K also indicates that true firs are already experiencing mortality, so the problem is taking care of itself. Appendix K also indicates that Douglas fir mortality is expected to remain low through the middle of this century and slowly increase after that. Lots can happen in that time span. Natural processes will do lots of work to thin the forest, alter species composition, reduce fuels, etc. The LSRA (p 113) says “The natural growth and evolution of forest stands and habitat over time will be a major factor in attaining desired conditions.” The 2/10/1998 REO letter approving the SCLSRA says “Projects not clearly beneficial to NFP objectives should be deferred in favor of natural stand development.” Logging large trees in the LSR is at best a highly speculative need. Not the kind of urgent problem that requires violating the LSR standards & guidelines intended to protect existing late successional habitat.

In order to find that logging will clearly provide a greater assurance of habitat maintenance as required by the Northwest Forest Plan, the FS must show that the benefits of fuel reduction logging outweigh the adverse effects of logging. This showing is mathematically virtually impossible, because habitat conditions will be degraded on virtually every acre that is logged, yet only a small fraction of treated acres are expected to interact with wildfire, and when it does happen, the effects of logging on wildfire could be positive, negative, or neutral with respect to late successional habitat effects. In addition, fuel logging treatments are expected to change the footprint of the fire very modestly (~10% or less). So, not only is fuel logging not clearly needed, it is also unlikely to provide greater assurance of habitat maintenance. The EA did not weigh these considerations.

The authors of the Northwest Forest Plan said that in stands over 80 years natural processes are the most reliable way to develop late successional habitat. The authors of the NWFP said that

logging to improve late successional habitat was unproven at the time the Northwest Forest Plan was approved, and it would take a comprehensive research program to show that logging could be beneficial. This research program never occurred. In fact, since the plan was approved there is new evidence that logging late successional habitat to control fire effects is very likely to cause net negative effects on late successional habitat values. Society for Conservation Biology, The Wildlife Society, American Ornithologists Union. 4-2-2012 letter to Secretary of Interior Salazar. http://www.eenews.net/assets/2012/04/02/document_gw_01.pdf. See also, Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. V 1.0. May 2010. https://www.dropbox.com/s/pi15rap4nvwxhtt/Heiken_Log_it_to_save_it_v.1.0.pdf?dl=0.

The Response-to-Comment (EA p 211) justifies “cutting older tree species” because they are “not well adapted for the site conditions.” These trees are still native species. They still provide ecological values that advance LSR objectives. Removing these trees will degrade habitat and deprive the site of large tree habitat, large snag habitat, carbon storage, microclimate buffering, etc. And if these trees are not “well adapted” then they will die from natural causes and contribute to snag habitat and dead wood habitat, soil building, carbon storage, etc.

Appendix J - Response-to-Comments (EA p 209) says:

On federal lands managed under NWFP, wildfire has been documented as a greater risk than timber harvest to suitable northern spotted owl habitat (Davis et al. 2016 and Lesmeister 2015). The project’s treatment areas are driven by the objective to decrease wildfire severity and protect interior suitable nesting habitat, which also functions as fire refugia.

This analysis is flawed because the FS has not shown that that logging plus fire is better for spotted owls and late successional habitat than fire alone. The available evidence is that logging suitable habitat to control wildfire is big mistake because it degrades far more habitat than it saves, so spotted owls would prefer dealing with fire alone, than with fire AND logging to control fire.

In order to show that logging will not prevent the Late-Successional Reserves from playing an effective role, the Forest Service needs to show that logging is relatively benign with respect to late successional habitat conservation, but it is not. The South Cascades LSR Assessment says that “Research conducted within and adjacent to the South Cascades LSR network indicates that spotted owls avoid suitable NRF that has been ‘degraded’. This effect appears to last for decades.”

Logging degrades late successional habitat by adversely modifying the microclimate that protects late-successional wildlife from extremes of both heat and cold, and by causing a significant long-term reduction in snags and dead wood habitat which is an essential feature of late successional habitat. The South Cascades LSR Assessment desired future condition for dead wood is: “Levels of snags and down wood are high enough, ... to maintain site productivity and species diversity in terrestrial, riparian, and aquatic communities.” The EA did not weigh these considerations. The EA (pp 94-95) admits that snags are in short supply, but it fails to show clearly that logging will make a bad situation worse.

The LSRA (p 89) also highlights "the importance of down wood as water storage reservoirs. Decaying logs are sponge-like, and in the dry season hold almost twice as much water per unit volume as mineral soil (Perry 1991). Water is important to biological activity because it buffers temperature extremes. Moist logs are key habitat for many forest organisms. Late successional amphibians are associated with moist logs due to their susceptibility to desiccation and the abundance of prey - these logs are islands of invertebrate productivity." The moisture-holding properties of dead wood are increasingly important in a warming climate.

Bell (2021) found that snags and dead wood are defining characteristics of late successional forests; there is a deficit of these features; and restoring them is a slow process. David M. Bell et al 2021. Quantifying regional trends in large live tree and snag availability in support of forest management. *Forest Ecology and Management* 479 (2021).

<https://pdf.sciencedirectassets.com/271259/1-s2.0-S0378112720X0020X/1-s2.0-S0378112720313232/am.pdf>. The South Cascades LSR Assessment (SCLSR, p 90) says that "Large harvests throughout the LSR network have reduced dead material and thus likely concentrated the species that utilize these habitats into smaller areas. These small areas are acting as refugia from which the species will expand as more habitat becomes available." As partial mitigation for past logging, the SCLSR (p 90) recommends providing more than the minimum levels of dead wood.

The South Cascades LSR Assessment (p 113) "... makes the assumption that if the structural components are in place, the ecological processes and functions associated with late-successional forest ecosystems will continue. These structural components include large trees, multiple-canopy stands, snags, down wood, logs in streams, and small openings." By implication, when late successional structures such as snags and dead wood are in short supply, the desired ecological functions in LSRs are not being met.

The EA provides barely any analysis of the effects of logging on snags and dead wood that are defining features of late successional habitat, and makes incorrect and unsupported assertions such as "The project would enhance complex forest structure such ... large snags and down wood." (EA p 26).

The Snag analysis in the EA and in Appendix K are both flawed. Our comments provided extensive evidence that logging will reduce the pool of green trees which will most certainly and unavoidably reduce the future recruitment of snags and dead wood. Every tree that leaves the forest on a log truck is a tree that will be denied any chance to grow and be recruited as a large snag or down wood. As noted in our comments, Garman et al (2003) showed -

... treatments providing rapid development of live, late-successional attributes generally produced relatively lower densities of shade-tolerant stems, lower amounts of Douglas-fir basal area, and fewer snags and logs over a rotation compared to other treatments."

Garman, Steven L.; Cissel, John H.; Mayo, James H. 2003. Accelerating development of late-successional conditions in young managed Douglas-fir stands: a simulation study. Gen. Tech. Rep. PNW-GTR-557. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 57 p.

<https://andrewsforest.oregonstate.edu/pubs/pdf/pub2722.pdf>. The 2018 Science Synthesis for

the NW Forest Plan says partial cutting in older forests will “strongly impact dead wood amounts, and the accompanying road and harvest system will add additional impacts.”
https://www.fs.usda.gov/pnw/pubs/pnw_gtr966.pdf.

The EA assertions that logging would accelerate late successional habitat development is contradicted at EA (p 90) which says that logging would “temporarily” reduce future sources of snag habitat. There is no analysis to show that this adverse effect would in fact be temporary. Available evidence shows that this effect may last 100 years. Using data from stand exams modeled through FVS-FFE (West Cascades variant) the Umpqua NF found that the actual effect of thinning is to capture mortality and significantly *delay* recruitment of large wood. USDA Forest Service. 2007. Curran Junetta Thin Timber Sale Environmental Assessment. Cottage Grove Ranger District, Umpqua National Forest. June 2007. <https://usfs-public.app.box.com/v/PinyonPublic/folder/158152590920>. This graph from the Curran Junetta Thin EA shows that heavy thinning delays by more than 100 years the attainment of habitat objectives for large snags, e.g., the 80% tolerance level.

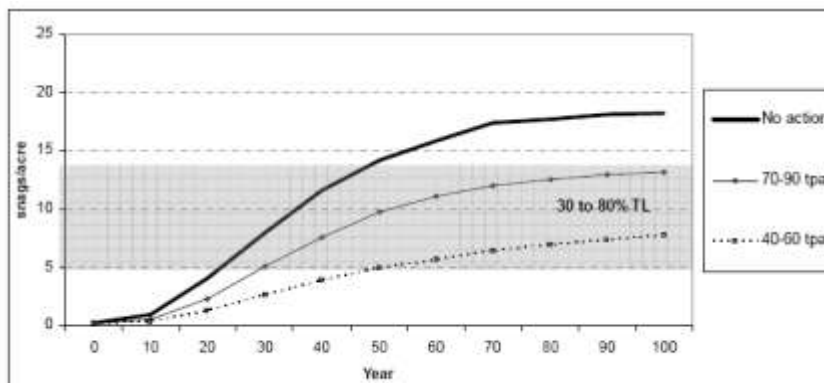


Figure 15. Short and long-term changes to ≥20" dbh snags.

<https://usfs-public.app.box.com/v/PinyonPublic/folder/158152590920>.

Dead wood habitat is common in virtually all old forests. “Dead wood in the form of snags and downed logs is generally common or abundant. Although a notable part of old-growth stands, such material is actually common in unmanaged stands in all successional stages in the Douglas-fir region.” Franklin & Spies 1983. CHARACTERISTICS OF OLD-GROWTH DOUGLAS-FIR FORESTS. Reprinted New Forests for a Changing World. Proceedings of the 1983 SAF National Convention <http://andrewsforest.oregonstate.edu/pubs/pdf/pub120.pdf>.

Many natural young and mature stands have some of the attributes of old-growth stands that may not be present in young, managed stands. Perhaps the greatest difference between natural and managed stands is the lower number and volume of large snags and logs in managed plantations (Spies and Cline 1988). Many young natural forests less than 80 years old have high amounts of carry-over of woody debris...

Thomas A. Spies and Jerry F. Franklin 1991. The Structure of Natural Young, Mature, and Old-Growth Douglas-Fir Forests in Oregon and Washington in Leonard F. Ruggiero, Keith B. Aubry, Andrew B. Carey, and Mark H. Huff, technical editors 1991. Wildlife and Vegetation of Unmanaged Douglas-Fir Forests. General Technical Report PNW-GTR-285.
<https://research.fs.usda.gov/treearch/5630>.

The Response-to-Comment says:

“martens are associated with late successional habitat with high canopy cover and decadence components (snags, large down wood) ... [T]reatments would maintain suitability of current marten habitat and increase development of denning/resting habitat in the long term. ... It is expected that many of the species that are predicted to initially respond adversely to vegetation treatments would benefit over the long-term.”

As explained in our comments, this conclusion is unsupported and fails to account for the fact that logging, by removing tens of thousands trees that would otherwise continue to grow and be recruited as large snags and dead wood, will greatly reduce the abundance of dead wood and this effect is quite long-lasting, e.g., 60-100 years or more. This arguably violates the third requirement for risk reduction in LSRs.

The EA (Table 6, p 30) seems to suggest that areas with low amounts of dead wood indicate a frequent fire regime, but those frequent fires both consume wood AND recruit wood, so those forest types also have abundant wood. The Eastside Screens’ intent statement for snags says:

Most (if not all) wildlife species rely on moderate to high levels of snags and down logs for nesting, roosting, denning and feeding. Large down logs are a common and important component of most old and late structural forests. Past management practices have greatly reduced the number of large snags and down logs in managed stands.

And the ICBEMP definition of old growth includes “Accumulations of large-size dead standing and fallen trees that are high relative to earlier stages.” USDA/USDI. ICBEMP SDEIS. Appendix 17a – Definitions of Old Forest.

<https://web.archive.org/web/20161221104651/http://www.icbemp.gov/pdfs/sdeis/volume2/appendix17a.pdf>.

