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First name: Chad
Last name: Hanson
Organization: John Muir Project
Title: Director
Comments: 17 March 2025

To: Jacque Buchanan, Regional Forester, Pacific Northwest Region

Jennifer Eberlien, Regional Forester, Pacific Southwest Region

Re: Draft EIS, Northwest Forest Plan Amendment

Dear Regional Foresters,

On behalf of the John Muir Project of Earth Island Institute, Conservation Congress, Blue Mountains Biodiversity Project, Protect Our Woods, Alliance for the Wild Rockies, Battle Creek Alliance, Defiance Canyon Raptor Rescue, Klamath Forest Alliance, Friends of the Clearwater, Gallatin Wildlife Association, W.A.T.E.R., Friends of the Bitterroot, and Western Watersheds, I am submitting these comments on the Draft EIS (DEIS) proposing to amend the Northwest Forest Plan (NWFP). For the reasons expressed below, the DEIS violates the provisions of the Endangered Species Act (ESA), as well as the National Environmental Policy Act (NEPA) statute, as amended by the Fiscal Responsibility Act of 2023, and we urge you to withdraw this DEIS and proposal.

ESA VIOLATION

The Proposed Action (and Alternative D) violates Section 7 of the ESA. The DEIS admits repeatedly that Northern Spotted Owl populations continue to decline, and admits that the huge increase in logging of larger/older trees in Northern Spotted Owl habitat would accelerate this population decline in the [ldquo]short term[rdquo], but attempts to justify this by making several wholly unsupported conclusory statements claiming that benefits to the Spotted Owl[mdash]in particular, milder wildfire behavior and an implied hint about increased forest carbon (DEIS, p. 3-90 through 3-93)[mdash]would magically accrue in the long-term. As discussed below, the DEIS offers no citation to scientific sources to support these conclusory statements, and ignores vast bodies of scientific evidence that contradict these conclusory statements. Making matters worse, the DEIS neglects to include a Biological Assessment regarding impacts of the proposed increase in logging on Northern Spotted Owls.

NEPA VIOLATIONS

Inadequate Range of Alternatives

The DEIS fails to consider a reasonable range of alternatives. The DEIS states that Alternatives B and D would increase decadal acres to be logged by twofold to fourfold relative to the current NWFP, and would increase logging levels (MMBF, millions of board feet of sawtimber) by up to threefold relative to the current NWFP (DEIS, p. 3-33, and Table 3-27). Much of this would occur by allowing, under Alternatives B and D, intensive logging within older forest stands in spotted owl habitat, as well as removal of much older and larger trees in such habitat, compared to Alternative A, the current NWFP. The DEIS sets up Alternative C, which would moderately reduce logging levels, as a straw man to fail, by inexplicably reducing the decadal acres of wildland fire management that would occur (DEIS, Table 3.16), despite an acknowledged ongoing wildland fire (lightning fires, prescribed fires, and indigenous cultural burning) deficit in these forests (DEIS, Fig. 3.3), and by minimizing Tribal inclusion relative to the other action alternatives, Alternatives B and D (see Table 2-1). The DEIS violates NEPA by failing to include and fully analyze an action alternative, or alternatives, that would substantially reduce logging levels (e.g., by 50%, or 75%), while retaining and not weakening all existing NWFP forest protection standards, substantially increasing wildland fire, including lightning fires, prescribed burns, and indigenous cultural burning, to levels that erase the fire deficit (levels of fire that are higher than any of the other action alternatives), and maximizing Tribal inclusion by including all of Tribal inclusion provisions in the other action alternatives.

Such an alternative, or alternatives, would meet the stated purpose and need and would be technically and economically feasible. From an economic standpoint, the DEIS itself shows that, as logging levels declined on federal and non-federal lands since the late 1980s, employment and average annual wages (adjusted for inflation and presented in 2023 dollars) have increased (DEIS, Figs. 3-8, 3-9, and 3-10). From a fire standpoint, the Forest Service already engages in managed wildfires from lightning strikes, prescribed burns, and indigenous cultural burning (DEIS, Fig. 3-3), and acknowledges in Alternatives B and D that increased annual burning is feasible. Moreover, the Forest Service[rsquo]s own science concludes that [ldquo][hellip]fire is usually more efficient, cost-effective, and ecologically beneficial than mechanical treatments[rdquo] (North et al. 2015), and a recent analysis by the Plumas National Forest admits that fire alone, without prior thinning, is feasible and, in fact, is far less expensive per acre--about one-sixth the per-acre cost of mechanical thinning plus burning (USFS 2023a,b [CPP project documents]).

