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TO: Wallowa Valley Ranger District, Wallowa-Whitman National Forest
VIA: https://cara.fs2c.usda.gov/Public/CommentInput?Project=358854 and https://cara.fs2c.usda.gov/Public/CommentInput?Project=359331

Subject: Huckleberry to Minam Fuel Break CE and the Upper Wallowa Valley Fuel Break CE — comments

Please accept the following comments from Oregon Wild concerning the Huckleberry to Minam Fuel Break CE, https://www.fs.usda.gov/r06/wallowa-whitman/projects/358854, and the Upper Wallowa Valley Fuel Break CE, https://www.fs.usda.gov/r06/wallowa-whitman/projects/359331. Oregon Wild represents 20,000 members and supporters who share our mission to protect and restore Oregon's wildlands, wildlife, and water as an enduring legacy. Our goal is to protect areas that remain intact while striving to restore areas that have been degraded. This can be accomplished by moving over-represented ecosystem elements (such as logged and roaded areas) toward characteristics that are currently under-represented (such as roadless areas and complex old forest).

The Huckleberry to Minam Fuel Break CE involves:

- up to 3000 acres of fuel breaks including
- 1120 ac commercial logging
- 1421 ac non-commercial thinning
- 0.53 mi temporary road construction

The Upper Wallowa Fuel Break CE involves:

- up to 3000 acres of fuel breaks including
- 375 ac commercial logging
- 1874 ac non-commercial thinning
- 1.58 mi temporary road construction

The Combined Project Scale Exceeds the Limits in the Fuel Break Categorical Exclusion

Both of these projects:

- have similar purposes (fuel breaks). The website description of both projects is identical: "The purpose of this project is to create strategic fuel breaks that would assist in the management of future natural and prescribed fires on National Forest lands that are in close proximity to the Eagle Cap Wilderness and private lands and adjacent to communities and infrastructure."

- have similar locations (close proximity to the Eagle Cap Wilderness and private lands and adjacent to communities),
- have similar timing (both announced July 22, 2026),
- are described in a joint proposed action which anticipates a singular decision,
- are managed by the same office (Wallowa Valley RD),
- have the same contact person (Todd Pederson),
- have 6 pages of nearly identical text in the proposed action(s),

Yet, together they will treat 4,790 acres (plus roads) and exceed the 3,000-acre limit for the fuel break CE (Pub. L. 117-58, Sec. 40806). The only reason to split this project into two projects is to exploit the CE and avoid the requirement to prepare and EA or EIS as required by NEPA. But this is not two projects. It is one project and it is larger than the allowed CE.

We recommend that the Forest Service modify this project as follows:

- Be honest and combine the two projects and consider them together; and
- Drop commercial logging and road construction, which would mitigate many of the extraordinary circumstances listed below, and
- Focus on fuels <9" dbh within 150 feet of roads, which should reduce the total acres to less than 3,000.

This would allow the Forest Service to legitimately use CE authority.

Extraordinary Circumstances Require a NEPA Anlaysis

Extraordinary Circumstances related to this project include …

Inadvertent take of ESA-listed whitebark pine tree. Workers implementing this project are unlikely to accurately identify and protect all live whitebark pine, and burn treatments will likely kill some whitebark pine trees that do get identified.

Commercial logging and roads in roadless/unroaded areas may have significant effects. These areas are under-represented unmanaged lands that provide disproportionate ecosystem services, and logging them will cause disproportionate harm to ecosystem services. Treatments should be very minimal in these areas except for light, non-commercial thinning and prescribed fire. Treating these areas with commercial logging and roads represent an extraordinary circumstance that triggers full NEPA analysis.

Fuel breaks are controversial and have questionable effectiveness. A NEPA analysis may be needed to address extraordinary circumstances related to trade-offs, connected actions, and because fuelbreaks are controversial. Omi (1996) states that, "Throughout their history fuelbreaks has been controversial, with mixed supporters and detractors on a variety of issues, including terminology, construction and maintenance standards, costs and effectiveness, and required scale of treatments. ... Surprisingly, little documentation exists for actual reductions in wildfire losses especially relative to the costs of construction and maintenance of a fuelbreak system." Omi, P.N. 1996. The role of fuelbreaks. In: Proceedings of the 17th Forest Vegetation Management Conference. Redding, CA. pp. 89-96. And. Agee, et.al. (2000) disclose, "The effectiveness of fuelbreaks remains a subject of debate within and outside of the fire management community." Agee, Bahro Finney, Omi, Sapsis, Skinner, van Wagtendonk, Weatherspoon (2000). The use of fuel breaks in landscape fire management. Forest Ecology and Management. 127. 55-66. 10.1016/S0378-1127(99)00116-4. pdf.

Careful analysis is required to address the complex and counterintuitive effects of logging on fuels. The proposed action describes the alleged benefits of commercial thinning (e.g., "Decreasing crown bulk density to reduce crown fire susceptibility [and] Reducing ladder fuels") without describing the counter-vailing evidence that logging increases fire hazard. 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. This represents extraordinary circumstances that trigger NEPA analysis.

Roads contribute to significant effects. The proposed action says "temporary roads will be returned to their pre-use condition as soon as practicable after treatment is completed." This is not supported by any analysis or evidence. All roads have long-term impacts. The only thing that is temporary is the time the road is used. Closing and ripping roads does NOT return roads to pre-use condition. It does not restore soil properties, or below ground ecosystems, nor does it return vegetation to the pre-road conditions. Roads are a well-known case of fuel hazard and fire risk, because roads open the canopy and stimulate growth of surface and ladder fuels, and because roads are associated with increased rates of fire ignition. This is more extra-ordinary circumstances.

There are a variety of potentially significant trade-offs associated with commercial logging as a method of fuel reduction. All logging, including thinning stands of any age, include some adverse impacts and trade-offs. Some impacts of logging are unavoidable, so there is no such thing as a logging operation that is 100% beneficial. Depending on how thinning is done thinning can have adverse impacts such as soil disturbance, habitat disturbance, carbon removal, spreading weeds, reduced recruitment of snags, road-related erosion and hydrologic impacts, moving fuels from the canopy to the ground, creating a hotter-drier-windier microclimate that is favorable to greater flame lengths and rate of fire spread, etc. Some of these negative effects are fundamentally unavoidable, therefore all thinning has negative effects that must be compensated by beneficial effects such as reducing competition between trees so that some can grow larger faster, increased resistance drought stress and insects, increasing species diversity, possible fire hazard reduction, etc.

Trade-offs from commercial logging include:

- Reducing canopy cover makes fire hazard worse, not better. Logging makes the stand hotter, drier, and windier, which (i) dries fuels, (ii) creates more hazardous conditions for fire. Commercial logging of canopy trees not only creates more hazardous slash that must be treated, it also stimulates the growth of future hazardous surface and ladder fuels, and makes future retreatment more expensive.
- Logging makes the forest warmer, increases evaporative demand and vapor pressure deficit, which increases drought stress. Watts, Andrea; Wondzell, Steve; Jarecke, Karla; Bladon, Kevin. 2024. Hot air or dry dirt: Investigating the greater drought risk to forests in the Pacific Northwest. Science Findings 268. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 6 p. https://www.fs.usda.gov/pnw/sciencef/scifi268.pdf. See also, Karla M. Jarecke, Linnia R. Hawkins, Kevin D. Bladon, Steven M. Wondzell 2023. Carbon uptake by Douglas-fir is more sensitive to increased temperature and vapor pressure deficit than reduced rainfall in the western Cascade Mountains, Oregon, USA. Agricultural and Forest Meteorology, Volume 329, 15 February 2023, 109267. https://www.sciencedirect.com/science/article/abs/pii/S0168192322004543.
- Removing canopy also causes habitat fragmentation, exposes wildlife to greater risk of predation, increases barriers to safe movement across roads and fuel treatment areas, degrades the microclimate refugia that diverse wildlife need to survive extreme weather during this climate emergency, and reduces the population of green trees needed to recruit future large trees (and critically important dead wood habitat that is in short supply).
- Logging transfers carbon from the forest to the atmosphere and exacerbates global climate change.
- Commercial logging has far greater impact on soil and water and weeds due to greater use of roads and heavy equipment that disturbs soil, cause erosion, and expose mineral soil where weeds can establish.
- Commercial logging creates unnatural habitat conditions. Natural disturbance leaves the dead wood habitat behind, where many old-growth species can persist while the forest recovers, but logging exports that valuable habitat away. This causes long-term reduced recruitment of large trees and large snags and dead wood.
- Logging adversely affects hydrology, causing unnatural peak stream flows and unnatural low stream flows.
- Logging requires heavy equipment and road construction and/or road use that have significant effects on soil, water, habitat, fire ignition risk, etc.