The EA relies on ineffective mitigation. The EA says that existing large snags would be retained, at least in the “treat and maintain” prescriptions, and the Response-to-Comment says “Commercial harvest stands would be assessed prior to treatment to determine if they are currently meeting snags and downed wood requirements. If snags are deficit, then a variety of sizes classes would be created post-treatment.” There are several unaddressed problem here:

First, retaining existing snags will be imperfect. Many ecologically valuable large snags will be cut to ensure worker safety and operational convenience, and those snags will remain standing only temporarily. Ensuring snag habitat requires an adequate pool of green trees for snag recruitment over time.

Second, current snag standards are outdated and fail to retain sufficient snags to maintain population viability and meet the various life needs of wildlife that depend on abundant snags, and to meet other important ecological functions provided by dead wood. Rose, C.L., et al. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O’Neil. OSU Press. 2001)

<http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf>. The EA (pp 95, 97) conclusions that populations of snag associated MIS would remain viable, is entirely unsupported until snag standards are updated to reflect best available science, and project analysis shows the effects of logging will meet those standards over time, not just at a point in time.

Third, meeting snag standards at a point in time after logging does not ensure recruitment of biologically optimal dead wood habitat throughout the life of the stand, which requires retention of large numbers of green trees to support future dead wood recruitment.

We are also concerned that the FS failed to use DecAID as it is intended and with attention to all of the weaknesses and caveats associated with its use. The Dead Wood Analysis in Appendix F shows the current levels of snags and dead wood and reference levels of snags and dead wood but fails to disclose the future levels of snags and dead wood in logged and unlogged mature stands. The EA fails a core function of NEPA analysis, to disclose the effects of different management approaches.

Appendix F also says “In mature stands in both wildlife habitat types, it is recommended to manage snags and down wood at the 80% tolerance level,” but there are several problems:

- The EA never says how many snags per acre are needed to meet 80% tolerance levels.
- The EA does not say how many green trees need to be retained to meet those snag levels overtime. Meeting desired snag levels over time is highly unlikely given the huge increase in timber volume (without a meaningful change in acres treated) after scoping.
- The EA does not specify which species the 80% tolerance level is referring to.

In short, the EA lacks clear analysis of the effects of logging and whether it will result in 80% tolerance for late successional wildlife that prefer abundant snags and dead wood.

The EA (pp 153-154) analysis of snag habitat seems to suggest some equivalency between DecAID 80% tolerance and “reference conditions” but this is not accurate. Tolerance is a species-specific concept, while reference conditions are based on natural processes such as site productivity and disturbance patterns. The Forest Service approach also ignores the fact that vast areas of non-federal lands (and intensively managed areas of public lands) have very few snags and very little large dead wood, so federal lands need to play a role mitigating for that landscape level deficit of dead wood habitat. The desired future condition described in the South Cascades LSR Assessment (SCLRSA, p 114) says the “Abundance and distribution of snags and down wood ameliorates changes in habitat condition and climatic anomalies.”

The FONSI is based on flawed analysis of LRMP compliance. EA Appendix J (p 201) says “... by working with the LSR Working Group of the Regional Ecosystem Office (REO) to review the Forest’s proposed actions, not already exempt, to determine if the actions are consistent with the NWFP prior to issuing a Final Decision Notice ... Therefore, the Forest is not violating NFMA or NEPA.” Unless they follow NFMA and NEPA procedures for plan amendments, the LSR Workgroup cannot independently amend the unambiguous NWFP requirements for risk reduction treatment in LSRs, which requires that the Forest Service show that logging is both clearly needed, clearly effective, and won’t prevent the LSR from meeting late successional habitat objectives.

We are concerned that the LSR Workgroup may not be fulfilling the intended functions to provide independent review of activities in LSRs, and guardrails to avoid threats to LSR conservation objections. There is too much pressure for the workgroup members to be “team players” and approve activities that will may LSR habitat. The LSR workgroup has become dominated by voices that support the agency’s core mission, i.e., logging. Project approval from the LSR Workgroup for logging LSR forests over 80 years old does not guarantee compliance with the Northwest Forest Plan. The LSR Workgroup cannot amend the Northwest Forest Plan standards & guidelines, at least not without following all the requirements of NFMA and NEPA.

NFMA not only requires compliance with the forest plan, but NEPA requires disclosure of information necessary to determine compliance with legal requirements such as the Endangered Species Act, Clean Water Act, National Forest Management Act, and applicable Forest Plan Standards & Guidelines. One of the indicators of NEPA significance is whether a project may violate environmental laws. The FS cannot make an informed finding of no significance unless they disclose and consider compliance with substantive requirements. See 40 CFR 1508.27(b)(10) and *NW Indian Cemetery Protective Association v. Peterson*, 795 F2d 688 (9th Circ. 1986).

Northern Spotted Owl Objections:

- *Violation of the Endangered Species Act and NFMA population viability requirement.*
- *Failure to: take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

We object to reducing and degrading habitat for northern spotted owls (and their prey), which will increase adverse competitive interactions with barred owls, potentially violating the Endangered Species Act and the NFMA requirements for population viability.

The FONSI is based on flawed analysis that fails to disclose the harm to spotted owls and their habitat from logging outweighs the benefits of fuel reduction. (EA Appendix J, p 200: “The amount of northern spotted owl habitat (for nesting, roosting, foraging, and dispersal) overall would be downgraded by 2% and 4% of federal lands in the Little Butte and Big Butte Creek Watersheds, respectively. The trade-off is greater better protection of resilience of highest priority spotted owl habitat in the Project Area.”) The NEPA analysis also misleads the public and the decision-maker by failing to disclose that logging described as “treat and maintain” will in fact degrade spotted owl habitat. The only thing being “maintained” is minimum thresholds for certain owl habitat functions, not current conditions that are more favorable for all the life needs of spotted owls and their prey.

Our objections about adverse impacts to spotted owls extends to our objections (above) about logging in the LSRs which were established to protect and recover spotted owls. The South Cascades LSR Assessment says that “Research conducted within and adjacent to the South Cascades LSR network indicates that spotted owls avoid suitable NRF that has been ‘degraded’. This effect appears to last for decades.”

Logging Suitable Owl Habitat to Save it from Fire Will do More Harm Than Good

The EA fails to take a hard look at the evidence showing that logging suitable spotted owl habitat to control fire is a net negative for spotted owls. The EA (pp 78-80) analysis of environmental consequences for northern spotted owl and its critical habitat is insufficient. There is no meaningful disclosure of the adverse effects of logging in terms of degrading habitat features important to spotted owls (stand density canopy cover, snags and dead wood, microclimate,

etc), likelihood that spotted owls' can co-exist with barred owls in a logged landscape, and the relative impacts and trade-offs of logging and fire.

When logging intended to benefit habitat will also reduce the quality of habitat, the NEPA analysis must include a careful evaluation of ecological costs and benefits — e.g., the probability that logging will degrade habitat vs. the probability that fuel reduction treatments will interact favorably with fire and thus benefit habitat. This evaluation requires an estimate of the probability of future wildfire. To assume, as many analyses do, a 100% chance of future wildfire over-estimates the likelihood of treatments will interact with fire, thus over-estimating the ecological value of fuel treatments, and under-estimating the ecological effects of logging on habitat. See Heiken, D. 2010. Log it to save it? The search for an ecological rationale for fuel reduction logging in Spotted Owl habitat. Oregon Wild. v 1.0. May 2010.

https://www.dropbox.com/s/pi15rap4nvwxhtt/Heiken_Log_it_to_save_it_v.1.0.pdf?dl=0.

To justify such fuel reduction logging in suitable owl habitat on ecological grounds requires several findings: (1) that wildfire is highly likely to occur at the site of the treatment, (2) that if fire does occur it is likely to be a severe stand-replacing event, and (3) that spotted owls are more likely to be harmed and imperiled by wildfire than by logging at a scale necessary to reduce fire hazard. Available evidence does not support any of these findings, which raises serious questions about the need for and efficacy of logging to reduce fuels in western Oregon and other forests lacking frequent fire return intervals.

The probabilistic element of the risk equation demands careful consideration. Both logging and fire have meaningful consequences, so the issue really boils down to a comparative probabilistic risk assessment where risk is characterized by two quantities: (1) the magnitude (severity) of the possible adverse consequence(s), and (2) the likelihood (probability) of occurrence of each consequence.

An insurance analogy might help. People buy fire insurance for their homes because they can pay a small amount in order to receive benefits in the improbable event of fire. Fuel reduction logging is like an insurance policy that hedges against the chance that fire might occur, but instead of paying with money we are paying with late successional habitat units (because logging late successional habitat to reduce fuels unavoidably degrades and removes habitat). We are also expecting benefits in habitat units. This means the agency can conduct an analysis to show whether the fire insurance payments are worth it from a habitat perspective. The agency can quantify whether logging results in a greater assurance of habitat maintenance, or not. When this analysis is conducted it is clear that fuel reduction logging is just not worth it, because, simply put, the price of insurance is far too high. Logging will degrade habitat across many acres that will never experience any benefits from modified wildfire. Fuel reduction logging is like paying 100 habitat units for insurance and receiving 10 habitat units of benefits.

The location, timing, and severity of future fire events cannot be predicted making it difficult to determine which forests will benefit from treatment - consequently fuel treatments must be extensive and many stands will be treated unnecessarily, thus incurring all the costs of fuel logging, but receiving none of the beneficial effects on fire behavior.

Furthermore, logging for purposes of fuel reduction has impacts on owl and prey habitat that remain under-appreciated, especially the reduction of complex woody structure, and the long-term reduction in recruitment of large snags and dead wood. Fuel reduction logging also has complex effects on fire hazard with potential to increase fire hazard, especially when fuel

reduction efforts involve removal of canopy trees. Ganey et al (2017) said “Existing studies on the effects of fuels reduction treatments on spotted owls universally suggest negative effects from these treatments (Meiman et al. 2003, Seamans and Gutiérrez 2007, Stephens et al. 2014a, Tempel et al. 2014).” Ganey, J.L., H.Y. Wan, S.A. Cushman, and C.D. Vojta. 2017. Conflicting perspectives on spotted owls, wildfire, and forest restoration. *Fire Ecology* 13(3): 146–165. doi: 10.4996/fireecology.130318020.

<http://fireecologyjournal.org/docs/Journal/pdf/Volume13/Issue03/ganey-318.pdf>

BLM admits that “The treatment of a stand to improve its fire resiliency commonly reduces the immediate value of the stand for northern spotted owls.” BLM 2016. PRMP and FEIS for the Resource Management Plans in Western Oregon. Appendix W - Response to Comments, p 1985. https://web.archive.org/web/20190304042302/http://www.blm.gov/or/plans/rmpswesternoregon/files/prmp/RMPWO_Vol_4_Appendix_W.pdf.

BLM’s logic seems to be that in some forests northern spotted owl habitat likely only ever reached full development in “fire refugia,” so why protect owl habitat outside of fire refugia? However, this logic fails to recognize that fire frequency was unnaturally high due to cultural burning. And, since “fire refugia” never got protection before 1994, and “fire refugia” are getting zero protection on private lands, this policy applied to just a small subset of BLM lands would lead to a greatly reduced and fragmented habitat landscape inadequate for northern spotted owl conservation and recovery.

Barred Owl objections

Barred owls have expanded their range throughout the spotted owls range, and every barred owl territory is now unavailable to spotted owls. This was not anticipated when the NWFP was adopted. Now the reserves are not enough. We need to protect suitable owl habitat in the Matrix as well. Now any loss of suitable habitat reduces the likelihood that spotted owls might co-exist with barred owls.

The EA fails to recognize that further loss of suitable owl habitat will increase the risk of accelerated population decline, and fails to recognize that protection of just a small subset of suitable habitat (e.g., fire refugia or Recovery Action 32) is inadequate to avoid significant added risk for spotted owl population decline. This was well described in our comments on the draft EA.