Further, even thinning of small, subcanopy trees is not necessary prior to introducing or restoring fire, based on half a century of studies, many of which were authored by Forest Service and other government scientists. The table below concisely summarizes some of the many studies indicating that fire alone can be applied, during natural fire season, in Western U.S. conifer forests without prior tree removal, including in the very densest and most long-unburned forests. Land managers simply conduct or allow burning during mild to moderate fire weather.

[SEE PDF for table of fires]

Failure to Take a Hard Look, Failure to Use Reliable Data, Failure to Ensure Scientific Accuracy and Integrity

Failure to take a hard look at reasonably foreseeable impacts, failure to use reliable data, and failure to ensure scientific accuracy and integrity regarding the analysis of impacts to Northern Spotted Owls

The DEIS includes less than two pages of text for the analysis of impacts from the alternatives, including the proposed action, on Northern Spotted Owls (DEIS, p. 3-74 to 3-75 and 3-79 through 3-80), despite Spotted Owl conservation being at the core of the DEIS, ostensibly. An additional three pages of text (DEIS, p. 3-76 through 3-78) are included to represent impacts to all species generally. Even more alarmingly, the DEIS, p. 3-76, admits that the actual analysis of adverse impacts to Northern Spotted Owls, due to the huge increase in logging of larger/older trees in Northern Spotted Owl habitat that would occur under the proposed action (and Alternative D), was not included in the DEIS, thus denying the public of the opportunity to comment on such analysis. Specifically, the DEIS (p. 3-76) admits:

[ldquo]Detailed and more comprehensive analysis on potential effects to T&E [Threatened and Endangered] species and designated critical habitat under the action alternatives will be provided in the BAs [Biological Assessments] being prepared as part of ESA consultation with the USFWS and NMFS and will be provided in the final BE and summarized in the Final EIS. This section summarizes general potential effects to T&E wildlife, fish, invertebrate, and plant species and their designated critical habitat based on the potential effects of the action alternatives to habitats (i.e., vegetation types) they are associated with. This preliminary analysis assumes these habitat changes are likely to affect T&E species that utilize those habitats.[rdquo]

(emphasis added)

This shocking omission renders the DEIS invalid and violates NEPA. This cursory analysis does not even come close to a hard look at reasonably foreseeable impacts to Northern Spotted Owls from a doubling to tripling of logging levels, and removals of larger and older trees, in Spotted Owl habitat. Serious impacts and contrary science (including contrary science from the Forest Service[rsquo]s own scientists) were ignored by, and not cited or discussed in, the DEIS. Moreover, nearly all of the science discussed below regarding impacts to Spotted Owls, and which contradicts the DEIS[rsquo]s assumptions regarding impacts of logging on this species, impacts of logging on wildland fire behavior and effects regarding Spotted Owls, and the relationship between Spotted Owls and wildland fire, including high-intensity fire, was either completely ignored by, and not cited or discussed in, the Forest Service[rsquo]s 2018 Science Synthesis (Spies et al. 2018), the Forest Service[rsquo]s 2020 Bioregional Assessment, and the Forest Service[rsquo]s 2021 Bioregional Assessment Supplemental Report, or were published after these documents were released.

Adverse impacts of logging to spotted owls were ignored by DEIS

Current research confirms severe adverse impacts to spotted owls from mechanical thinning and post-fire logging, and neutral or positive effects from big wildfires in the absence of post-fire logging (Hanson et al. 2018, Lee 2020, Hanson et al. 2021). The U.S. Fish and Wildlife Service, in its recent proposal (see attached 60-day comments on the proposed listing, which we incorporate herein by reference) to list the California spotted owl as threatened in the Sierra Nevada, and noted that mechanical thinning and post-fire logging have an adverse impact on spotted owls.