Non-commercial thinning of small trees and retention of higher canopy cover mitigates all these adverse effects and still achieves fuel reduction objectives. Most fires move along the ground, not through the canopy, so fuel reduction focused on surface and ladder fuels is most effective. Canopy fuels are rarely continuous. Virtually every road serves as a break in canopy continuity, and there is a dense road network on public lands. Retaining canopy also helps suppress the growth of future surface and ladder fuels, which means that future retreatment can be more affordable, with less frequent need for treatment and less accumulated fuels to deal with.

Active management intended to restore high conservation value forests (such as mature and old-growth forests, unroaded areas, disturbed areas, critical habitat, riparian areas, etc.) has significant trade-offs.

> AM [Active Management] has overlooked or downplayed collateral ecosystem damages in HCVF [high conservation value forests], including: (1) habitat needs of at-risk species,

(2) thinning effects on ecosystem function, carbon emissions and biodiversity, (3) the role of stand-replacing or partial stand-replacing natural disturbances (e.g. wildfire, insect outbreaks) that produce complex early seral habitats, and (4) extensive road networks with associated impacts. We argue the underlying science to support AM may be lacking in some cases and that more scrutiny is needed to ensure objectives are supported by rigorous science, including transparency in identifying collateral damages and ways to mitigate them.

Table 1

Exemplary forms of degradation in High Conservation Value Forests (HCVF) that can result from Active Management (AM). A larger list of degradation indicators is presented in (DellaSala et al., 2025).

Degradation indicator	HCVF consequences	Source
Threatened, endangered, imperilled, range-restricted species	Loss of critical habitat, competition with invasive species.	(Bettega et al., 2024; DellaSala et al., 2025; Lee, 2018)
Cumulative effects	Ecosystems pushed beyond tipping points that trigger a state-shift.	(Lindenmayer et al., 2011)
Natural disturbance dynamics	Loss of complex early seral forests. Changes in fire behaviour and insect infestations.	(Swanson et al., 2011; Lesmeister et al., 2021; Taylor et al., 2020; Millikin et al., 2024)
Forest microclimate	Increased drying and higher wind speeds along edges.	(Ma et al., 2010; Trentini et al., 2017; Hao et al., 2024)
Tree mortality	Elevated tree loss beyond that from natural disturbance.	(Baker and Hanson, 2022)
Soils and below-ground processes	Soil nutrients and soil structure changes, soil compaction, mycorrhizal disturbances.	(Marchi et al., 2014; Picchio et al., 2012; Hwang et al., 2020; Bowd et al., 2019)
Carbon sequestration and stores	Increased emissions, impaired sequestration, and reduced carbon stores.	(Mackey et al., 2022; Harmon et al., 2022; Bartowitz et al., 2022)
Hydrology	Road stream intersections and high road densities alter peak flows, runoff, sedimentation, and water quality.	(Ibisch et al., 2016)
Forest fragmentation and landscape change	Landscape-scale logging and road building shifts seral stages to an abundance of young managed stands and small, isolated patches of old-growth forest.	(Laurance and Arrea, 2017; Taylor and Lindenmayer, 2020; Ma et al., 2023)
Large old trees	Selective logging, post-disturbance logging, and commercial thinning reduce populations of large trees.	(Russell et al., 2006; Thorn et al., 2018)

Lindenmayer et al. 2025. When Active Management of high conservation value forests may erode biodiversity and damage ecosystems. Biological Conservation 305 (2025) 111071. https://doi.org/10.1016/j.biocon.2025.111071.

Recommendations for more effective fuel breaks

The proposed action says "Shrubs are not proposed for removal except within 20 feet of roads." This indicates the FS will be removing less hazardous commercial sized trees with thick bark and high canopies, while retaining low shrubs that represent greater fuel hazards. This is not an effective fuel break.

If used correctly, shaded fuel breaks can be a useful tool for fire management. Done incorrectly they can make the situation worse, and cause a lot of unintended adverse trade-offs. Shaded fuel breaks implemented non-commercially with significant canopy retention may be an effective fuel treatment, IF they are maintained over time. If fuel breaks remove too much canopy and are accomplished with heavy equipment that disturbs too much soil, fuel breaks can stimulate the growth of hazardous fuels and weeds, making fire hazard worse instead of better, while making long-term maintenance more difficult and more expensive.

Fuel breaks can have significant trade-offs, including: spreading weeds through soil and canopy disturbance, habitat fragmentation and edge effects, exacerbating barriers to wildlife movement, impaired wildlife connectivity, loss of wildlife cover, loss of snag and dead wood habitat, facilitating unauthorized OHVs, increased carbon emissions, etc. NEPA analysis is needed to disclose and consider these trade-offs and develop alternatives that avoid, minimize, and mitigate adverse effects. Many of the trade-offs caused by shaded fuel breaks cause potentially significant cumulative effects. The effects of shaded fuel breaks are long-lasting because the agency must repeat fuel reduction efforts on a regular basis in order to maintain fuel breaks, which means more soil disturbance, more weeds, more erosion, more carbon emissions, permanent loss of snag habitat and connectivity, etc.

Fuel breaks are largely untested with potentially uncertain ecological effects.

> Shinneman *et al*. (2019) reported that there is little scientific information available regarding their [fuel breaks] ecological effects. They report that fuel breaks can: (1) directly alter ecosystems; (2) create edges and edge effects; (3) serve as vectors for wildlife movement and plant invasions; and (4) preemptively fragment otherwise contiguous sagebrush landscapes.

Kauffman, Beschta et al 2020. Comments on Boise BLM's Tri-State Fuel Break Project. 22 Dec 2020. https://drive.google.com/open?id=1AEA3PTs31Sv_-RZZnMsduhHCb1hniZ_e *citing* Shinneman, Douglas J.; Germino, Matthew J.; Pilliod, David S.; Aldridge, Cameron L.; Vaillant, Nicole M.; Coates, Peter S. 2019. The ecological uncertainty of wildfire fuel breaks: examples from the sagebrush steppe. Frontiers in Ecology and the Environment 17(5):279-288. https://doi.org/10.1002/fee.2045. ("Fuel breaks are increasingly being implemented at broad scales (100s to 10,000s of square kilometers) in fire-prone landscapes globally, yet there is little scientific information available regarding their ecological effects (e.g. habitat fragmentation). … Given uncertain outcomes, we examine how implementation of fuel breaks might (1) directly alter ecosystems, (2) create edges and edge effects, (3) serve as vectors for wildlife movement and plant invasions, (4) fragment otherwise contiguous sagebrush landscapes, and (5) benefit from scientific investigation intended to disentangle their ecological costs and benefits."). See also Shinneman, D.J., Aldridge, C.L., Coates, P.S., Germino, M.J., Pilliod, D.S., and Vaillant, N.M., 2018, A conservation paradox in the Great Basin—Altering sagebrush landscapes with fuel breaks to reduce habitat loss from wildfire: U.S. Geological Survey Open-File Report 2018–1034, 70 p., https://doi.org/10.3133/ofr20181034.

Another concern is that PODs are not typically designed to achive ecological priorities, but institutional priorities:

> More troubling still is what happens when fire is no longer even primarily ecological — when it becomes institutional. Across much of the American West, fires are now planned, managed, and expanded within pre-scribed and carefully planned operational boundaries called PODs — Potential Operational Delineations. These are not maps of what nature does. They are maps of what agencies decide. Within this framework, more acres burned means more funding. Larger fires generate secondary and tertiary contracts for "restoration" work that almost never produce thriving forests, restored biospheres or health watersheds, but reliably produce an explosion of highly flammable thorns, thistles… and another healthy budget cycle.

Dana Tibbitts 2026. Strange Fire: Fire, Discernment and the Collapse of Distinction. The Smokey Wire: National Forest News and Views. June 23, 2026. https://forestpolicypub.com/2026/06/23/strange-fire-fire-discernment-and-the-collapse-of-distinction-guest-post-by-dana-tibbitts/.