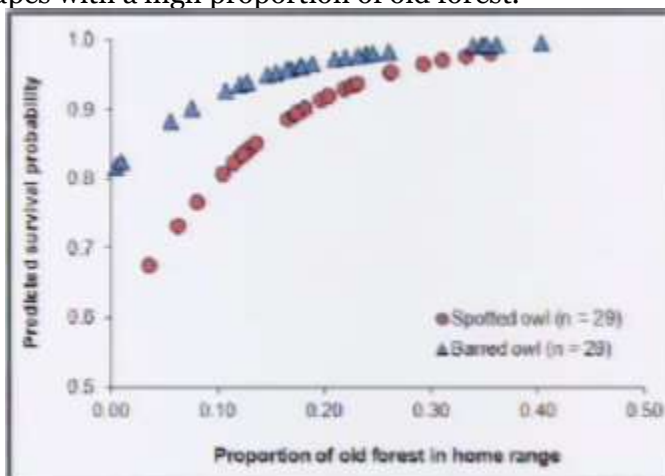
The EA fails to recognize that protecting RA32 and fire refugia are not enough. The invasive barred owl now occupies vast areas of suitable habitat that were presumed to be available to spotted owls when the Northwest Forest Plan was adopted. The FS has never amended the plan or prepared programmatic NEPA analysis to account for this. It is undeniable that ALL suitable habitat needs to be protected for logging in order to reduce the risk of competitive exclusion.

A well-known axiom of the species-area relationship from island biogeography holds that as habitat area increases, the number of cohabiting species also increases, and conversely, as the area of suitable habitat declines, the risk of competitive exclusion increases. See especially, Part III - Competition in a Spatial World in Tilman, D. and P. Kareiva, Eds. 1997. *Spatial Ecology: The Role of Space in Population Dynamics and Interspecific Interactions*. Monographs in Population Biology, Princeton University Press. 368 pp; and see Connor, E. F., & McCoy, E. D.

(1979). The Statistics and Biology of the Species-Area Relationship on JSTOR. The American Naturalist, 791. <https://doi.org/2460305>; pdf.

Providing more suitable habitat, even if it is not occupied, will help mitigate for barred owl competition. Jenkins et al. (2021) showed that when facing competition from barred owls, spotted owls are showing less site fidelity, higher annual rates of dispersal from established territories, and longer dispersal distances. Jenkins, J. M. A., D. B. Lesmeister, E. D. Forsman, K. M. Dugger, S. H. Ackers, L. S. Andrews, S. A. Gremel, B. Hollen, C. E. McCafferty, M. S. Pruett, J. A. Reid, S. G. Sovern, and J. D. Wiens. 2021. Conspecific and congeneric interactions shape increasing rates of breeding dispersal of northern spotted owls. *Ecological Applications* 31(7):e02398. 10.1002/eap.2398 [pdf](#). (“Increased occupancy of study areas by barred owls was associated with greater breeding dispersal distances for spotted owls in our study areas, suggesting that it has become more difficult for spotted owls to locate favorable habitat conditions (Jenkins et al. 2019a). ... The increase in dispersal was substantial; historically ~7% of individual owls on an annual basis moved to a new territory (Forsman et al. 2002), but that rate increased to ~25% in the last years of our study. Breeding dispersal affects individual fitness by influencing survival, mating success, and, ultimately, reproductive success (Forero et al. 1999, Bowler and Benton 2005, Terraube et al. 2015), so increasing rates of dispersal could exacerbate existing population declines, particularly in a k-selected species with historically high site fidelity”). Spotted owls would very likely benefit if they encountered more unoccupied suitable habitat when dispersing. Conversely, spotted owls will be harmed by removal of suitable habitat, even if it is unoccupied, because they will have even fewer opportunities to find suitable unoccupied habitat when they are dispersing, which will mean even longer dispersal distances and more energy expenditure, and greater exposure to predators.

A telemetry study showed that in fragmented landscapes barred owls have a survival advantage relative to spotted owls, but that survival advantage diminishes in landscapes with a higher proportion of older forest. In other words, conservation of mature and old-growth forest should be favored because spotted owls are able to compete nearly equally with barred owls in landscapes with a high proportion of old forest.



See Wiens, D. 2012. Presentation to The Wildlife Society. <http://tw.sclivelearningcenter.com/index.aspx?PID=6893&SID=163551> (at 1:12).

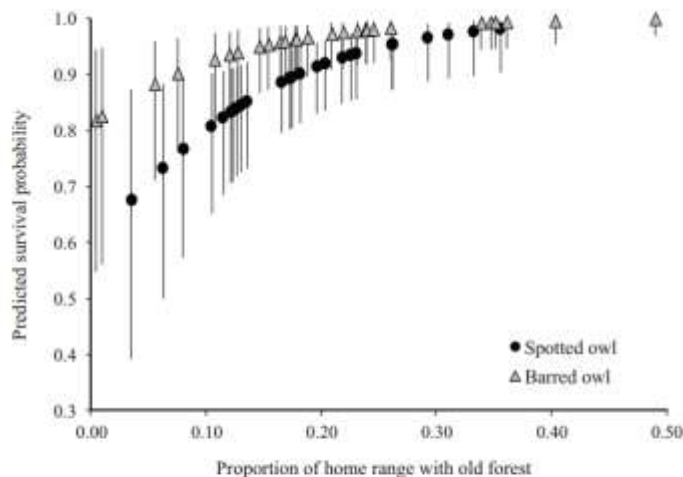


Figure 13. Predicted relationship between mean proportion of old conifer forest within the home range and seasonal (6-month) survival probabilities of radio-marked northern spotted owls ($n=29$) and barred owls ($n=28$) in western Oregon, USA, 2007–2009. We calculated point estimates with 95% confidence intervals at observed mean values for each individual under the best-supported model of survival, which included the additive effects of species and proportion of old conifer forest within the home range.

Wiens, J.D., Anthony, R.G., and E.D. Forsman. 2014: Competitive Interactions and Resource Partitioning Between Northern Spotted Owls and Barred Owls in Western Oregon. Wildlife Monographs 185:1–50; 2014; DOI: 10.1002/wmon.1009.

<https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/48214/AnthonyRobertFishesWildlifeCompetitiveInteractions.pdf>.

David Wiens has conducted the most thorough research on the influence of barred owls on spotted owls and concluded -

Conservation Implications

- Results emphasize the importance of old conifer forest and moist streamside habitats to resource partitioning.
- Additional loss of older forest can further constrain both species to a common set of limiting resources, thereby increasing competitive pressure

Wiens, D.J. 2012. Dietary Overlap between Northern Spotted Owls and Barred Owls in Western Oregon, *workshop* What's for Dinner: Spotted Owl Prey 2012

<https://web.archive.org/web/20160507204001/http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/workshops/spotted-owl/>;

<https://web.archive.org/web/20160507204001/http://ecoshare.info/wp-content/uploads/2012/08/Barred-compared-to-spotted-Owl-diets.ppt>

The final Recovery Plan for the Northern Spotted Owl has partially addressed the barred owl issue by adopting Recovery Action 32 which urges the FS and BLM to “Maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands outside of MOCAs...” based on the idea that “protecting these forests will not further exacerbate competitive interactions between spotted owls and barred owls as would occur if the amount of shared resources were decreased.” (FRP p 34). The revised critical habitat for the northern spotted owl was also expanded to “... increase the likelihood that spotted owls would be able to persist in areas where barred owls are also present. ... [A]dditional critical habitat may allow for coexistence of the two species, potentially reducing competition (Dugger et al. 2011; Forsman et

al. 2011).” FWS 2012. CHU draft EA, p 53, 62.

https://web.archive.org/web/20130626220741/http://www.fws.gov/oregonfwo/Species/Data/NorthernSpottedOwl/Documents/CH_DRAFTEnvAssmnt_6.1.12.pdf. In considering this recommendation the agencies must prepare NEPA analysis which considers the full potential of suitable habitat quantity and quality and its mediating influence on the interactions between spotted owls and barred owls. Maintaining a subset of suitable habitat as recommended by the recovery plan is one option, but the agencies must consider the full benefits of protecting all suitable habitat, not just a subset, and providing additional mitigation in matrix areas such as managing the matrix to enhance habitat for owl prey species. The recovery plan is not a NEPA document and FWS was not required to consider all reasonable alternatives. Action agencies like the FS and BLM on the other hand are required to fully consider alternatives. It would be wise to do so at a range-wide level, but until that is done, the agencies should not adversely modify any suitable habitat. Protection of additional suitable habitat in order to reduce competitive interactions between the two owls is now a recognized tool in the toolbox and represents significant new information about *any* proposal to modify suitable habitat regardless of how far the planning process may have proceeded.

A 2011 report “Population Demography of Northern Spotted Owls” corroborates the need to protect more than just a subset of the highest quality spotted owl habitat as contemplated in Recovery Action 32.

We also found a negative relationship between recruitment rates and the presence of Barred Owls and a positive relationship between recruitment and the amount of suitable owl habitat in the study areas. Recruitment was higher on federal lands where the amount of suitable owl habitat was generally highest. [p 75] ...

While our observational results do not demonstrate cause–effect relationships, they provide support for the hypothesis that the invasion of the range of the Spotted Owl by Barred Owls is at least partly the cause for the continued decline of Spotted Owls on federal lands. Our results also suggest that Barred Owl encroachment into western forests may make it difficult to insure the continued persistence of Northern Spotted Owls (see also Olson et al. 2004). The fact that Barred Owls are increasing and becoming an escalating threat to the persistence of Spotted Owls does not diminish the importance of habitat conservation for spotted Owls and their prey. In fact, the existence of a new and potential competitor like the Barred Owl makes the protection of habitat even more important, since any loss of habitat will likely increase competitive pressure and result in further reductions in Spotted Owl populations (Horn and MacArthur 1972, Olson et al. 2004, Carrete et al. 2005). [p 76] ...

Our results and those of others referenced above consistently identify loss of habitat and Barred Owls as important stressors on populations of Northern Spotted Owls. In view of the continued decline of Spotted Owls in most study areas, **it would be wise to preserve as much high quality habitat in late-successional forests for Spotted Owls as possible**, distributed over as large an area as possible. This recommendation is comparable to one of the recovery goals in the final recovery plan for the Northern Spotted Owl (USDI Fish and Wildlife Service 2008), but **we believe that a more inclusive definition of high-quality habitat is needed** than the rather vague definition provided in the 2008 recovery plan. Much of the habitat occupied by Northern Spotted Owls and their prey does not fit the classical definition of “old-growth” as defined by Franklin and Spies (1991), and a narrow definition of habitat based on the Franklin and Spies criteria would exclude many areas currently occupied by Northern Spotted Owls. [p 77]...

Eric D. Forsman, Robert G. Anthony, Katie M. Dugger, et al. 2011. Population Demography of Northern Spotted Owls. University of California Press. No. 40 in Studies In Avian Biology by the

Cooper Ornithological Society. <https://www.ucpress.edu/book/9780520270084/population-demography-of-northern-spotted-owls>, pdf.

Owl Prey Objections

The Response-to-Comment (EA p 212) says logging will “increase of diversity and abundance of prey species for northern spotted owl.” But this is unsupported by evidence or analysis. On balance, logging is likely to reduce habitat for flying squirrels and other prey species that rely on dense canopy and dead wood.

“Snag and down woody debris are important components of spotted owl habitat ... [If stands are not thinned] [e]ventually the stands would start to differentiate to varying degrees and show a substantial increase in the levels of snags, down wood and understory development. Where these developments occurred, they would improve the dispersal habitat characteristics” Mt Hood NF 2011. Huckleberry Thin EA. <https://usfs-public.app.box.com/v/PinyonPublic/folder/158150413008>. Salem BLM’s Turner Creek EA acknowledged “Overall the No Action alternative would result in much more coarse wood in the next several decades as compared to the Proposed Action which would provide better overall habitat for small mammals which in turn may benefit the spotted owl.” https://web.archive.org/web/20160522082645/http://www.blm.gov/or/districts/salem/plans/files/TC_EA.pdf.