The DEIS attempts to justify increased logging by assuming that increased logging would reduce high-intensity fire (which is contradicted by abundant science, as discussed below), and by assuming that high-intensity wildfire would convert some areas of suitable habitat to unsuitable by killing most or all of the trees. However, high-intensity fire patches are highly suitable foraging habitat for spotted owls, so long as they are not subjected to post-fire logging (e.g., Lee 2020, Hanson et al. 2021, USFS 2023), as USFS proposes to do on tens of thousands of acres in the Project area. In contrast, mechanical thinning has been found to reduce spotted owl occupancy by 43% (Stephens et al. 2014).

Jones et al. (2020) admits that spotted owls actively forage in high-intensity fire areas, and conclude the following: [ldquo]Spotted owls avoided areas that had experienced post-fire salvage logging[rdquo]. Kramer et al. (2021) has also been cited for the proposition that spotted owls forage less deeply into the interior of larger high-intensity fire patches. However, neither that study nor Jones et al. (2020) took into account the fact that spotted owls often nest in lower-intensity fire areas, and forage less as they get farther and farther away from the nest site, regardless of whether such more distant areas are in high-intensity fire patch interiors or in dense, old forest, as found in Bond et al. (2009) and as explained in Hanson et al. (2021). Thus, the Jones et al. (2020) and Kramer et al. (2021) studies are misleading because they do not account for distance from the nest site. Spotted owls also forage less into the interior of dense, old forests as distance increases from nest sites. Only Bond et al. (2009) accounted for distance from nest sites and they found that spotted owls preferentially select high-intensity fire areas up to 1500 meters away from nest sites, including in areas much more than 100 meters into the interiors of high-intensity fire patches. Bond et al. (2009), Hanson et al. (2018), and Hanson et al. (2021) find that mature/old forest that experienced high-intensity fire, and becomes complex early seral forest habitat ([ldquo]snag forest habitat[rdquo]) is suitable spotted owl habitat, specifically suitable foraging habitat, and Lee (2018, 2020) find that, in the absence of post-fire logging, large wildfires have neutral or positive effects for spotted owls, and spotted owl reproduction increases with more high-intensity fire. In fact, new evidence indicates that Northern Spotted Owls can and will successfully nest and reproduce abundantly in the interior of a large high-intensity fire patch, which has not been post-fire logged (Chi 2025). Current evidence, ignored by the DEIS, shows that post-fire logging, not fire itself, is the threat to Northern Spotted Owl populations and may tend to encourage and facilitate barred owl incursions (Bond et al. 2022; see also Bond and Hanson 2014 regarding the potential for logging in general, including thinning, to facilitate and increase barred owl incursions).

The DEIS misrepresents the science, and improperly minimizes disclosure of impacts, by only considering lower-intensity fire areas in dense mature/old forest as suitable spotted owl habitat.

The US Fish and Wildlife Service[rsquo]s proposal to list the California spotted owl under the Endangered Species Act acknowledges serious harm to spotted owls from mechanical thinning and post-fire logging, yet the NWFP DEIS not adequately address this. For example:

On p. 62 of the USFWS listing proposal, USFWS admits that [ldquo]mechanical thinning can decrease California spotted owl occupancy and is negatively correlated with reproduction (Tempel et al. 2014a, p. 2089; Stephens et al. 2014, p. 903; Tempel et al. 2022, p. 19)[rdquo], and further concludes on p. 62 that [ldquo]there is evidence of reduced foraging in fuel treatment areas[rdquo] and [ldquo]Thinning may have negative short-term effects on prey species by increasing the risk of predation by removing above-ground cover and reducing canopy connectivity, and thinning may remove suitable nesting substrates[hellip][rdquo]