PODs and fuel breaks should be explicitly planned and designed to facilitate the return of fire to the landscape, not to perpetuate the failed policy of continued suppression of wildfire. If the fuels breaks are intended for continued fire suppression, then the NEPA analysis should disclose the adverse environmental effects of that outdated policy. Timothy Ingalsbee 2005. Fuelbreaks for Wildland Fire Management: A Moat or a Drawbridge for Ecosystem Fire Restoration? Journal of Fire Ecology, Pages: 85-99. DOI:10.4996/fireecology.0101085. https://web.archive.org/web/20070818123112/http://www.fireecology.net/pdfs/7_ingalsbee.pdf.

We think some of the trade-offs of shaded fuel breaks and PODs can be minimized by following guidelines, such as:

- Well-shaded fuel breaks will be much more effective than linear clearings, or heavy thinning. Maintaining a reasonably dense canopy will mitigate habitat fragmentation effects, as well as lower maintenance costs by suppressing growth of surface and ladder fuels. Focus on small (<9" dbh) surface and ladder fuels within 150 feet of roads;
- Focus fuel break treatments near roads. Fire management goals can typically be met by focusing on small fuels within 150 feet from roads. In a survey of fuel breaks in California "average width of fuel breaks in this sample was 116.9 meters" which is ~59 meters each side of the road, or less than 200 feet from roads. Stephens, Collin, Omi, Johnson 2023. FINAL REPORT: Manager Perspectives on Fuel Break Effectiveness and Configurations. JFSP PROJECT ID: 19-2-01, March 2023. https://mcusercontent.com/5f6de7b069a57255f980944b4/files/68ab7c9b-a224-e68b-a3fa-97077e22b662/19_2_01_1.pdf.
- Focus on treating plantations and previously logged stands. Avoid/minimize treating mature & old-growth, riparian areas, and roadless/unroaded areas.
- Treatments in reserves and land allocations with an ecological mandate should be avoided where possible, and minimized/modified to retain more large wood and diverse vegetation to meet objectives for the RMP.
- Use manual treatments (hand felling, lop-and-scatter, burning small piles) instead of heavy equipment. This will protect soil, water quality, and fire resilient native plants;
- Retain dense, mid-to-high canopy to help maintain a cool, moist microclimate, retain fuel moisture, help suppress the growth of surface and ladder fuels (which also minimizes maintenance costs), and provide a bit more cover to mitigate for adverse effects on wildlife mobility;
- Where all trees are less than the minimum 7-9" dbh threshold, leave the healthiest trees at a variable spacing of 20-feet with a variance of 50% to allow for the best leave trees. Don't thin to heavy and risk stimulating the growth of hazardous fuels. Retain

uncommon trees such as yew, mountain mahogany, aspen, hardwoods, whitebark pine, etc.

- Retain deciduous hardwoods which can serve as heat sinks during fires;
- Adjust prescriptions in response to different forest types, retaining a bit more density in moist forest types, and a bit less in dry forest types;
- Retain important elements of diversity where possible, such as Pacific yew, and some patches of shrubs that produce berries, nuts, nectar, etc. (food for wildlife), and to provide intermittent opportunities for wildlife crossing the road;
- Consider and minimize the effects on large and small wildlife that need to cross roads. Opening the forest reduces cover and increases barriers to safe movement of wildlife;
- Treat a well-planned network of roads that ideally create polygons with a high ratio of area/perimeter. Too much redundancy will create cumulative impacts. Larger PODs have a more favorable ratio of area/perimeter, which reduces cumulative effects. Possibly consider smaller PODs within the WUI, and larger PODs further out. Reduce cumulative effects by avoiding redundant fuel breaks, e.g. avoid treating nearby parallel roads.
- Plan and account for recurring maintenance costs, e.g., manual thinning, prescribed fire, weed control, etc. Avoid commercial logging in the first instance because log values will not be a recurring feature of POD maintenance. The fuels removed should be smaller over time, not larger.
- PODs planning must be truly interdisciplinary, not just in name only.
- NEPA analysis of PODs should be both programmatic and site-specific.

Please develop a NEPA alternative that follows these guidelines.

The NEPA analysis should consider the environmental effects of connected actions, including recurring maintenance and fire suppression activities. The NEPA analysis should disclose the essential connection between fuelbreaks and fire suppression, and disclose what kinds of potential suppression activities, such as fireline construction with hand crews or bulldozers, fire retardant chemical dumping, backfire and burnout operations, hazard tree felling could occur within the fuelbreaks, and disclose the general effects on soils, watersheds, and species of interest.

Weeds are a potential big problem with fuel breaks, especially the combination of frequent disturbance caused by recurring maintenance, and road use as a vector for weeds.

> "[W]e found that 19 of the 24 fuel breaks had significantly higher relative nonnative cover than the adjacent wildland areas.... Time since construction was strongly associated with nonnative abundance when we evaluated all of the fuel breaks together.... A number of different species assumed dominance... suggesting that many nonnative species may be well adapted to take advantage of the conditions provided by fuel treatments.... [F]uel breaks with more canopy and ground cover may be less likely to be invaded.... We found that nonnative cover decreased with distance from the fuel break, suggesting that fuel breaks act as sources of nonnative plant seeds during the invasion of adjacent areas."

Merriam, K.E., Keeley, J.E., and Beyers, J.L., 2007, The role of fuel breaks in the invasion of nonnative plants: U.S. Geological Survey Scientific Investigations Report 2006-5185, 69 p. http://pubs.usgs.gov/sir/2006/5185/pdf/sir_2006-5185.pdf.

The Forest Service finds …

> in general, annual grasses that have invaded a lot of these locations along the roadside were the most ignitable.

> While non-native annual invasive plants grow quickly, seed, dry out and die, native perennial plants retain moisture into the summer and early fall and will green back up in the spring. They need to retain that moisture to survive.
> When it comes to ignitability the amount of moisture in plant leaves and stems is a major influencing factor. The lower the moisture the more easily ignitable.

Andrew Avitt 2026. The fire that never starts. Reducing roadside ignitions. USFS Office of Communication. March 9, 2026 https://www.fs.usda.gov/about-agency/features/fire-never-starts

In another publication, the authors warn that fuel breaks are of unproven effectiveness in the face of extreme fire weather, and suggest that an extensive system of fuel breaks would "create edges and edge effects, serve as vectors for wildlife movement and plant invasions (like cheatgrass), and fragment otherwise contiguous sagebrush landscapes." Douglas J Shinneman, Matthew J Germino, David S Pilliod, Cameron L Aldridge, Nicole M Vaillant, Peter S Coates 2019. The ecological uncertainty of wildfire fuel breaks: examples from the sagebrush steppe. Frontiers in Ecology and Management. Vol 17, Issue 5, June 2019. Pages 279-288. https://esajournals.onlinelibrary.wiley.com/doi/pdf/10.1002/fee.2045 ("Given uncertain outcomes, we examine how implementation of fuel breaks might (1) directly alter ecosystems, (2) create edges and edge effects, (3) serve as vectors for wildlife movement and plant invasions, (4) fragment otherwise contiguous sagebrush landscapes, and (5) benefit from scientific investigation intended to disentangle their ecological costs and benefits.").

Fuel breaks can incrementally serve a variety of potential purposes during fire suppression efforts, however in a survey of fuel breaks in California "… only four first stopped at the fuel break without aid from suppression resources, while 29 either required the use of suppression resources or failed, which is in agreement with previous research …" In testing various fuel break configurations, the authors found, "In the fuel break only scenario, all model runs showed a slight increase in burn probability in the near vicinity of the fuel break. … likely due to the increase in light and flashy fuels in the fuel break area. … The final modeling scenario of a simulated firing operation shows large decreases in burn probability on the lee side of all fuel breaks." Stephens, Collin, Omi, Johnson 2023. FINAL REPORT: Manager Perspectives on Fuel Break Effectiveness and Configurations. JFSP PROJECT ID: 19-2-01, March 2023. https://mcusercontent.com/5f6de7b069a57255f980944b4/files/68ab7c9b-a224-e68b-a3fa-97077e22b662/19_2_01_1.pdf. The effectiveness of fuel breaks depends a lot on whether they are used as firing lines for burnout operations.