Courtney (2004) summarized spotted owl habitat use studies and found positive relationships between spotted owl habitat use and several forest attributes that are *detrimentally affected by thinning*, including: canopy volume, canopy closure, snag basal area or volume, and log volume. Importantly, these relationships appear to hold true whether the owl sites were old growth or non-old growth forest. See Jim Thraillkill 2006. “Effects of Habitat Thinning on Northern Spotted Owls? Literature Summarized Through 2005.” Appendix F of Interagency Level 1 Team, North Coast Province. 2010. Biological Assessment of Habitat Modification Projects Proposed During Fiscal Years 2011 and 2012 in the North Coast Planning Province, Oregon, that are Not Likely to Adversely Affect (NLAA) Northern Spotted Owl and Marbled Murrelets and Their Critical Habitats, April 13, 2010 (page 101). *citing* Courtney *et al* 2004, Scientific Evaluation of the Status of the Northern Spotted Owl, SEI, Sept 2004.

Other relevant findings from this Thraillkill white-paper include:

- “Snag volume is correlated with increased [spotted owl] foraging use (North 1999). (p 102)
- “Snag volume is important to owl foraging sites because it influences local prey abundance (Carey 1995).” (p 102)
- “[S]tudies (Carey et al 1999) conducted in the Oregon and Washington Cascades and Coast Ranges have demonstrated a direct relationship between increasing levels of coarse wood debris (CWD) in a stand and the abundance of small mammals (e.g. northern flying squirrel) in those stands.” (p 102)
- “[T]hinning prescriptions should take advantage of creating conditions where coarse wood debris recruitment can be hastened.” (p 102)

Note: This white paper does not address new information since 2005 showing longer-term (multi-decade) adverse effects of thinning on flying squirrels and dead wood recruitment.

Spotted Owl foraging is positively associated with snag volume and dead wood volume, both of which are adversely affected by commercial logging, which has long-term adverse effects on dead wood recruitment.

Foraging activity is positively associated with tree height diversity (North et al. 1999, p. 524), canopy closure and woody debris (Irwin et al. 2000, p. 180; Courtney et al. 2004, pp. 5-15), **snag volume**, density of snags greater than 20 in (50 cm) dbh (North et al. 1999, p. 524; Irwin et al. 2000, pp. 179-180; Courtney et al. 2004, pp. 5-15), density of trees greater than or equal to 31 in (80 cm) dbh (North et al. 1999, p. 524), **volume of woody debris** (Irwin et al. 2000, pp. 179-180), and young forests with some structural characteristics of old forests (Carey et al. 1992, pp. 245-247; Irwin et al. 2000, pp. 178-179). Habitat use is influenced by prey availability. Ward (1990, p. 62) found that spotted owls foraged in areas where the occurrence of prey was more predictable within older forests and near ecotones of old forest and brush seral stages. The availability or abundance of prey can in turn influence reproductive success (Rosenburg et al. 2003, pp. 1720-1723)

FWS 2024. Sand Lake BO. <https://usfs-public.app.box.com/v/PinyonPublic/file/1483599380416>

In contrast to flying squirrels, chipmunks had a significant positive association with thinning. However, chipmunks are not an important prey item for the spotted owl, probably because they are not nocturnal. Managers must not assume that small mammal biomass is fungible in terms of the spotted owl diet, and managers must recognize that thinning has adverse trade-offs on owl prey.

The agency should recognize the long-term effects of captured mortality on the habitat needs of small mammals and spotted owls.

Several small mammals, such as the northern flying squirrel form the prey base for the Endangered Species Act (ESA) listed spotted owl and are among the species associated with abundant large dead standing and down wood. This presumably, is why spotted owls prefer to forage in stands with abundant standing and fallen dead wood (Table 2, North et al. 1999). The fruiting bodies of hypogeous fungi are a food source of northern flying squirrels and are also associated with down logs, suggesting that there are complex, indirect paths through which dead wood supports spotted owls (Amaranthus et al. 1994, Carey 2000).

Thomas Spies, Michael Pollock, Gordon Reeves, and Tim Beechie 2013. Effects of Riparian Thinning on Wood Recruitment: A Scientific Synthesis - Science Review Team Wood Recruitment Subgroup. Jan 28, 2013, p 36.

<https://web.archive.org/web/20220120055722/http://www.mediate.com/DSConsulting/docs/FINAL%20wood%20recruitment%20document.pdf>.

Manning et al (2012) found that the thinning is adverse to both flying squirrels and snags, and these effects may be related.

- Flying squirrel density positively associated with snag density
- Snags rare in thinned stands
- Thinning causes decrease in density-dependent mortality
- ...
- Canopy gaps = exposure to predators
- Tree trunks = safety

Tom Manning, Joan Hagar, Brenda McComb 2012 spotted owl prey workshop. Flying Squirrel Response to Thinning in the Oregon Cascades. http://ecoshare.info/wp-content/uploads/2012/08/Commercial-thinning_flying-squirrels.ppt;

<http://ecoshare.info/projects/central-cascade-adaptive-management-partnership/workshops/spotted-owl/>. See also, Tom Manning, Joan C. Hagar, and Brenda C. McComb. 2011. Thinning of Young Douglas-fir Forests Decreases Density of Northern Flying Squirrels in the Oregon Cascades, [FORECO9370, revised Aug 2011] <https://andrewsforest.oregonstate.edu/sites/default/files/lter/pubs/pdf/pub4783.pdf>

Wilson & Forsman 2013 state (“thinning reduces the abundance of some tree-dwelling rodents, especially Northern Flying Squirrels (*Glaucomys sabrinus*) and Red Tree Voles (*Arborimus longicaudus*), that are important prey species for Northern Spotted Owls (*Strix occidentalis caurina*).” Wilson, Todd M.; Forsman, Eric D. 2013. Thinning effects on spotted owl prey and other forest-dwelling small mammals. In: Anderson, Paul D.; Ronnenberg, Kathryn L., eds. Density management for the 21st Century: west side story. Gen. Tech. Rep. PNW-GTR-880. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station: 79–90. https://www.fs.usda.gov/pnw/pubs/pnw_gtr880/pnw_gtr880_009.pdf.

“Management strategies that involve tree removal, even ones designed to have positive long-term ecological effects, almost always result in reduced squirrel populations. A squirrel-predation connection explains this phenomena ...” Wilson, T. 2010. Forest structure is a good indicator of flying squirrel habitat. In Mazza, Rhonda 2010. 2010 Science Accomplishments Report of the Pacific Northwest Research Station. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 88 p. <https://web.archive.org/web/20170531140755/https://www.fs.fed.us/pnw/pubs/2010-science-accomplishments.pdf>.

Wildfire and Resiliency Objections:

- *Failure to: take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

As explained in our comments, the EA fails to take a hard look at the complex effects of logging on fuel and fire hazard, including the fact that logging can make fire hazard worse, and can make forests less resilient. Canopy reduction via logging has competing effects on fuels and microclimate that need to be more carefully examined. (i) Logging removes fire resistant trees with thick bark and high canopies that help maintain a cool, moist microclimate that help maintain fuel moisture; (ii) Logging opens the stand and makes the forest hotter, drier, and windier all of which exacerbate fire behavior and increase evaporative demand and drought stress on remaining trees; (iii) Logging moves significant amounts of fine fuels from the canopy (where they are relatively unavailable for combustion by surface fires) to the ground, (where they are more available for combustion by surface fires), and such activity fuels often remain on the ground for extended periods before being treated; (iv) Logging opens the canopy which makes light, water, and nutrients available to stimulate the growth of future surface and ladder fuels; (v) A more open stand with more rapid growth of hazardous fuels requires more frequent and more expensive follow-up fuel treatments.

The EA failed to consider alternatives that focus on non-commercial thinning and prescribed fire and would better harmonize the complex and competing effects of logging on wildfire and resiliency.

The Response-to-Comment regarding increased evaporative demand and increase fire hazard caused by logging is inadequate. It fails to meaningfully address the fact that logging can make forests less resilient to drought by increasing trees' exposure to warm dry air and increased evaporative demand. And fails to meaningfully address the fact that logging increases fire hazard by opening the canopy and increases fuel drying and increases growth of surface and ladder fuels. The FS logging prescriptions are designed to focus on "solutions" that increase logging (e.g., reduce fuels, reduce competition for soil moisture) , while ignoring undesired consequences of logging that undermine the very purpose of logging, and failing to consider alternatives that better harmonize the complex trade-offs caused by logging.

Our objections to the EA's inadequate analysis of wildfire resiliency, include our concerns described above related to LSRs and spotted owls and the lack of evidence that logging provides net benefits to protected resources.

Carbon and Climate Change Objections:

- *Failure to: make climate mitigation part of the purpose and need, take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

The Forest Service cannot meet its legal obligations unless it works to reduce climate change. Those legal obligations emanate from the Forest Service Organic Act, the National Forest Management Act, the Endangered Species Act, Multiple-Use Sustained-Yield Act, and the applicable Land and Resources Management Plan. "Public forest reservations are established to protect and improve the forests for the purpose of securing a permanent supply of timber for the people and insuring conditions favorable to continuous water flow." 1897 FS Organic Act. <https://winapps.umn.edu/winapps/media2/wilderness/NWPS/documents/publiclaws/ORGANIC-ACT-OF-1897.pdf>. Climate change is expected to disrupt forest ecosystems and hydrologic systems to an extent that threatens to violate the very foundations of the agency's Organic Act. The FS should make every effort to reduce GHG emissions that exacerbate global climate change.

The agency is required by law to faithfully implement its Resource Management Plan. Meeting resource management objectives set forth in the RMP requires properly functioning ecosystems with biophysical conditions and disturbance regimes within the historic range of variability. Global climate change is a clear and present threat to forest ecosystems and watersheds and is preventing the agency from meeting the goals and standards & guidelines described in the applicable Resource Management Plan, and other core legal requirements for management of federal lands. The agency cannot meet the RMP without bringing climate change under control, which requires reducing emissions, including emissions from logging. The agency cannot say that carbon storage is outside the scope of this project or not part of the purpose and need. The agency must include carbon storage as part of the purpose and need for this project.

The agency typically says one of the purposes of this project is to provide a supply of wood products to the public. The agency should reconsider timber targets in light of the fact that the public *needs* carbon storage to reduce global climate change much more than they *need* wood products. The NEPA analysis also needs to account for the fact that managing forests for water

quality, water quantity, quality of life, and carbon storage for a stable climate will contribute far more to community stability than propping up the timber boom-bust industry with subsidized logging.

The agency must recognize that wood products are already underpriced and over-supplied due to “externalities” (costs that are not included in the price of wood, so those costs are shifted from wood product producers and consumers to the general public who suffer the consequences of climate change without compensation from those who receive artificially inflated profits from logging related externalities). Ecosystem carbon storage on the other hand is under-supplied because there is not a functioning market for carbon storage and climate services. The agency is in a position to address these market imperfections by focusing on unmet demand for carbon storage instead of offering wood products that are already oversupplied.

The EA failed to take a hard look at the complex effects of logging on carbon and climate change. On the one hand, logging might reduce competitive stress between trees and make forests temporarily better prepared for climate change. On the other hand, logging will definitely emit GHG to the atmosphere and add to the cumulative overload of GHG in the global atmosphere and make climate change worse for this landscape AND the rest of the world; AND logging will open the canopy and adversely modify the microclimate and expose trees to greater stress from warm dry air, and expose wildlife to greater extremes of heat and humidity; AND logging will increase fire hazard by increasing fuel drying, putting hazardous slash on the ground, and stimulating the growth of future surface and ladder fuels. The EA failed to make any effort to fully describe, weigh, balance, and harmonize these conflicting effects, by for instance thinning more conservatively (using methods such as non-commercial thinning and prescribed fire), which would retain greater carbon storage, reduce GHG emissions, suppress growth of hazardous fuels, reduce future fuel maintenance costs, maintain a more favorable fuel profile, and maintain a more favorable microclimate.