On p. 63, USFWS admits that [ldquo]California spotted owls inhabit areas of low-medium severity fire, patchy high-severity fire, and areas with dead trees; therefore, salvage logging likely reduces the amount of habitat available for California spotted owls (Gutie´rrez et al. 2017, p. 276).[rdquo] USFWS further admits, on p. 63, that there is evidence that [ldquo]California spotted owl occupancy decreases with salvage logging (Lee et al. 2013, p. 1327; Lee and Bond 2015, p. 228; Hanson and Chi 2021, p. 5)[rdquo], and that [ldquo]Salvage logging can be a threat to California spotted owls when their habitat components of large trees, coarse woody debris, and habitat heterogeneity are removed from the landscape, resulting in a decrease in occupancy at the population level.[rdquo] USFWS also admits, at the top of p. 64, that the Sierra Nevada Forest Plan Amendment even allows salvage logging in CSO PACs that are occupied by CSOs after fires, so long as the Forest Service merely claims that the territory is no longer suitable for CSOs postfire, which the agency can do under the forest plan amendment even if CSOs are nesting and reproducing (Lee and Bond 2015, Hanson et al. 2018).

Potential for mechanical thinning and post-fire logging to increase wildfire intensity and overall tree mortality in spotted owl habitat was ignored by DEIS

The Forest Service[rsquo]s own scientists conducted two enormous, landscape-scale analyses regarding forest density, wildfire severity, and Northern Spotted Owl conservation[mdash]both of which directly contradicted the core assumptions in the DEIS[mdash]i.e., the DEIS[rsquo]s assumptions that denser, mature/old forests in Northern Spotted Owl habitat will burn more intensely in wildfires, ostensibly resulting in greater reductions in Northern Spotted Owl nesting/roosting habitat, and less dense, more open forests, such as those resulting from mechanical thinning, will supposedly burn less intensely. In violation of NEPA, the DEIS[rsquo]s Forest Stewardship and Fire Resistance and Resilience sections, and other sections, ignored this research, along with dozens of other studies (including numerous additional studies by Forest Service scientists) with findings that contradict the DEIS[rsquo]s assumptions, as discussed below.

Lesmeister et al. (2019) concluded the following after a large-scale empirical scientific analysis:

[ldquo]Thinned forests have more open conditions, which are associated with higher temperatures, lower relative humidity, higher wind speeds, and increasing fire intensity. Furthermore, live and dead fuels in young forest or thinned stands with dense saplings or shrub understory will be drier, making ignition and high heat more likely, and the rate of spread higher because of the relative lack of wind breaks provided by closed canopies with large trees.[rdquo]

In a follow-up study, these Forest Service scientists (Lesmeister et al. 2021) recently conducted a massive, landmark 30-year analysis of several hundred wildfires[mdash]a substantial portion of which was conducted in dry, frequent-fire forests[mdash]and found that, in these forest types (most frequent fire regime), the densest forests with the highest biomass, highest canopy cover, and highest tree densities, on average had lower wildfire severities when fires occurred when compared to more open, lower-density forests resulting from mechanical thinning and other logging operations (see Figure 4b from Lesmeister et al. 2021 below). The study found the same result in mesic forests with less frequent fire regimes (see figure below). The Forest Service scientists concluded that more open forests with lower biomass had higher fire severity, because the type of open, lower-biomass forests resulting from thinning and other logging activities have [ldquo]hotter, drier, and windier microclimates, and those conditions decrease dramatically over relatively short distances into the interior of older forests with multi-layer canopies and high tree density...[rdquo]

[SEE PDF for figure]

(Figure 4 from Lesmeister et al. 2021[mdash]values above 1.0 are relatively more likely, and values below 1.0 are relatively less likely)

Other Forest Service scientists, in Lydersen et al. (2014), reported the following finding in the 257,000-acre Rim fire of 2013:

[ldquo]Density of small to intermediate size trees (20[ndash]40 cm dbh in the analysis with all plots and both 40[ndash]60 cm and 60[ndash]80 cm dbh in the analysis excluding plots burned on a plume-dominated day) were also related to Rim Fire severity, with plots with a greater small tree density tending to burn with lower severity.[rdquo]