The efficacy of fuel breaks needs to be closely examined.

> …fuel break performance and benefit is based on the questionable expectation that fire suppression will be capable of "stopping" fires after initial attack fails (see Expectations above). Large fires escape initial attack for many reasons that include resource scarcity due to high numbers of ignitions, and spotting and crown fire behaviors that make holding a pre-defined position by firefighters untenable and perhaps dangerous. Furthermore, the only firefighting tactics supported by fuel breaks are categorized as "indirect" (Brown and Davis 1973). This means that the rest of firefighting tactics (direct attack and parallel attack) are not enhanced regardless of the current fire behavior or fire position on the landscape relative to the location of the fuel break. A large fire that slows before reaching a fuel break (because of a change in weather conditions, nighttime, etc.) must be attacked (by direct or parallel tactics) with no benefit of the fuel break. Utilizing fuel breaks involves a large burnout operation, which may be of a size equal to the original wildfire, take place regardless of the fire behavior at its current location, and produce negative effects on wildland vegetation greater than the original wildfire.

> Maintenance costs of fuel breaks are often ignored by proponents but maintenance is a perpetual burden that is likely to divert efforts from managing fuels and vegetation on the remaining majority of the landscape.
> …
> Evidence that fuel breaks surrounding urban zones are sufficient to reduce threats to urban values is lacking. Because of their location on the periphery of wildlands, fuel breaks cannot reduce losses of wildland values associated with a community. Although it is commonly argued that fuel breaks will reduce wildfire intensities adjacent to residential development and thereby allows firefighters to protect homes, wildland-urban fire disasters tend to occur during severe fire conditions when fire behavior characteristics often overwhelm fire protection resources.

Finney and Cohen. 2003. Expectation and Evaluation of Fuel Management Objectives. USDA Forest Service Proceedings RMRS-P-29.
http://www.fs.usda.gov/rm/pubs/rmrs_p029/rmrs_p029_351_366.pdf.

The agency should retain, not reduce, canopy fuels because canopy fuels actually help maintain a favorable microclimate and reduce surface and ladder fuels which are the greater hazard. If there is a perceived need to reduce the continuity of canopy fuels, the road itself serves that purpose.

> It has been empirically demonstrated on the Umpqua that creating large gaps in the canopy during fuel break construction will lead to an undesired response of growth of smaller trees and brush. This would most likely contribute to undesired fire effects and fuel breaks that become inefficient in just a few years.

Umpqua NF 2025. Buckeye IRR Project, Comment Consideration Appendix (p 28). https://usfs-public.app.box.com/s/7f9mgj386i60jwz01yxprgystx05xth2/file/1958172230107

Hakkenberg et al. (2024) showed that ladder fuels were the main driver of wildfire severity, whereas dense, high canopy fuels tend to reduce fire severity, even during extreme fire conditions.

> Here we employed GEDI space-borne lidar to consistently assess how pre-fire forest fuel structure affected wildfire severity across 42 California wildfires between 2019–2021. Using a spatial-hierarchical modeling framework, we found a positive concave-down relationship between GEDI-derived fuel structure and wildfire severity, marked by increasing severity with greater fuel loads until a decline in severity in the tallest and most voluminous forest canopies. Critically, indicators of canopy fuel volumes (like biomass and height) became decoupled from severity patterns in extreme topographic and weather conditions (slopes >20°; winds > 9.3 m/s). On the other hand, vertical continuity metrics like layering and ladder fuels more consistently predicted severity in extreme conditions – especially ladder fuels, where sparse understories were uniformly associated with lower severity levels.
> …
> Vertical fuel continuity is especially important for lower stratum ladder fuels, where greater continuity may enable flames to transition from ground and surface fires to higher canopy strata, thereby increasing contagion … [W]e observed that steep slopes, dry conditions and high winds overwhelmed most fuel structural conditions to constrain landscape severity patterns. Importantly, the sole exception to this pattern occurred with ladder fuels …
> … This finding suggests that high-intensity fuel treatments (which target entire forest canopies rather than focusing on lower stratum ladder fuels only) may have a limited effect on wildfire severity in extreme conditions. Conversely, sparse understories (<10 m) – even those that concurrently possess robust mid- strata (>10 m) – were associated

with reduced wildfire severity. This result has important management implications, especially for treatment interventions that focus on vertical fuel continuity such as understory thinning or cultural burns, which have been found to be effective in reducing high-severity burns2. Understory treatments have also been found to lessen externalities associated with more intensive thinning operations71 and simultaneously promote culturally- and ecologically-beneficial wildfire outcomes across a wide variety of topographic, weather and climate contexts1,72.

Hakkenberg, C. R., Clark, M. L., Bailey, T., Burns, P., & Goetz, S. J. (2024). Ladder fuels rather than canopy volumes consistently predict wildfire severity even in extreme topographic-weather conditions. *Communications Earth & Environment*, *5*(1), 1-11. https://doi.org/10.1038/s43247-024-01893-8; pdf.

Conserve Unroaded Areas

The purple polygons in the maps below show inventoried and uninventoried roadless areas potentially affected by this projects.

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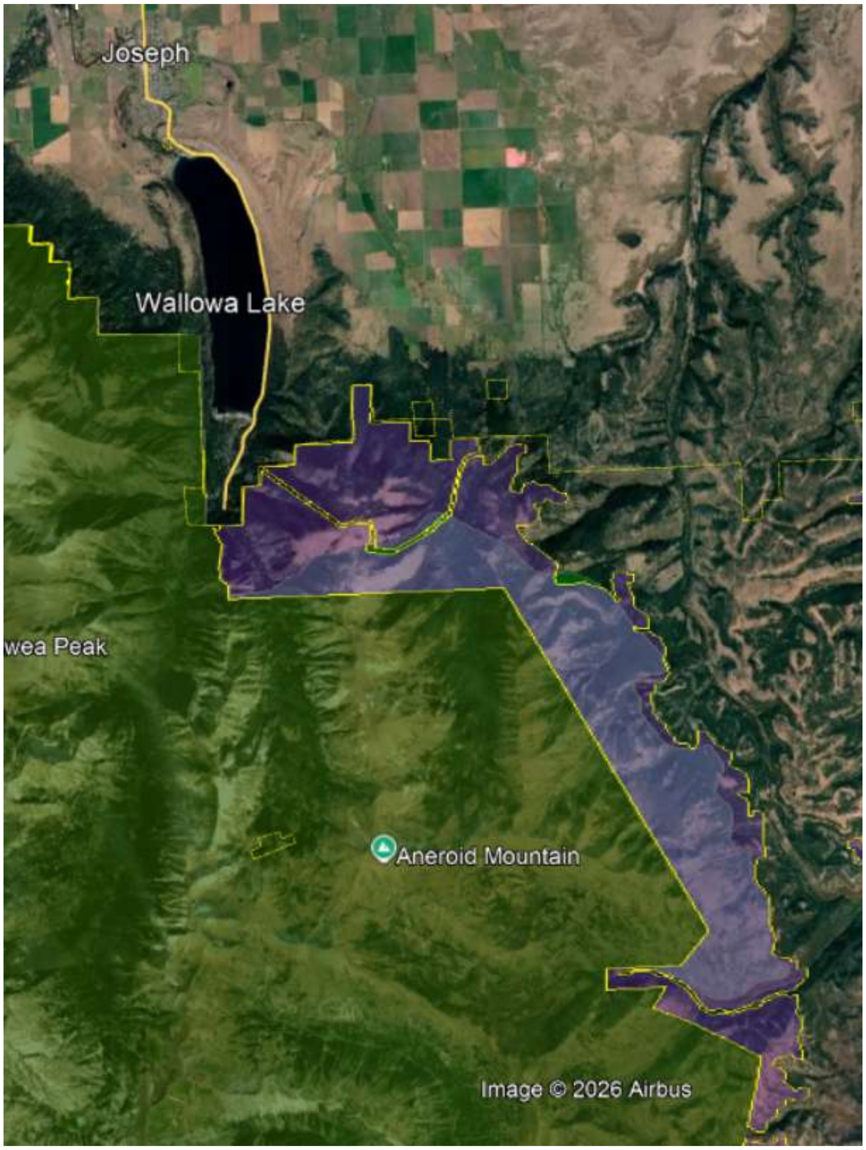

Large intact expanses of unfragmented habitat were once quite common but are now rare. Species evolved in the context of the large habitat patches that result from the natural disturbance regime. As just one important example, big game need large patches of security cover which is best provided by large unroaded areas. New science confirms that roads and logging tend to be contagious on the landscape (managed areas beget more management until little remains unmanaged), so to conserve the habitat values associated with wild places we have to prevent the first intrusions. The purpose and need for this project should include protecting and restoring large unroaded areas consistent with the natural range of variability. This goal is just as important as goals related to tree density or species composition that the agency too often relies on to justify logging and road building.