The FONSI is based on a flawed analysis of carbon and climate change. EA Appendix J (p 200) says “Carbon emissions from logging equipment and planned burning operations would be within the range of likely emissions from land and fire management, road repair, and recreational use in the area under a no-action alternative, and are necessary to accomplish the climate-adaptation objectives.” This fails to account for the fact that logging kills trees, stops carbon accumulation, and accelerates the transfer of carbon from the forest to the atmosphere. It also assumes that climate adaptation objectives, which may provide speculative local benefits, are more important than avoiding GHG emissions to advance climate change mitigation objectives, that provide global benefits.

As noted in our comments, the EA makes numerous misleading statements about carbon and climate impacts. The Response-to-Comment says logging would reduce carbon in the forest and transfer it to wood products, failing to mention:

- the significant transfer of carbon to the atmosphere, where it will exacerbate global climate change and ocean acidification;
- the fact that wood products represent net carbon emissions, not net carbon storage, because only a small fraction of the carbon in a logged forest is diverted to wood products, most is put on an accelerated path to the atmosphere;

- the fact that logging kills trees, stops photosynthesis, and represents a significant lost opportunity to capture carbon in the growing forest. This has a long-term carbon/climate impacts that the next generation of forest can never fully recoup. Even if the future forest regrows the same amount of carbon, it will never fully mitigate for the warming caused by the extra carbon put in the atmosphere by logging;

The Response-to-Comment says “the amount removed from the forest through the project would amount to less than 0.4% of total carbon stocks on the RRSNF. Based on this, it was determined that project effects on carbon would not be significant.” This fails a basic NEPA principle of cumulative effects can be significant. The agency may argue that logging a few small patches of forest won’t make a difference in the global scheme of the climate problem, but as Voltaire said, “No snowflake in an avalanche ever feels responsible.” The NEPA analysis must recognize that global warming will not be solved by one miraculous technological fix or by changing one behavior or one economic activity. The whole global carbon cycle must be managed to reduce carbon emissions and increase carbon uptake. Recent evidence supports the conclusions that all net emissions of greenhouse gases are adverse to the climate. None can be considered *de minimus*. “We show first that a single pulse of carbon released into the atmosphere increases globally averaged surface temperature by an amount that remains approximately constant for several centuries, even in the absence of additional emissions. We then show that to hold climate constant at a given global temperature requires near- zero future carbon emissions. Our results suggest that future anthropogenic emissions would need to be eliminated in order to stabilize global-mean temperatures. As a consequence, any future anthropogenic emissions will commit the climate system to warming that is essentially irreversible on centennial timescales.” H. Damon Matthews and Ken Caldeira. 2009. Stabilizing climate requires near-zero emissions. *Nature* Vol 455 | 18 September 2008 | doi:10.1038/nature07296. <http://www.350.me.uk/LP/1.pdf>

Every ton of CO₂ emitted to the atmosphere contributes to global climate change and ocean acidification. There is a single global carbon budget for cumulative GHG emissions for the period from the present to the end of the carbon economy which (because we have been slow to act) must occur in the next few decades. Those budgets require significant reductions in carbon emissions and an eventual end to GHG emissions. See Richard Millar, Myles Allen, Joeri Rogelj, Pierre Friedlingstein. 2016. The cumulative carbon budget and its implications. *Oxford Review of Economic Policy*, Volume 32, Issue 2, SUMMER 2016, Pages 323–342, <https://doi.org/10.1093/oxrep/grw009>; <http://pure.iiasa.ac.at/id/eprint/12738/1/The%20cumulative%20carbon%20budget%20and%20its%20implications.pdf>. “The carbon budget is a key concept in the climate-policy sphere. It arises directly from the finding that the increase in global mean surface air temperature is proportional to cumulative CO₂ emissions over time. This finding is far from trivial, and together with the long-lived nature of CO₂ as a greenhouse gas leads to two simple but powerful conclusions: 1. We need to cut emissions to zero in order to stop the increase in global temperature. 2. The amount of CO₂ that can be emitted globally in order to stay within a certain warming limit is finite – the carbon budget.” CONSTRAN, 2019: ZERO IN ON the remaining carbon budget and decadal warming rates. The CONSTRAN Project Annual Report 2019, DOI: <https://doi.org/10.5518/100/20>; <https://constrain-eu.org/wp-content/uploads/2020/02/CONSTRAN-Zero-In-On-The-Remaining-Carbon-Budget-Decadal-Warming-Rates.pdf>. The agency has no basis for concluding that emissions from logging are

more important than (and belong in the constrained cumulative carbon budget) than other activities that emit GHG. When the agency says that emissions from logging are *minimal* or *infinitesimal* on a global scale, it is effectively saying that its emissions belong outside the budget rather than inside the budget. This is fatally wrong. All GHG emissions are part of the cumulative emissions from all sources. None are outside the budget.

The Response-to-Comment says “Proposed thinning would mimic fire and protect the forest from large biomass loss from insect attack and wildfire.” This is unsupported by any analysis or credible science. Every analysis that accounts for the low likelihood of wildfire interacting with fuel treatments has concluded that logging to modify fire effects will emit more carbon than wildfire alone. Law & Harmon (2011) conducted a literature review and concluded ...

Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO₂ to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.

Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. Carbon Management 2011 2(1).

<https://archives.corvallisoregon.gov/public/ElectronicFile.aspx?dbid=0&docid=4256162>.

Logging proponents often claim that logging will increase carbon storage in the forest by limiting carbon emissions caused by natural processes such as fire and insect-induced mortality. This is simply counter-factual. In most cases, managing forests in an effort to control natural processes that release carbon will only make things worse by releasing MORE carbon. This is mostly because no one can predict where fire or insects will occur, so the treatments must be applied to broad landscapes, yet the probability of fire or insects at any given location remains low, and only a small fraction of the treated areas will actually experience fire or insects. As a result, many acres will be treated "unnecessarily" and therefore the cumulative carbon emissions from logging to control fire and insects (plus the carbon emissions from fire and insects that occur in spite of control efforts) are greater than emissions from fire and insects alone. A careful analysis shows that logging to control fire and expecting to increase carbon storage is analogous to rolling a die and expecting to roll a six every time.

[T]here is no guarantee that thinning across vast landscapes will stabilize carbon stores. Rather the best available scientific study has shown that thinning reduces carbon stores more than fire itself and reduces carbon stores whether or not fire burns that particular forest.

Law, B. 2021. Response to Questions for the Record, *attached to* Statement Of Dr. Beverly Law, Professor Emeritus, Oregon State University, Before The United States House Of Representatives, Subcommittee On National Parks, Forests And Public Lands, April 29, 2021, Concerning “Wildfire In A Warming World: Opportunities To Improve Community Collaboration, Climate Resilience, And Workforce Capacity”

<https://web.archive.org/web/20210501190104/https://naturalresources.house.gov/imo/media/doc/Law,%20Beverly%20-%20Testimony%20-%20NPFPL%20Ov%20Hrg%2004.29.21.pdf>
(link to Statement, without Response to Questions).

The 2018 US Forest Service Northwest Forest Plan Science Synthesis concluded that fuel reduction is unlikely to be an effective climate mitigation strategy.

Some studies from other regions in the Western United States (i.e., the Southwest and Sierra Nevada) suggest that thinning and fuel reduction can mitigate carbon loss from fire. Fuel reduction may reduce losses of carbon at stand levels compared with the consequences of high-severity wildfire burning in stands with high fuel loads (Finkral and Evans 2008; Hurteau and North 2009; Hurteau et al. 2008, 2011, 2016; North and Hurteau 2011; North et al. 2009, Stephens et al. 2009). However, because the probability of treated areas burning is generally low (Barnett et al. 2016), and most biomass is not consumed by fire, slight differences in losses resulting from combustion in fire compared with losses from fuel reduction are unlikely to make fuel reduction a viable mitigation strategy (Ager et al. 2010, Campbell et al. 2012, Kline et al. 2016, Mitchell et al. 2009, Restaino and Peterson 2013, Spies et al. 2017).

USDA 2018. Synthesis of Science to Inform Land Management Within the Northwest Forest Plan Area. General Technical Report. PNW-GTR-966 Vol. 1. June 2018.
https://www.fs.usda.gov/pnw/pubs/pnw_gtr966.pdf.

The Response-to-Comment says “The project applies several climate change adaptation actions including increased landscape resiliency and resistance by improving forest health thus leading to more carbon sequestration by reducing the risk of carbon loss from high severity burns or insect and disease mortality that is expected to occur without action.” This is misleading and contradictory. The EA denies trade-offs, saying that logging will advance both climate adaptation and increase carbon storage. This is not supported by current science. There are significant trade-offs. Logging to help forests adapt will always emit carbon to the atmosphere.

The Response-to-Comment says “We acknowledge that there are tradeoffs between carbon stocks and forest health and resilience.” But the EA never really explains those trade-offs or how they might be harmonized, such as with lighter thinning, or non-commercial thinning instead of commercial logging.

Campbell and Agar (2013) conducted a sensitivity analysis and found robust results indicating that fuel reduction does not increase forest carbon storage.

... we attempt to remove some of the confusion surrounding this subject by performing a sensitivity analysis wherein long-term, landscape-wide carbon stocks are simulated under a wide range of treatment efficacy, treatment lifespan, fire impacts, forest recovery rates, forest decay rates, and the longevity of wood products. Our results indicate a surprising insensitivity of long-term carbon stocks to both management and biological variables. After 80 years, ... a 1600% change in either treatment application rate or efficacy in arresting fire spread resulted in only a 10% change in total system carbon. This insensitivity of long-term carbon stocks is due in part by the infrequency of treatment/wildfire interaction and in part by the controls imposed by maximum forest biomass. None of the fuel treatment simulation scenarios resulted in increased system carbon.

Campbell, J, Agar, A (2013) Forest wildfire, fuel reduction treatments, and landscape carbon stocks: A sensitivity analysis. Journal of Environmental Management 121 (2013) 124-132
http://fes.forestry.oregonstate.edu/sites/fes.forestry.oregonstate.edu/files/PDFs/Campbell_2013_JEM.pdf.

Before attributing carbon benefits to fuel reduction logging please consider the conclusions of:

- John L Campbell, Mark E Harmon, and Stephen R Mitchell. 2011. Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2011; doi:10.1890/110057 <http://forestpolicy.com/wp->

[content/uploads/2011/12/campbell-2011.pdf](#). (Results suggest that the protection of one unit of C from wildfire combustion comes at the cost of removing three units of C in fuel treatments.)

- Mitchell, Harmon, O'Connell. 2009. Forest fuel reduction alters fire severity and long-term carbon storage in three Pacific Northwest ecosystems. *Ecological Applications*. 19(3), 2009, pp. 643–655.
https://web.archive.org/web/20111024074629/http://www.fs.fed.us/pnw/pubs/journals/pnw_2009_mitchello01.pdf. (“...reducing the fraction by which C is lost in a wildfire requires the removal of a much greater amount of C, since most of the C stored in forest biomass (stem wood, branches, coarse woody debris) remains unconsumed even by high-severity wildfires. For this reason, all of the fuel reduction treatments simulated for the west Cascades and Coast Range ecosystems as well as most of the treatments simulated for the east Cascades resulted in a reduced mean stand C storage.... We suggest that forest management plans aimed solely at ameliorating increases in atmospheric CO₂ should forego fuel reduction treatments ...”)
- Reinhardt, Elizabeth, and Lisa Holsinger 2010. Effects of fuel treatments on carbon-disturbance relationships in forests of the northern Rocky Mountains. *Forest Ecology and Management* 259 (2010) 1427–1435.
http://www.fs.usda.gov/rm/pubs_other/rmrs_2010_reinhardt_e002.pdf (“Although wildfire emissions were reduced by fuel treatment, the fuel treatments themselves produced [carbon] emissions, and the untreated stands stored more carbon than the treated stands even after wildfire. ... Our results show generally long recovery times ...”)
- Law, B. & M.E. Harmon 2011. Forest sector carbon management, measurement and verification, and discussion of policy related to mitigation and adaptation of forests to climate change. *Carbon Management* 2011 2(1).
<https://archives.corvallisoregon.gov/public/ElectronicFile.aspx?dbid=0&docid=4256162> (“Thinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result in a net emission of CO₂ to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment.”)
- Restaino, Joseph C.; Peterson, David L. 2013. Wildfire and fuel treatment effects on forest carbon dynamics in the western United States. *Forest Ecology and Management* 303:46–60.
http://www.fs.usda.gov/pnw/pubs/journals/pnw_2013_restiano001.pdf (“... C costs associated with fuel treatments have can exceed the magnitude of C reduction in wildfire emissions, because a large percentage of biomass stored in forests (i.e., stem wood, branches, coarse woody debris) remains unconsumed, even in high-severity fires (Campbell et al., 2007; Mitchell et al., 2009). ... Wildfire occurrence in a given area is uncertain and may never interact with treated stands with reduced fire hazard, ostensibly negating expected C benefits from fuel treatments. Burn probabilities in treated stands in southern Oregon are less than 2%, so the probability that a treated stand encounters wildfire and creates C benefits is low (Ager et al., 2010).”)
- Goslee, K., Pearson, T., Grimland, S., Petrova, S., Walls, J., Brown, S., 2010. Final Report on WESTCARB Fuels Management Pilot Activities in Lake County, Oregon. California Energy Commission, PIER. DOE Contract No.: DE-FC26-05NT42593.
<https://escholarship.org/content/qt9xg9n2pj/qt9xg9n2pj.pdf?t=r15vej>; AND Pearson, T.R.H., Goslee, K., Brown, S., 2010. Emissions and Potential Emission Reductions from Hazardous Fuel Treatments in the WESTCARB Region. California Energy Commission, PIER. CEC-500-2014-046. <https://winrock.org/wp-content/uploads/2016/03/WCHazardousFuelsReport.pdf>. (Summarized by Restaino & Peterson (2013) as follows: “Pearson et al. (2010) and Goslee et al. (2010) developed

methodologies to evaluate C dynamics associated with fuel treatment projects in low to mid-elevation forest in northern California and Oregon. The authors, with consultation from teams of scientists, quantify C storage and release within the context of a six-point conceptual framework: annual fire risk, treatment emissions, fire emissions, forest growth and re-growth, re-treatment, and the shadow effect (i.e., treatment effect outside the treated area). Results indicate that the mean annual probability of wildfire for the study region is less than 0.76%/year, and treatments reduce C stocks by an average of 19%. Where timber is removed, 30% of extracted biomass is stored in long-lasting wood products. Wildfire emissions in treated stands, quantified with the Fuel Characteristic Classification System, are reduced by 6% relative to untreated stands. Growth estimates for a 60-year simulation horizon, derived from FVS, indicate that in the absence of wildfire, untreated stands sequester 17% more C than treated stands. However, in simulations that include wildfire, treated stands sequester 63% more C than untreated stands. The shadow effect is unlikely to be large enough to affect net GHG emissions. In summary, initial reductions in C stocks (e.g., thinning), combined with low annual probability of wildfire, preclude C benefits associated with fuel treatments, even if harvest residues are used for biomass energy.”)

- Chiono, Lindsay 2011. Balancing the Carbon Costs and Benefits of Fuels Management. Research Synthesis for Resource Managers. Joint Fire Science Program Knowledge Exchange.
https://static1.squarespace.com/static/545a90ede4b026480c02c5c7/t/5527ebd9e4bof620docb5b58/1428679641640/CFSC_Chiono_Carbon_and_Fuel_Mngmt.pdf (“[T]he net carbon impact of fuel treatments is further complicated by the probabilistic nature of wildfire occurrence and the impermanence of post-treatment stand conditions ... [T]reatment activities produce an immediate carbon emission while future wildfire emissions are uncertain ... Depending on the intensity of treatment, the quantity of carbon removed may be substantial enough to negate gains from avoided wildfire emissions. ... cumulative emissions from fuels reduction activities repeated in order to maintain low hazard conditions over time can overwhelm avoided wildfire emissions, resulting in a net carbon loss.”)
- Dina Fine Maron 2010. FORESTS: Researchers find carbon offsets aren't justified for removing understory (E&E Report 08/19/2010, reporting on the WESTCARB Project)
<https://saveamericasforests.org/Forests%20-%20Incinerators%20-%20Biomass/Documents/Press/E&E%20News-Dina%20Fine%20Maron-8.19.10-Scientists-No%20Carbon%20Credits%20for%20Logging%20Forest%20Understory.pdf>. (“‘The take-home message is we could not find a greenhouse gas benefit from treating forests to reduce the risk of fire,’ said John Kadyszewski, the principal investigator for the terrestrial sequestration projects of the West Coast Regional Carbon Sequestration Partnership. WESTCARB, ... Since there is a relatively low risk of fire at any one site, large areas need to be treated -- which release their own emissions in the treatment process. The researchers have concluded that the expected emissions from treatments to reduce fire risk exceed the projected emissions benefits of treatment for individual projects.”)
- Rachel A. Loehman, Elizabeth Reinhardt, Karin L. Riley 2014. Wildland fire emissions, carbon, and climate: Seeing the forest and the trees – A cross-scale assessment of wildfire and carbon dynamics in fire-prone, forested ecosystems. *Forest Ecology and Management* 317 (2014) 9–19.
https://web.archive.org/web/20170531073954/https://www.fs.fed.us/rm/pubs_other/rmrs_2014_loehman_r001.pdf (“... management of carbon in fire-prone and fire-adapted forests is more complex than simply minimizing wildfire carbon emissions and maximizing stored carbon in individual stands. The stochastic and variable nature of fires, the relatively fine scale over which fuels treatments are implemented, and potentially high carbon costs to

implement them suggest that fuel treatments are not an effective method for protecting carbon stocks at a stand level (Reinhardt et al., 2008; Reinhardt and Holsinger, 2010).”)

- Jim Cathcart, Alan A. Ager, Andrew McMahan, Mark Finney, and Brian Watt 2009. Carbon Benefits from Fuel Treatments. USDA Forest Service Proceedings RMRS-P-61. 2010. https://www.fs.usda.gov/rm/pubs/rmrs_p061/rmrs_p061_o61_o79.pdf.
- Chiono, L. A., D. L. Fry, B. M. Collins, A. H. Chatfield, and S. L. Stephens. 2017. Landscape-scale fuel treatment and wildfire impacts on carbon stocks and fire hazard in California spotted owl habitat. *Ecosphere* 8(1):e01648. 10.1002/ecs2.1648. <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/ecs2.1648> (“We used a probabilistic framework of wildfire occurrence to (1) estimate the potential for fuel treatments to reduce fire risk and hazard across the landscape and within protected California spotted owl (*Strix occidentalis occidentalis*) habitat and (2) evaluate the consequences of treatments with respect to terrestrial C stocks and burning emissions. Silvicultural and prescribed fire treatments were simulated on 20% of a northern Sierra Nevada landscape in three treatment scenarios ... [A]ll treatment scenarios resulted in higher C emissions than the no-treatment scenarios.”)
- Stenzel, J. E., Berardi, D. B., Walsh, E. S., & Hudiburg, T. W. (2021). Restoration thinning in a drought-prone Idaho forest creates a persistent carbon deficit. *Journal of Geophysical Research: Biogeosciences*, 126, e2020JG005815. <https://agupubs.onlinelibrary.wiley.com/doi/epdf/10.1029/2020JG005815> (“Forest thinning in a young ponderosa pine plantation resulted in observed and modeled decreases in ecosystem and forest sector carbon storage over unmanaged control plots through the year 2050. Despite increased tree-level production and water use in a location characterized by growing season drought stress, this study affirms inherent site tradeoffs between individual tree vigor and stand carbon storage over time. We estimate that thinned plot carbon stocks will return to prethinned levels by 2035 (Figure 6), but forest sector carbon parity (Mitchell et al., 2012) with untreated plots will not occur by 2050 and therefore represents a relative carbon source to the atmosphere in the absence of disturbance. ...[A] carbon deficit relative to control remained due to the removal of ~40% of live ecosystem carbon as well as the subsequent release of ~60% of removed biomass by 2050. Despite the continued storage of a portion of removed biomass in long-lived wood products, large immediate and short-term emissions were associated with slash combustion, on-site decomposition, and short-term product chain emissions (i.e., waste and paper), and do not represent avoided emissions through 2050. A multidecadal ecosystem biomass (i.e., carbon) deficit following moderate and heavy partial harvest is supported by most analyses of mid to long-term thinning structural impacts (James et al., 2018; Zhou et al., 2013), ...”).
- Harmon, M.E.; Hanson, C.T.; DellaSala, D.A. 2022. Combustion of Aboveground Wood from Live Trees in Megafires, CA, USA. *Forests* 2022, 13, 391. <https://doi.org/10.3390/f13030391>; <https://www.mdpi.com/1999-4907/13/3/391/pdf> (“Biomass combustion is a major biogeochemical process, but uncertain in magnitude. We examined multiple levels of organization (twigs, branches, trees, stands, and landscapes) in large, severe forest fires ... [C]ombustion rates are very low overall at the stand (0.1%–3.2%) and landscape level (0.6%–1.8%), because large trees with low combustion rates comprise the majority of biomass, and high severity fire patches are less than half of the area burned. Our findings of low live wood combustion rates have important implications for policies related to wildfire emissions and forest management.”).
- John W Coulston et al 2023. Near-term investments in forest management support long-term carbon sequestration capacity in forests of the United States, *PNAS Nexus* (2023). DOI: 10.1093/pnasnexus/pgad345 ([pdf](#)). (“Fuel treatments are designed to temporarily reduce carbon from forests through thinning, prescribed fire, or other mechanical means, and under a fuel high-treatment (FHT) scenario [10-50% of basal area removed] (Fig. 1D), 288

MMT of aboveground carbon will be removed from western forests by 2032 (Fig. 2B). Under a fuel low-treatment (FLT) scenario [10-25% of basal area removed] (Fig. 1D), 194 MMT of carbon will be removed (Fig. 2B). The fuel-treatment scenarios have two additional short-term (2022–2032) effects: (i) lost sequestration potential from live tree removal and (ii) decreased wildfire carbon emissions (Fig. 2B). ... Results for the fuel-treatment scenarios suggest a negative mitigation potential in the near-term largely due to the removal of live trees. In the longer term, projections suggest a positive, but small, mitigation potential largely due to increased growth of thinned stands and reduced fire mortality. Under the FHT scenario, in 2032, projections suggest a –31 MMT yr⁻¹ mitigation potential, indicating that forests would have less net annual carbon accumulation with the fuel treatments. Conversely, by 2050, the FHT fuel treatments may lead to a +6 MMT yr⁻¹ mitigation potential (about 4.5% of current flux). These results highlight that carbon accumulation through net forest growth is unlikely to offset carbon removal and loss of sequestration potential from fuel treatments in the near term. In the longer term, the treatments may lead to small increases in annual accumulation rates due to avoided wildfire emissions and improved growth in thinned forests. However, the projected cumulative 2022–2050 carbon sequestered under the FLT and FHT scenarios is 200 and 310 MMT less, respectively, than the baseline (Fig. 2D), indicating a reduced capacity of US forests to offset emissions from other sectors over the projection period.”)