Large blocks of unroaded landscape under the primary influence of natural processes are an important part of the evolutionary system under which wildlife evolved. Those natural processes include the interplay of photosynthesis, succession, and various natural disturbance processes, like fire, wind, insects, etc. Decades of logging and roads, grazing and fire suppression have left the landscape highly modified and diminished the role of natural processes. Maintaining viable populations likely requires restoring the natural range of variability for large unmanaged habitat blocks. This project moves things in the wrong direction, representing a potentially significant effect. The EA and FONSI needs to address this important issue.

The NEPA analysis should discuss whether the project will push the landscape toward or away from the natural range of variability for large-scale habitat patches. Landscape analysis based on historic disturbance patterns suggests that historically the majority of old forest occurred in large patches. See Wimberly, M. 2002. Spatial simulation of historical landscape patterns in coastal forests of the Pacific Northwest. Can. J. For. Res. 32:13-16-1328 (2002) pdf. (72% of the total mature forest in the Oregon Coast Range was concentrated in patches >1,000 ha). These large patches of older forests that native fish and wildlife species evolved with are now severely underrepresented on the forest landscape and must be protected and restored.

Law et al (2022) make a strong case that conservation of intact forests advances the twin goals of protecting the climate and biodiversity, and that broad-scale thinning to reduce fire severity conflicts with climate and biodiversity goals.

> …
> "While primary forests of all extents have conservation value, areas of greater extent warrant particular attention where they persist, as they support more biodiversity, contain larger carbon stocks, provide more ecosystem services, encompass larger-scaled natural processes, and are more resilient to external stresses. The significance of large areas of primary forests has been highlighted by the global mapping of Intact Forest Landscapes (IFL) greater than 500 km2 in extent. While suitable for many purposes, other thresholds may be more suitable at regional and national levels that reflect local ecological factors." (IUCN Policy Statement on Primary Forests, https://www.iucn.org/sites/dev/files/content/documents/iucn_pf-ifl_policy_2020_approved_version.pdf, accessed on 22 April 2020).
> …
> Instead of regularly harvesting on all of the 70% of U.S. forest land designated as "timberlands" by the U.S. Forest Service, setting aside sufficient areas as Strategic Reserves would significantly increase the amount of carbon accumulated between now, 2050 and 2100, and reestablish greater ecosystem integrity, helping to slow climate change and restore biodiversity. The 2022 IPCC AR6 report stated that "Recent analyses, drawing on a range of lines of evidence, suggest that maintaining the resilience of biodiversity and ecosystem services at a global scale depends on effective and equitable conservation of approximately 30% to 50% of Earth's land, freshwater and ocean areas, including currently near-natural ecosystems (high confidence)." Continuing commercial timber harvest on a portion of the remaining public lands and tens of millions of hectares of private lands would continue to adequately supply a sustainable forestry sector.
>
> Preserving and protecting mature and old forests would not only increase carbon stocks and growing carbon accumulation, they would slow and potentially reverse accelerating species loss and ecosystem deterioration, and provide greater resilience to increasingly severe weather events such as intense precipitation and flooding.
> …
> Many of the existing forest management practices allegedly protect forests and homes from wildfire and are having severe adverse effects on forest ecosystem integrity and resilience, and are worsening climate change and diminishing biodiversity.
> …

> To summarize, harvest-related emissions from thinning are much higher than potential reduction in fire emissions. In west coast states, overall harvest-related emissions were about 5 times fire emissions …

Law, Beverly E., William R. Moomaw, Tara W. Hudiburg, William H. Schlesinger, John D. Sterman, and George M. Woodwell. 2022. Creating Strategic Reserves to Protect Forest Carbon and Reduce Biodiversity Losses in the United States. Land Vol. 11, no. 5: 721. https://doi.org/10.3390/land11050721, https://www.mdpi.com/2073-445X/11/5/721/htm. See also, Law BE, Berner LT, Mildrexler DJ, Bloemers RO and Ripple WJ (2022) Strategic reserves in Oregon's forests for biodiversity, water, and carbon to mitigate and adapt to climate change. Front. For. Glob. Change 5:1028401. doi: 10.3389/ffgc.2022.1028401. https://www.frontiersin.org/articles/10.3389/ffgc.2022.1028401/pdf.

Consider the following Dec. 1999 comments from WWF and CBI on the proposed National Forest Roadless Rule:

> In eastern Washington and Oregon, from 70 to 95% of the late-successional and old-growth forest that remain cover less than 100 acres. Three national forests (Colville, Wallowa-Whitman, and Winema) in this region have no late seral patches larger than 5,000 acres, and only one of the seven late-successional forests larger than 5,000 acres in three national forests (Malheur, Ochoco, and Umatilla) is protected (Henjum et al. 1994). For these reasons, the Eastside Scientific Society Panel (Henjum et al. 1994) recommended protecting all roadless areas of 1,000 acres or those smaller than 1,000 acres of ecological significance as key to restoring ecological integrity (aquatic and terrestrial) and maintaining the remaining patches of late-seral/old-growth forests across the region. Thus, it is imperative that the EIS recognize the importance of these smaller roadless areas for their contribution in maintaining late-seral forests throughout the nation and particularly in the regions identified above.
>
> Setting Conservation Thresholds (coarse vs. fine filter approaches) – the basic premise of a coarse-filter approach is to protect representative habitats (particularly in redundant sequence) within an ecoregion as a means for minimizing the need and costs of protecting or managing every species. Based on the above review, the supposition that roadless areas act a coarse filter approach to biodiversity is not only plausible but scientifically defensible. In general, large roadless areas are more likely to capture a representative array of habitat types and elevation bands, particularly in highly complex regions, than small roadless areas. However, in many ecoregions (both eastern and western examples provided here) what remains of landscapes with ecological integrity is smaller than the RARE II threshold of 5,000 acres. Consequently, the 5,000 acres threshold is not as ecologically meaningful as 1,000 acres for maximizing the conservation benefits and opportunities to achieve the twin goals of representation and ecosystem restoration. A more defensible threshold would be to use 1,000 acres as the initial starting point, back-filling with fine filter conservation approaches aimed at targeting smaller areas of ecological significance and ecological hot spots such as endemic species foci that operate over smaller spatial scales. This process would more effectively ensure an "adaptive" conservation approach that makes use of coarse and fine filters, achieves representation objectives, and is consistent with recommendations as proposed by the scientific community above and the Eastside Scientific Society (Henjum et al. 1994). To set the threshold at 5,000 acres would increase ecological risks significantly.

http://replay.waybackmachine.org/20060615084657/http://www.worldwildlife.org/wildplaces/kla/pubs/roadscope.pdf.

The Northwest Forest Plan LSOG Effectiveness Monitoring Plan says that "perhaps 80 percent or more [of the historic late-successional old-growth forest] would probably have occurred as relatively large (greater than 1,000 acres) areas of connected forest." Miles Hemstrom, Thomas Spies, Craig Palmer, Ross Kiester, John Teply, Phil McDonald, and Ralph Warbington; Late-Successional and Old-Growth Forest Effectiveness Monitoring Plan for the Northwest Forest Plan, USFS General Technical Report PNW-GTR-438; December 1998; https://www.fs.usda.gov/pnw/pubs/gtr_438.pdf. Currently, these 1,000 acre and larger patches are rare on the landscape.