- James, J. N., Kates, N., Kuhn, C. D., Littlefield, C. E., Miller, C. W., Bakker, J. D., Butman, D. E., & Haugo, R. D. (2018). The effects of forest restoration on ecosystem carbon in western North America: A systematic review. *Forest Ecology and Management*, 429, 625-641. <https://doi.org/10.1016/j.foreco.2018.07.029>. pdf. (“Restoration treatments are conducted for a range of ecological objectives. Tree harvest removes some material from a site and typically converts some biomass from standing live to dead surface material, although some methods remove most of the harvested material from a site (Reinhardt and Holsinger, 2010). Since they remove or consume biomass, they incur a debt of ecosystem carbon compared to their pre-treatment condition (Reinhardt and Holsinger, 2010; Wiechmann et al., 2015). Whether the ecological objectives outweigh the carbon debt of restoration treatments is unclear. However, managing forests for climate change mitigation and protecting carbon stocks from long-term loss due to pathogens, drought, and wildfire requires assessing potential short- and long-term trade-offs of treatments on carbon pools, fire risk, and ecosystem services such as biodiversity and water (Reinhardt and Holsinger, 2010). Furthermore, the amount of carbon removed by treatments and the time needed for forests to re-sequester that carbon affect the long-term carbon costs and benefits of restoration treatments (Hurteau and North, 2010). It is important to recognize the difficulty of predicting ecosystem dynamics resulting from disturbances such as wildfires or droughts that can induce large, rapid losses of terrestrial carbon and ecosystem function (Breshears and Allen, 2002; Millar and Stephenson, 2015). Some of the uncertainties in projecting forest carbon dynamics into the future – and thus the recovery of carbon removed due to treatments – include the effects of current and past land use change, fire regimes, and forest management practices on the rates of carbon flux (Foster et al., 2003). ... Treatments lost more aboveground and total C relative to control than relative to pre-treatment values ... Aboveground C was reduced by all treatments but particularly by thinning or thinning & fire. ... The forested area of western Washington and Oregon could sequester considerably more carbon if management strategies allowed forest ecosystems to return closer to the carbon stores found in old-growth conditions (Smithwick et al., 2002). ... [S]imulation studies suggest that regeneration of thinned areas and increased growth of remaining trees did not compensate for the lost C ... ”)

- Guo, W., Safeeq, M., Cui, G., Myint, P. C., Jiang, P., Guo, H., Goulden, M. L., Emmett, K. D., Hart, S. C., & Bales, R. C. (2025). Enhancing carbon storage through proactively managing fire-prone coniferous mountain forests. *Ecological Modelling*, 510, 111332. <https://doi.org/10.1016/j.ecolmodel.2025.111332>. (“Based on our modeling results, it is unlikely that in-forest management actions will yield a net increase in C sequestration – compared to the baseline, no-management case – in these fire-prone mountain forests of the Sierra Nevada. This is attributable to C losses from thinning or prescribed fire followed by the subsequent decay of dead biomass, and it is in line with the many earlier studies that have reported declines in forest C from proactive management (e.g. Campbell et al., 2012; Krofcheck et al., 2018; Wang et al., 2022).”). Note: This study also makes unsupported statements about the “benefits of management performed in advance of high severity fire” which fail to account for the carbon emissions from thinned sites that do not experience wildfire. And, this study said there may be a “sweet spot” with fuel reduction and carbon benefits if forests were thinned from below with a <7” dbh limit, and if the cut trees were put into long-term storage in wood products.

The Environmental Assessment failed to adequately respond to our comments which explained that logging may help forests adapt to climate change, but it will also:

- exacerbate global climate change by adding to the cumulative overload of GHG in the atmosphere, which will increase global warming and ocean acidification;
- removing canopy will make logged stands hotter, drier, and windier, which will:
 - increases evaporative demand and exacerbates drought stress on trees caused by climate warming;
 - increase fuel drying and flame lengths which exacerbates fire effects caused by climate change;
 - degrades the function of mature and old-growth forests as microclimate refugia for wildlife seeking to escape weather extremes caused by climate change;

The EA needs to describe and address all of the complex effects of logging and its relation to climate change mitigation and adaptation. The EA needs to consider an alternative that harmonizes carbon storage and adaption by focusing on removing small fuels and retaining medium and large trees that storage and accumulate carbon.

The agency has decided that meeting the purpose of this project requires logging that will emit greenhouse gases to the atmosphere and which will exacerbate global climate change (and ironically increase the climate stress imposed on the forest). These are very significant effects that require an EIS and consideration of mitigating alternatives. The agency can mitigate the effects of logging-related GHG emissions by retaining more trees, thinning less aggressively, forgoing logging in some areas, etc.

NEPA mandates that an agency “shall to the fullest extent possible: use the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these action upon the quality of the human environment.” 40 C.F.R. § 1500.2(e). NEPA also requires the agency to “study, develop, and describe appropriate alternatives to the recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources as provided by section 102(2)(E) of the Act [NEPA].” 40 C.F.R. § 1501.2 (c). All reasonable alternatives must receive a “rigorous exploration and objective evaluation ..., particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects.” *Id.* § 1500.8(a)(4).

The agency need to rethink its focus on climate adaptation/resilience actions (such as density reduction with commercial log removal) that will actually increase carbon emissions and

exacerbate global climate change and reduce climate resilience, not just in the treated stands but around the world. The agencies instead need to design preferred alternatives that meaningfully harmonize climate change adaptation and climate change mitigation, such as non-commercial thinning + prescribed fire, increased riparian protection, conservation of mature, old-growth and unroaded areas, road system rescaling and storm-proofing.

The agency should develop alternatives that harmonize potentially competing objectives of climate change mitigation, and climate change adaptation. Climate change mitigation involves keeping carbon in the forest and avoiding GHG emissions to the atmosphere from logging. Climate change adaptation may involve a variety of actions that range from reducing stand density to reduce water stress in a warming world to providing habitat redundancy and connectivity, and maintaining cool/moist habitat refugia for wildlife that thrive in dense forests. Addressing climate change requires the agency to both mitigate AND prepare for global climate change. This requires careful balancing of sometimes competing objectives, such as retaining trees to store carbon, and thinning to reduce climate stresses. The best harmony among these objectives is to retain medium and large trees that store the most carbon and provide the greatest ecosystem services, while thinning small trees removal of which will reduce climate stresses on the larger trees while emitting less carbon.

Riparian Reserve Objections

- *Violation of the Northwest Forest Plan prohibition on logging in riparian reserves.*
- *Violation of the Aquatic Conservation Strategy by logging that retards attainment of ACS objectives related to stream shade and wood recruitment.*
- *Violation of the Endangered Species Act and NFMA population viability requirement for aquatic and riparian species.*
- *Failure to: make climate mitigation part of the purpose and need, take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

Logging in riparian reserves will reduce canopy and cooling shade, increase soil disturbance and erosion, and reduce wood recruitment in violation of the Aquatic Conservation Strategy of the Northwest Forest Plan. The project area includes habitat for listed fish species, including Southern Oregon Northern California Coast (SONCC) coho salmon, KMP steelhead, rainbow trout, and coastal cutthroat trout. All these fish need cold water and complex habitat created in part by dense shade and abundant wood in and near streams.

The FONSI is based on flawed analysis. EA Appendix J, p 200, saying:

“There would either be no effects to fish populations and their associated habitat or they would be minimized through application of the Project Design Criteria. The proposed action would improve conditions for the aquatic ecosystem by supporting the growth of large trees for stream shade and future instream large wood for complex instream habitats, as well as reducing tree density so the stands are more resilient to potential wildland fires, insects and disease.”

Logging would NOT “would improve conditions for the aquatic ecosystem by supporting the growth of large trees for stream shade and future instream large wood.” Rather, logging would adversely modify riparian and aquatic habitat. Our prior comments and the LSR Objections

above explain in great detail why commercial logging will cause a long-term reduction of recruitment of dead wood which is an essential feature of high quality riparian and aquatic habitat.

Logging will remove trees that would otherwise grow and be recruited both instream and throughout the riparian reserves to meet ACS objectives. Logging may increase growth of retained trees, but that growth is focused on far fewer stems, so the net effect for wood recruitment is adverse. In addition, most of the proposed riparian logging is adjacent to small streams where small wood can serve important functions like pool formation and sediment capture. Thinning small trees near small streams will cause adverse effects.

Dead wood is important to both aquatic and terrestrial purposes of the riparian reserves network, so the NEPA analysis cannot just focus on recruitment of wood to streams, but must also address the need to recruit optimal levels of snag and dead wood to meet the needs of terrestrial wildlife (primary cavity excavators, secondary cavity users, amphibians, mollusks, lichen, fungi, etc.) which were intended to be benefited by riparian reserves. Wood loading in small streams helps them perform their many critical ecological functions. Meyer J.L. et al 2007. WHERE RIVERS ARE BORN: The Scientific Imperative for Defending Small Streams and Wetlands. Sierra Club and American Rivers. https://www.americanrivers.org/wp-content/uploads/2016/05/WhereRiversAreBorn_report.pdf

Thinning in stands of trees that are not yet of "pool forming" size may be beneficial, but after trees are of pool-forming size, thinning just captures and removes the mortality that should end up in the stream. (In simplistic terms, a pool-forming tree is one big enough to fall all the way across the stream, so it varies by stream size, but in general it only takes a small tree to form a pool in a small stream). See Roni, Philip, Timothy J. Beechie, Robert E. Bilby, Frank E. Leonetti, Michael M. Pollock, And George R. Pess. 2002. **A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds.** *North American Journal of Fisheries Management* 22:1–20, 2002 American Fisheries Society 2002 [http://www.crab.wa.gov/LibraryData/RESEARCH and REFERENCE MATERIAL/Environmental/020923StreamRestoreTechPNW.pdf](http://www.crab.wa.gov/LibraryData/RESEARCH_and_REFERENCE_MATERIAL/Environmental/020923StreamRestoreTechPNW.pdf).

In order to retain options for recruitment of large wood in degraded stream systems, scientific recommendations include retention of trees >12" dbh.

Removal of trees from riparian zones may delay the recovery of fish habitat. At a minimum, the largest trees (that is, those > 12 inches in diameter at breast height) should be left in riparian areas for future sources of in-stream wood. This would apply to all streams, as recommended by Anderson and others (1992). Smaller trees could be removed as part of a program for riparian vegetation restoration.

Gordon H. Reeves and Fred H. Everest. 1994. REDUCING HAZARD FOR ENDANGERED SALMON STOCKS, in *Eastside Forest Ecosystem Health Assessment; Volume IV*. Everett, Richard L., comp. 1994. *Restoration of Stressed Sites, and Processes*. Gen. Tech. Rep. PNW-GTR-330. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station. https://www.fs.usda.gov/pnw/pubs/pnw_gtr330.pdf. (p 23).

Looking at the total miles of streams, small streams dominate, therefore most logging takes place along small streams. BLM has admitted that small wood can be functional in small streams.

TABLE 1. DIAMETER OF FUNCTIONAL WOOD PIECE AS IT RELATES TO WIDTH OF ACTIVE STREAM CHANNEL

Width of Stream (ft.)	Diameter of functional wood (in.)
15	4.5
20	6
30	9
40	12
50	15
>50	>20

From Beechie et al. 2000

BLM 2014. Planning Criteria - Western Oregon RMP Revisions, p 49.

<http://www.blm.gov/or/plans/rmpswesternoregon/plandocs.php>. It's also worth noting that small streams are disproportionately ecologically important. "While small-stream habitats have only about 20% of the available salmon in the watershed, they provide 50% of bear consumption of salmon. 'This tells us that populations of sockeye salmon that spawn in little streams are disproportionately important to bears,' said study lead author Jonny Armstrong, an ecologist at Oregon State University. 'Bears profit from these small streams because they offer salmon at unique times of the season. To capitalize on plentiful salmon runs, bears need them to be spread across time.' Small streams typically have cold water, which leads to populations of salmon that spawn much earlier in the season when no other populations are available to predators such as bears." Branam, C. 2019. Easy prey: The largest bears in the world use small streams to fatten up on salmon. December 19, 2019. <https://today.oregonstate.edu/news/easy-prey-largest-bears-world-use-small-streams-fatten-salmon> citing Jonathan B. Armstrong, Daniel E. Schindler, Curry J. Cunningham, William Deacy, Patrick Walsh. 2019. Watershed complexity increases the capacity for salmon–wildlife interactions in coastal ecosystems. Conservation Letters. Published: 20 November 2019 <https://doi.org/10.1111/conl.12689> <https://conbio.onlinelibrary.wiley.com/doi/pdfdirect/10.1111/conl.12689>.