Unroaded areas are strongholds for at-risk fish -

> The few areas that may meet RMOs [riparian management objectives] are typically found in wilderness, roadless areas, and undeveloped lands. … Many authors have reported on the consequences of forest management and the attendant proliferation of roads across the landscape. DellaSala et al. (2011) state that "the roaded, intensively managed landscapes of the other national forest lands have been closely correlated with heavily sediment-laden streams and dramatic changes in flow regimes (Espinosa et al. 1997; Trombulak and Frissell 2000; Center for Biological Diversity et al. 2001; Coffin 2007; Frissell and Carnefix 2007)." The small roadless areas that have been left "unmanaged", with a lack of logging and roads, play a critical role in maintaining high-quality water and protecting aquatic ecosystems. The clean water from remnant roadless areas is important to maintain healthy coldwater salmonid fisheries, sustain viable aquatic ecosystems, and help protect threatened species and ecosystems (Abell et al. 2000; Trout Unlimited 2004). Roadless area are an important refugia for many salmon and trout populations, as well as for a diversity of endangered freshwater species (Henjum et al. 1994; Huntington 1998; Trombulak and Frissell 2000; Center for Biological Diversity et al. 2001; Strittholt and DellaSala 2001; Oechsli and Frissell 2002; Strittholt et al. 2004; Petersen 2005). DellaSala et al. (2011) state that "restoration of salmon and trout fisheries in places with high road densities will likely fail without the pivotal role provided by roadless areas as fishery strongholds." Further, they state that "For many major drainages (entire watersheds of major rivers, such as the Columbia River Basin), roadless areas and other wilderness areas represent the last few percentages (typically 1% to 5%) of the landscape with a minimally disturbed, or near natural, hydrology.

Stuart, Amy 2022. Review and Comment on the "Forest Plans Amendment Forest Management Direction for Large Diameter Trees in Eastern Oregon and Southeastern Washington Environmental Assessment" and the Consequences and Impacts to Fish Habitat and Native Fish Populations in Riparian Areas. Expert Report for Oliver Stiefel, Crag Law Center. April 19, 2022.

Olden et al. (2026) documented the benefits of conserving roadless areas, especially related to drinking water, recreation, ad biodiversity.

> Forests, water and people are fundamentally interconnected. Rivers and their upstream forested watersheds provide numerous critical ecosystem services, including delivering clean, reliable drinking water, supporting timber production, sequestering carbon, and mitigating extreme floods and droughts [1–3].
>
> …
>
> People depend on forested lands to provide clean, abundant, and affordable water. Decades of research have consistently demonstrated that forested lands provide higher-quality water than other land cover types by intercepting precipitation, promoting infiltration, and filtering contaminants through soil and root biogeochemical processes [8–10].
>
> …

Forests play a crucial role in sustaining aquatic biodiversity by regulating the physical, chemical, and biological processes that shape the integrity of riverine ecosystems [18–20]. Protected and intact forested watersheds promote habitat complexity, regulate water temperatures, reduce sedimentation, and facilitate connectivity between terrestrial and aquatic ecosystems. These diverse functions help support exceptionally high riverine and riparian biodiversity, including aquatic invertebrates [21], amphibians [22], fishes [23], spiders [24], birds [25], bats [26] and mammals [27]. The benefits of forested watersheds for biodiversity also underpin a wide range of popular and economically-valuable recreational activities, including hunting, fishing, wildlife watching, and many water-based outdoor activities [28].

...

Forest management and operations can compromise the numerous societal, economic and ecological benefits of forested landscapes. Forestry practices, including associated logging roads, can threaten the ability of watersheds to supply clean, reliable water to human communities [30,31] by impairing water quality through increased sedimentation and carbon transport following timber cultivation and harvesting, and diffuse pollution through nutrient runoff following fertilizer application [32]. Moreover, by altering stream hydrology, increasing sedimentation, reducing shade and raising water temperatures [33,34], forestry practices can impact both freshwater and terrestrial biodiversity [35–37] and compromise recreational opportunities associated with hunting and fishing [38,39].

...

Concerns are mounting that rollbacks to the Roadless Rule could significantly impact the quality of drinking water for Americans, as well as recreational activities and biodiversity on or adjacent to National Forests [44,47]. To offer scientific insight into these issues, our study aimed to assess the vulnerabilities of weakening protections under the Roadless Rule by quantifying the benefits of IRAs for river protection, drinking water provision, and support for recreational activities and native aquatic biodiversity.

...

Here, we assess vulnerabilities to weakened protections under the Roadless Rule by quantifying the benefits IRAs provide for river protection, clean water provisioning, recreational opportunities, and aquatic biodiversity across the conterminous United States. We find that IRAs protect over 130,000 kms of streams and rivers, representing 2.5% of total river length, and serve as the primary protection mechanism for more than 100,000 kms of rivers (1.9%) when accounting for other regulatory and conservation frameworks. These protections are geographically widespread and particularly important in regions with limited alternative safeguards. IRA-influenced watersheds supply drinking water to at least 25 million Americans, with several states sourcing water for over one-third of their populations from these areas. Proximity of National Forests to urban centers amplifies these benefits, even in states with relatively small IRA extents. In addition, IRA-protected watersheds overlap substantially with high-demand hunting and fishing areas and support diverse aquatic biodiversity. Our results demonstrate that rescinding the Roadless Rule would diminish protections for rivers, and may compromise drinking water quality and affordability, reduce recreational opportunities, and threaten freshwater biodiversity. Safeguarding Roadless Rule protections is therefore essential for sustaining ecosystem services, supporting human well-being, and advancing broader conservation and resilience goals under increasing climatic and land-use pressures.

...

Efforts to downgrade, downsize, or degazette IRAs are in stark contrast with mounting calls from conservation scientists to expand and better manage protected areas [67]. In addition to the primary benefits demonstrated in this study, IRAs enhance the size and connectivity of other large protected areas [44], thereby buffering them from current and future human land-use pressures [68]. Roadless areas also play an important role in overall forest and wildland fire management strategies. From 1992 to 2024, wildfire-ignition density was lowest in designated wilderness areas (1.7 fires/1,000 hectares), followed closely by that in IRAs (1.9 fires/1,000 ha). The highest wildfire-ignition density was in lands within 50 meters of roads (7.4 fires/1,000 ha).

Olden JD, Postel SL, Dombeck MP, Kesting H, Freeman P, Comte L (2026) Assessing the value of the U.S. Roadless Rule for people and nature. PLOS Water 5(7): e0000538. July 15, 2026. https://doi.org/10.1371/journal.pwat.0000538. pdf.

"America's roadless areas produce the cold, clean water that trout and salmon depend on, they give elk and mule deer the space they need to thrive, and they offer hunters and anglers access to quality hunting and fishing that's getting harder to find," says president and CEO of Trout Unlimited Chris Wood. ... In Oregon, 83 percent of the high-quality spawning and rearing habitat for bull trout is found in roadless areas. ... [R]oadless areas provide the core habitat that elk, mule deer, and other critters rely on. These areas contain forage, cover, and plenty of room for animals to migrate between their summer and winter ranges.

Collins 2026. Roadless Areas Provide 10 Times Better Elk Hunting and Support the Best Trout Streams in the West, Study Shows. Outdoor Life. March 19, 2026. https://www.outdoorlife.com/conservation/roadless-report-better-hunting-fishing/

Mildrexler et al. (2026) do a great job highlighting the benefits of large and small roadless areas and the perils of more roads and logging.

A century of intensive logging resulted in over 386,000 miles of roads built on US national forests, enough to circle the globe about 15 times, with an estimated additional 60,000 miles of illegal unauthorized roads (USDA, 2001). This massive road system contributes to reductions in the quality and quantity of water, habitat fragmentation, spread of invasive plants, increased wildfire risk, and other problems that undermine ecological integrity (Aplet et al., 2026; Healey, 2020; Gucinski et al., 2001; Lindenmayer et al., 2025; Wisdom et al., 2018). In this context, remaining roadless areas have enormous ecological value, including roadless areas that are larger than 1000 acres but less than the 5000-acre minimum criteria for IRA designation (DellaSala et al., 2011; Henjum et al., 1994; Rhodes et al., 1994).

...

The high forest integrity scores for IRAs are underpinned by healthy ecosystem functions and the many valuable well-documented ecosystem services that IRAs provide (DellaSala et al., 2011; Dietz et al., 2021; Talty et al., 2020). If protected, IRAs can make important contributions toward achieving climate and biodiversity targets and safeguarding critical water resources (Crist et al., 2005; DellaSala et al., 2011; Law et al., 2021; Loucks et al., 2003).