Dead wood is important to meeting many aquatic and terrestrial wildlife habitat values. Dead wood is also important for ecological services such as the capture, storage and release of water, sediment, and nutrients including, carbon. Most riparian reserves are short of dead wood due to past and ongoing logging, roads, fire suppression, etc. Natural processes of stand growth and mortality will correct this shortage, whereas logging will capture and export mortality and reduce and delay recruitment of wood to both streams and uplands within riparian reserves. This is not a minor short-term effect, but rather a significant long-term effect. Such effects are inconsistent with the Aquatic Conservation Strategy which prohibits logging in riparian reserves unless it is needed to meet objectives, and requires that management actions "maintain" and "not retard" ACS objectives, including dead wood. Any proposal to log riparian reserves must address these factors, develop clear goals, provide clear linkages between proposed actions and desired outcomes. Any alleged benefits of logging must be weighed against likely adverse effects on dead wood recruitment.

Riparian areas are widely considered to be important wildlife habitat. Cool air temperatures due to the presence of cool and turbulent surface waters, typically dense vegetative canopy cover, and their location in the lowest portions of watersheds combine to maintain a distinct microclimate along stream channels and in the adjacent riparian area. Maintaining the integrity of the vegetation in these areas is particularly important for riparian-dependent species of amphibians, arthropods, mammals, birds, and bats.

...

Large quantities of down logs are an important component of many streams. Coarse woody debris influences the form and structure of a channel by affecting the profile of a stream, pool formation, and channel pattern and position. The rate at which sediment

and organic matter are transported downstream is controlled in part by storage of this material behind coarse woody debris. Coarse woody debris also affects the formation and distribution of habitat, provides cover and complexity, and acts as a substrate for biological activity. Coarse woody debris in streams comes directly from the adjacent riparian area, from tributaries that may not be inhabited by fish, and from hillslopes. 1994 Northwest Forest Plan FSEIS page 3&4-61.

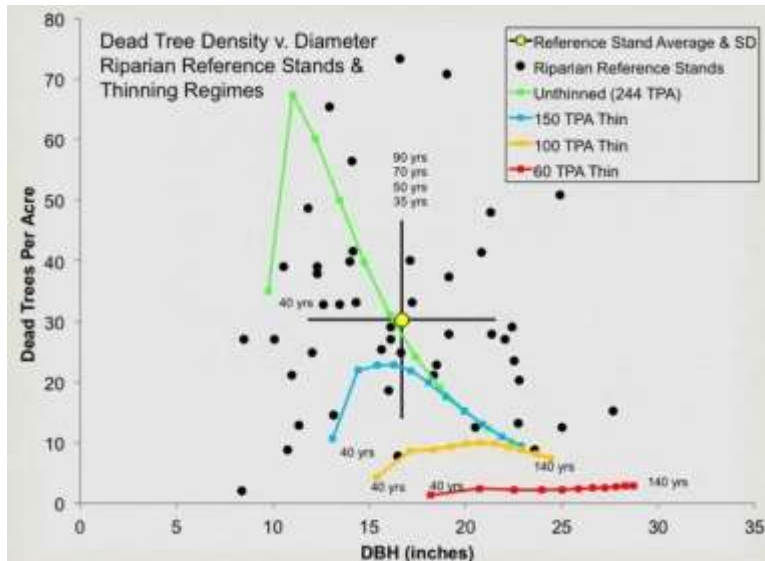
Under the NWFP: “The risk has been shifted under the Aquatic Conservation Strategy because each project must meet the maintenance and restoration criteria by maintaining or restoring the physical and biological processes required by riparian-dependent resources within a watershed.” 1994 FSEIS p 3&4 – 69. Clearly, this requires the agency to show there is a need for intervention. The 1993 SAT Report (which underpins the ACS) said “Within these protection areas, timber management and other ground disturbing activities are prohibited unless a site-specific watershed analysis indicates such activities will accelerate meeting desired ecological conditions.” And “Within the Riparian Habitat Conservation Areas, timber management and other land management activities are essentially prohibited unless the watershed analysis indicates such activity is necessary to accelerate meeting desired ecological conditions.” 1993 SAT Report. Ch 5, p 296. “[F]or areas where riparian conditions are presently degraded, management activities must be designed to improve habitat conditions.” 1993 SAT Report. Ch 5, p 464.

The agency should not manage for *minimum* levels of dead wood because *optimal* levels of dead wood are much higher than minimums. In fact, there may not be any maximum. “The presence of LWM within a stream channel is critical to maintaining integrity of the system, in fact, there cannot be an overabundance of LWM.” Deschutes NF, 1997. Big Marsh Watershed Analysis. https://web.archive.org/web/20240611001219/https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/7225/Deschutes_WA_Big_Marsh.pdf. The Regional Ecosystem office recommends managing dead wood in young stands within reserves to attain *biologically optimal* levels, not just *average* or *reference* levels. REO said “CWD objectives should be based on research that shows optimum levels of habitat for late-successional forest-related species, and not be based simply on measurements within natural stands.” REO 7-9-1996 Criteria to Exempt Specific Silvicultural Activities in Late-Successional Reserves, http://www.reo.gov/library/policy/REO-694_comm_thin_criteria.doc.

New science brings into question the ecological value of commercial logging as a restoration tool in riparian reserves in the Coast Range and western Cascades of Washington and Oregon.

... our data suggest that mature, late-successional conifer dominated forests have well developed structural characteristics in terms of abundant large trees in the overstory, abundant large snags, and a well-developed understory of shade-tolerant trees. We modeled the growth of young conifer stands to assess whether a common restoration treatment [thinning to 150 trees per hectare] would accelerate development of structural characteristics typical of reference conditions. We found that left untreated, the stands followed a trajectory towards developing forest structure similar to the average reference condition. In contrast, the restoration treatment followed a developmental trajectory along the outside range of reference conditions.

Pollock, M. M., T. J. Beechie, and H. Imaki. 2012. Using reference conditions in ecosystem restoration: an example for riparian conifer forests in the Pacific Northwest. *Ecosphere* 3(11):98. <http://dx.doi.org/10.1890/ES12-00175.1> The following figure from this study shows that all types of thinning cause stand development to miss the reference stand trajectory for dead wood.



Since streams are already severely degraded by logging, any further logging in riparian reserves should be very carefully scrutinized to avoid further adverse effects. Any claimed benefits of logging in riparian reserves should be clearly justified and supported by compelling scientific evidence. And that is just what the NWFP Aquatic Conservation Strategy calls for. ACS Objective #8 calls for restoring and maintaining “amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.” Existing large wood levels are deficient across the landscape due to past and ongoing harvest practices. The objectives require retention and long-term recruitment of abundant trees and wood especially large wood that provides long-lasting ecological services.

Western Pond Turtle Objections

- *Failure to: make climate mitigation part of the purpose and need, take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

The EA relies mainly on the riparian reserves to protect Western pond turtles, but this is not adequate protection because turtles spend much of their life outside of riparian reserves. The EA did not weigh and consider this risk. The Response-to-Comment says that greater protection for pond turtles outside of riparian reserves would impede the purpose and need to improve forest health and forest resiliency, but the FS could have considered an alternative that used non-commercial thinning treatments. If that’s good enough for the shaded fuel breaks around key infrastructure, it should be good enough for other areas such as pond turtle habitat outside riparian reserves.

Survey and Manage Objections

- *Violation of the Northwest Forest Plan ROD as amended by the 2001 Survey and Manage ROD (without proper justification).*

- *Failure to: make climate mitigation part of the purpose and need, take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

Amending the requirement for pre-disturbance surveys for old growth dependent species. The 2001 survey and manage ROD already weighed the importance of project planning efficiency versus pre-disturbance surveys, and decided that the informational value of surveys necessitates surveys being done as part of the NEPA process, not after. The EA does not support changing this policy.

Unroaded Objections

- *Failure to: make climate mitigation part of the purpose and need, take a hard look, consider opposing viewpoints, consider reasonable alternatives, prepare an EIS, document compliance with substantive requirements, and respond to comments.*

We object to commercial logging in ecologically significant unroaded areas >1,000 acres. The EA admits, “There are a few proposed [unroaded] units near the NW boundary of the Sky Lakes Wilderness surrounding Mount McLoughlin.”

Our comments explained that unroaded areas provide valuable ecosystem services and are an important part of the natural range of variability but these areas are vastly under-represented on the landscape, and this project will make that worse.

The Response-to-Comment dismisses out concerns about unroaded areas >1,000 acres, because “The suggestion to incorporate protection of these unroaded areas or further inventory them at the watershed scale is outside of the scope of the Snowy Butte Project.”

The EA fails to recognize unroaded areas as ecologically significant features of the landscape. World Wildlife Fund and the Conservation Biology Institute summarized the important attributes of small roadless areas (1,000-5,000 acres).

Small roadless areas share many of attributes in common with larger ones, including:

- Essential habitat for species key to the recovery of forests following disturbance such as herbaceous plants, lichens, and mycorrhizal fungi
- Habitat refugia for threatened species and those with restricted distributions (endemics)
- Aquatic strongholds for salmonids
- Undisturbed habitats for mollusks and amphibians
- Remaining pockets of old-growth forests
- Overwintering habitat for resident birds and ungulates
- Dispersal “stepping stones” for wildlife movement across fragmented landscapes

DellaSala, Dominick and James Stritholt. 2002. Scientific Basis For Roadless Area Conservation. World Wildlife Fund. Ashland, OR; Conservation Biology Institute. (June 2002 - Updated October 2003) https://consbio.org/wp-content/uploads/2022/05/Scientific_Basis_For_Roadless_Area_Conservation.pdf.

In a 1997 letter to President Clinton, 136 scientists said:

There is a growing consensus among academic and agency scientists that existing roadless areas—irrespective of size—contribute substantially to maintaining biodiversity and ecological integrity on the national forests. The Eastside Forests Scientific Societies Panel, including representatives from the American Fisheries Society, American Ornithologists' Union, Ecological Society of America, Society for Conservation Biology, and The Wildlife Society, recommended a prohibition on the construction of new roads and logging within existing (1) roadless regions larger than 1,000 acres, and (2) roadless regions smaller than 1,000 acres that are biologically significant.... Other scientists have also recommended protection of all roadless areas greater than 1,000 acres, at least until landscapes degraded by past management have recovered.... As you have acknowledged, a national policy prohibiting road building and other forms of development in roadless areas represents a major step towards balancing sustainable forest management with conserving environmental values on federal lands. In our view, a scientifically based policy for roadless areas on public lands should, at a minimum, protect from development all roadless areas larger than 1,000 acres and those smaller areas that have special ecological significance because of their contributions to regional landscapes.

Letter to President Clinton from 136 scientists (Dec. 10, 1997).

https://drive.google.com/file/d/oB4L_-RD-MJwrRzhFcm5QcFR0MHM/view?usp=sharing&resourcekey=0-2-sbGMN3bOUBQGGMDBQM1Q

Just like a steep slope, or a wetland, or an old-growth forest, unroaded areas are recognizable features of the landscape that must be considered when planning a logging project. Just because the Forest Service does not have specific policies that apply to unroaded areas, does not waive the NEPA requirement to consider relevant environmental information (such as the disproportionate ecological values of unroaded areas) when making decisions affecting our national forests.

The EA fails to disclose the disproportionate values of unroaded areas and the disproportionate impacts of logging, and failed to consider non-commercial treatment alternatives that would better conserve those values.

Sincerely,

A handwritten signature in black ink that reads "Doug Heiken". The signature is written in a cursive, slightly slanted style.

Doug Heiken

Attached: Cited materials