...

Exceptional water values

IRAs are profoundly important for their role in preserving the natural hydrology of forest ecosystems, a quality that is now rare in temperate forests due to the long and intense history of resource extraction (Haddad et al., 2015; Usher, 1987; Wilcove et al., 1986). This includes above and belowground water movement and flow patterns which are highly vulnerable to human impacts such as road building and logging (Kastridis, 2020). Forests and water are an integrated system, and native forests and soils are particularly important for water flows and supplies (Creed et al., 2019). Because IRAs are predominantly located in mountainous terrain, they protect topographically complex headwater stream systems that feed into larger rivers (Fig. 2). These areas provide numerous valuable ecosystem services such as cold water refugia for fish like bull trout and salmon, habitat for sensitive plant species, resilience to climate change, and drinking water supplies to millions of Americans (DellaSala et al., 2011; Isaak and Luce, 2023; Liu et al., 2022). In the Western US, about 90% of people are served by public drinking water systems derived from NFS lands that include 71% of all IRAs in the nation (Liu et al., 2022).

...

Intact headwater streams that IRAs protect are superior at retaining, filtering, and slowly releasing water throughout the year (DellaSala et al., 2011; Furniss et al., 1991). This regulation of water quantity and quality is vital for supporting late-summer stream flows important to fisheries, cultural values, and recreational opportunities (Colvin et al., 2019). IRAs also contribute water supplies to downstream agricultural use. Through regulation of water flow, roadless areas help buffer species and services important to economies from climate impacts.

...

Strongholds for wildlife and wildlands

IRAs are among the most wild, undeveloped lands both in the nation and within their respective states (Talty et al., 2020). They provide habitat for hundreds of vulnerable wildlife species (Dietz et al., 2021), and they are key to the conservation of threatened, endangered, or imperiled species (Loucks et al., 2003). Large roadless areas serve as source populations for many species including wide-ranging carnivores like grizzly bear (Ursus arctos), wolverine (Gulo gulo), Canada lynx (Lynx canadensis) and fisher (Martes pennanti) (Carroll et al., 2001; Noss and Cooperrider, 1994; Sanderson et al., 2002). IRAs are strongholds for fish, including threatened salmonids and bull trout (Gucinski et al., 2001; Rhodes et al., 1994). They provide a safe haven for old and ancient trees that contribute unique evolutionary diversity having survived long cycles of environmental change (Cannon et al., 2022). Old-growth forests are a key component of IRAs and provide unique habitats for threatened species, and buffer sensitive species from warming (Betts et al., 2018; Piovesan et al., 2022).

IRAs are often located near existing reserves, thereby enhancing landscape connectivity of the larger reserve system. This proximity serves to increase the size of large intact habitats and reduce distance between core areas. Additionally, existing reserves tend to be at higher elevations than nearby IRAs that extend into adjacent lower elevation areas with unique wildlife habitats and ecosystem types (Aycrigg et al., 2016; Crist et al., 2005; Talty et al., 2020). Roadless areas that physically link existing reserves together safeguard system functionality that is of existential importance to wide-ranging species and critical to climate adaptation. IRAs expand ecoregional and elevational representation of the reserve system and increase the number of areas large enough to provide refugia for species needing large tracts of land relatively undisturbed by people (Develice and Martin, 2001). ... Present and future ecological integrity of existing reserves is ultimately intertwined with and bolstered by the roadless lands near to them.

...

Forest carbon and climate mitigation values

Because IRAs have been protected from road building, they contain a significant amount of mature and old-growth forests that were often targeted for logging in roaded areas of national forests. Mature and old-growth forests with large trees play an outsized role in storing and accumulating carbon from the atmosphere, making them essential for climate change mitigation (Moomaw et al., 2019; Mildrexler et al., 2020; Law et al., 2022; Birdsey et al., 2025). A study of US forest carbon stocks found that IRAs hold 22%

of the total mature forest carbon stock and 27% of the total old-growth carbon stock on national forest lands (Birdsey et al., 2025). In addition to their large, accumulated carbon stocks, mature and old forests provide co-benefits to biodiversity, water availability, and buffering climatic extremes linked to their ecological integrity and ecosystem functions (Frey et al., 2016; Perry and Jones, 2016; Moomaw et al., 2019; Mildrexler et al., 2023; DellaSala et al., 2025). IRAs are thus high-priority areas that could be strategically protected (GAP 1 or 2) to meet climate preservation targets of 30% protection by 2030, and 50% by 2050 (Law et al., 2021).

Medicine, food, and culture
Roadless areas play an important role in provisioning foods and medicines that support the nutritional, economic and cultural well-being of a large percentage of US citizens, especially among rural and Indigenous communities (Chamberlain et al., 2025).
...
Many IRAs are on the ancestral homelands of Tribes and hold spiritual, cultural, and ecological significance to Indigenous cultures (Vest, 1988).
...

Risks of rescinding the roadless rule

National forest roads - unmanageable and underfunded
With over 386,000 miles of roads on national forest lands, the USFS struggles to maintain a fraction of the existing road system. Deteriorating roads and road densities that exceed management standards degrade valuable ecosystem services, such as water quality and habitat security for wildlife (USDA, 2002; Wisdom et al., 2018).
...

Opening roadless areas to road building jeopardizes aquatic values
The exceptional aquatic values of IRAs are seriously threatened by road building. Negative consequences of roads include increased risk of sedimentation and debris slides, stream flow alterations, habitat fragmentation, invasion by exotic species, dispersal of pathogens, impacts on water quality such as chemical contamination, degradation of aquatic habitat, and other human actions (for example, trash dumping, illegal hunting, fires) (Gucinski et al., 2001; Wemple et al., 2018). Roads significantly elevate erosion and sediment delivery to streams (Gucinski et al., 2001; Kastridis, 2020). They disrupt subsurface flows essential to the maintenance of baseflows, and channel water into ditches and culverts, causing multiple negative impacts on water quality and hydrology of watersheds (Wemple and Jones, 2003; Wemple et al., 2018). Altogether, roads are one of the greatest sources of aquatic degradation for fish and other species (Rhodes et al., 1994). Water quality impaired by road systems and forest cover loss may require expensive restoration or water treatment systems to accomplish what intact watersheds do free of cost (DellaSala et al., 2011; Gucinski et al., 2001; Warziniack et al., 2017).
...

More roads lead to more wildfires
Although the rationale for rescinding the Roadless Rule to permit road building in IRAs is given as reducing wildfire risk, in fact, a wide body of research shows that the opposite is true (Aplet et al., 2026; Balch et al., 2017; DellaSala and Frost, 2001; Yang et al., 2006). Human-started wildfires are an increasingly costly and dominant driver of fire regimes in the US, with human-related ignitions concentrated near forest roads (Calef et al., 2008; Faivre et al., 2014; Higuera et al., 2023; Narayanaraj and Wimberly, 2012; Syphard et al., 2025). A recent assessment of the impacts of roads on wildfire ignition density found that from 1992 to 2024, in all 8 contiguous-US Forest Service regions combined, the highest wildfire-ignition density was in lands within 50 m of roads (Aplet

et al., 2026). The lowest wildfire ignitions were in designated Wilderness and IRAs (Aplet et al., 2026). Another study analyzed over 1.5 million fires across the US from 1992 to 2012 and found a significant increase in the frequency of human-caused wildfire ignitions, which accounted for 84% of all wildfires and 44% of total area burned (Balch et al., 2017). Human activities associated with roads alter fire regimes in three primary ways (Bowman et al., 2011). 1) Humans change the distribution and density of ignitions, with roads being a primary location where increased ignitions occur. 2) Humans shift the seasonality of burning by introducing ignitions into landscapes at times when natural starts from lightning are rare, but fuels are sufficiently dry enough to ignite and carry fire (Balch et al., 2017; Higuera et al., 2023). … 3) Humans alter available fuels especially along roadsides. Roads are strongly associated with the spread of invasive plant species in national forests (Healey, 2020), and invasive plants provide highly flammable vegetation to dry roadsides, where human-ignitions most frequently occur. …

…

Wilderness areas and IRAs are critical intact landscapes where natural fire regimes can function, which helps reduce fuel build-up, modulate future wildfire activity, and confer landscape resilience to climate change (Koch, 1935; Bradley et al., 2016; Johnston et al., 2021). Qualities that make these areas relatively good places to manage natural fire for resource benefit at relatively low risk, such as topographic complexity, and remote backcountry settings, also make them costly, difficult, and hazardous places for on-the-ground fire suppression activities (Dunn et al., 2020). Keeping IRAs intact and free from roads and emphasizing natural processes in these areas is an efficient, cost-effective, risk-reduction management strategy, particularly for an agency that is currently looking to reduce costs associated with land management and adapt ecosystems to a changing climate.

…

Logging in IRAs is damaging and uneconomic

Logging within IRAs runs counter to the urgent need to prevent forest degradation of intact forest ecosystems (Moomaw et al., 2019; Pan et al., 2024; Watson et al., 2016). The protection of Earth's remaining intact forests, including IRAs, is necessary to help humanity adapt to some of its greatest challenges – water security, climate change, and biodiversity loss. Moreover, directing limited agency resources toward costly and ecologically damaging backcountry logging takes resources away from areas where restoration is a higher priority, putting communities and ecosystems at greater risk. Logging activities in IRAs are far more costly to plan and implement compared with roaded areas (DeVelice and Martin, 2001; Hjerpe et al., 2017). For operators, the high cost of transport from relatively remote locations contributes to tight economic margins which spur more aggressive logging to offset costs, such as logging large-diameter trees. Logging large trees rapidly releases decades to centuries of accumulated carbon to the atmosphere worsening climate change and degrading forests (Law et al., 2021; Mildrexler et al., 2020, Mildrexler et al., 2023). Timber harvest in IRAs is misguided economic policy because it degrades roadless areas and the valuable ecosystem services they provide, exacerbates climate change, and redirects resources away from protecting communities.

Mildrexler et al 2026. Roadless rule rescission threatens highest integrity forest ecosystems in the United States. Biological Conservation. Volume 321, September 2026, 111950. https://doi.org/10.1016/j.biocon.2026.111950.

In 1994, several scientific societies submitted a report to Congress and the President recommending conservation of roadless areas larger than 1,000 acres. This report is described by the Interior Columbia Ecosystem Management Project as a “Major Stud[y] of Eastside Ecosystems and Management.”

> Because roads crisscross so many forested areas on the Eastside, existing roadless regions have enormous ecological value. ... Although roads were intended as innocuous corridors to ease the movement of humans and commodities across the landscape, they harm the water, soils, plants, and animals in those landscapes. [p 6]
>
> ...
>
> **4. Do not construct new roads or log within existing (1) roadless regions larger than 1000 acres or (2) roadless regions smaller than 1000 acres that are biologically significant.**
>
> Roadless regions constitute the least-human-disturbed forest and stream systems, the last reservoirs of ecological diversity, and the primary benchmarks for restoring ecological health and integrity. Roads fragment habitat; alter the hydrological properties of watersheds; discharge excessive sediment to streams; increase human access and thus disturbance to forest animals; and influence the dispersal of plants and animals, especially exotic species, across the landscape. Because many forested areas in eastern Oregon and Washington are heavily dissected by roads, the ecological value of existing roadless regions is especially high. [pp 8, 202]
>
> ...
>
> Our analysis defined a roadless region as any region where all points within an LS/OG stand were at least 100 meters from a road or trail.
>
> ...
>
> What remains of ponderosa pine and Douglas fir LS/OG is the least protected today. In the four national forests within the Blue Mountains, 48% of the land base above 6000 feet lies in wilderness areas, whereas only 10% of the land below 6000 feet, where ponderosa pine occurs, receives such protection ... [p 110]
>
> ... Fifth, roads, whose impact on aquatic and terrestrial resources is well documented, are widely distributed in eastside forests. Road densities in western Colville, Winema, and Ochoco National Forests average 2.5, 3.5, and 3.7 miles per square mile, respectively. Densities reach 8.8 and 11.9 miles per square mile in some watersheds. In the national forests of Oregon's Blue Mountains (Table 5.2), less than 10% of roadless regions on slopes steeper than 60% are now protected, less than 15% on slopes of 30-60%. Moreover, roadless regions, like LS/OG patches, are extensively fragmented. In northern Ochoco National Forest, nearly one-third (38,882 acres) of 128,140 acres of roadless region consists of patches smaller than 1000 acres. (RARE II surveys underestimated total roadless area in this region [45,700 acres] because they considered only areas larger than 5000 acres.) [p 110]
>
> ...
>
> CONCLUSIONS
>
> Watersheds outside wilderness and roadless regions in eastern Oregon and Washington are highly degraded. Without an intensive restoration effort on federal and private lands, many native aquatic stocks and species risk extinction. [p 160]
>
> ...
>
> Because the distribution of many native fishes in Oregon's national forests has receded into steep headwater areas, USFS has a vital role in protecting the few remaining watershed refugia and preventing further damage to already degraded habitats downstream. Critical to securing eastside [aquatic diversity areas] ADAs as aquatic refugia are the remaining roadless regions, sources of large wood from LS/OG forests, and the integrity of riparian corridors on national forestlands. [p 168]
>
> ...

7. High road densities harm many forms of wildlife.
The ecological integrity of existing LS/OG patches and other roadless regions can only be maintained if these sites are not disturbed by the construction of roads. Roadless regions serve as critical refuges for terrestrial wildlife sensitive to human disturbance. Road densities in LS/OG patches that already have roads should be reduced to less than 1 mi/mi^2. Achieving this goal is vital to rehabilitation of eastside fisheries and terrestrial resources. [p 197]

Henjum, M.G., J.R. Karr, D.L. Bottom, D.A. Perry, J.C. Bednarz, S.G. Wright, S.A. Beckwitt and E. Beckwitt. 1994. Interim Protection for Late-Successional Forests, Fisheries, and Watersheds: National Forests East of the Cascade Crest, Oregon and Washington. A Report to the Congress and President of the United States. Eastside Forests Scientific Society Panel.

The importance of conserving unroaded areas is highlighted by the finding that forest fragmentation in the U.S. continues to increase. Riitters et al (2012) compared the decline in total forest area to the decline in interior forest conditions from 2001 to 2006 at 5 spatial scales and found that interior forest is declining faster than total forest at all spatial scales, with greater losses in the largest spatial scales.

Table 1 | Scale-dependent change in forest interior area from 2001 to 2006. Forest interior area was measured at five spatial scales defined by neighborhood size and was summarized for the conterminous United States

	Forest interior area			
	2001	2006	Change	
Neighborhood size (ha)	(Thousand km^2)	(Thousand km^2)	(Thousand km^2)	(Percent)
4.41	1,419	1,374	−45	−3.2
15.2	1,151	1,102	−49	−4.3
65.6	867	817	−50	−5.8
590	523	482	−41	−7.8
5,310	277	248	−29	−10.5

Riitters, K.H. & Wickham, J.D. (2012) Decline of forest interior conditions in the conterminous United States. Sci. Rep. 2, 653; DOI:10.1038/srep00653. https://www.srs.fs.usda.gov/pubs/ja/2012/ja_2012_riitters_002.pdf.

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Each substantive issue discussed in these comments should be (i) incorporated into the purpose and need for the project, (ii) used to develop NEPA alternatives, including mitigation alternatives, that balance tradeoffs in different ways, (iii) carefully analyzed and documented as part of the effects analysis, and (iv) used to inform the finding of significance.

Please post to the project website, links to all relevant ESA and EFH consultation documents, RMPs, watershed analyses, and other supporting documents relied on in the NEPA analysis.

The NEPA analysis should clearly document how proposed activities will comply with substantive requirements including applicable laws and the LRMP as amended.

Please post to the project website before the public comment period, georeferenced maps of the proposed activity units that can be used to navigate in the field using apps such as Avenza.

Please provide Oregon Wild with timely notice of any forthcoming comment opportunities, and any draft and final decisions on this project. If the agency discovers new information or changed circumstance or modifies the project or the analysis after the decision, Oregon Wild requests to be notified and provided an opportunity to comment.

Note: If any of these web links in these comments are dead, they may be resurrected using the Wayback Machine at Archive.org. http://wayback.archive.org/web/

Sincerely,

Doug Heiken

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