The very largest scientific analysis ever conducted in dry forests on the subject of tree removal and wildfire severity, Bradley et al. (2016), found that forests completely protected from tree removal had the lowest fire severity, while forests with some limited tree removal allowed had higher levels of fire severity, and forests with the fewest environmental protections and the most tree removal had the highest fire severity. The authors concluded the following:

[ldquo]We found forests with higher levels of protection [from tree removal] had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading. Our results suggest a need to reconsider current overly simplistic assumptions about the relationship between forest protection and fire severity in fire management and policy.[rdquo]

Hanson (2021) made similar findings in dry forests in the approximately 380,000-acre Creek fire of 2020 in the southern Sierra Nevada, reporting that, based on the Forest Service[rsquo]s own data, forests with previous logging under the rubric of [ldquo]fuel reduction[rdquo][mdash]specifically, mechanical thinning and post-fire logging[mdash]had overall higher fire severity than unmanaged forests.

More recently, scientists have begun looking at another key question regarding mechanical thinning and wildfire severity in dry forests, related to overall combined tree mortality from thinning itself and subsequent wildfire. These studies have consistently found that mechanical thinning kills more trees than it prevents from being killed in mature and old dry forests, including Baker and Hanson (2022) (pertaining to the Caldor fire of 2021 in the northern Sierra Nevada), and DellaSala et al. (2022) (pertaining to the Wallow fire of 2011 in Arizona). Baker and Hanson (2022) explained why some studies have erroneously reported that mechanical thinning is effective as a wildfire management approach:

[ldquo]Despite controversy regarding thinning, there is a body of scientific literature that suggests commercial thinning should be scaled up across western US forest landscapes as a wildfire management strategy. This raises an important question: what accounts for the discrepancy on this issue in the scientific literature? We believe several factors are likely to largely explain this discrepancy. First and foremost, because most previous research has not accounted for tree mortality from thinning itself, prior to the wildfire-related mortality, such research has underreported tree mortality in commercial thinning areas relative to unthinned forests. Second, some prior studies have not controlled for vegetation type, which can lead to a mismatch when comparing severity in thinned areas to the rest of the fire area given that thinning necessarily occurs in conifer forests but unthinned areas can include large expanses of non-conifer vegetation types that burn almost exclusively at high severity, such as grasslands and chaparral. Third, some research reporting effectiveness of commercial thinning in terms of reducing fire severity has been based on the subjective location of comparison sample points between thinned and adjacent unthinned forests. Fourth, reported results have often been based on theoretical models, which subsequent research has found to overestimate the effectiveness of thinning. Last, several case studies draw conclusions about the effectiveness of thinning as a wildfire management strategy when the results of those studies do not support such a conclusion, as reviewed in DellaSala et al. (2022).[rdquo] (internal citations omitted)

Finally, with regard to the common misconception that mature and old-growth stands are [ldquo]overgrown[rdquo], and have too many smaller trees relative to historical forests, Baker et al. (2023) meticulously documented the fact that this notion stems from a pattern of scientific omissions in studies funded by the Forest Service (see also Lindenmayer et al. 2025 and DellaSala and Hanson 2024 on this point). This pattern of omissions of peer-reviewed, published reply articles, which refuted and discredited U.S. Forest Service response articles, created a [ldquo]falsification[rdquo] of the scientific record regarding historical forest density and fire regimes. The corrected record shows that historical forests were much denser on average than assumed by the Forest Service and were shaped by mixed-severity fire, not merely low-severity fire.

The DEIS[rsquo]s brief, cursory [ldquo]analysis[rdquo] of impacts to Northern Spotted Owls not only improperly ignores contrary research regarding impacts to spotted owls from logging, and the tendency of thinning and post-fire logging to exacerbate wildfires, but is also predicated on two unsupported conclusory statements. For example, the DEIS, p. 3-78, claims that increased logging under the proposed action would reduce forest density and canopy cover, which the DEIS claims would reduce [ldquo]future loss of these [late-successional/old-growth] forests to high-severity fires compared to Alternative A[rdquo]). And, on DEIS p. 3-77, the DEIS makes an additional unsupported conclusory statement, attempting to downplay the impacts of the huge proposed increase in logging of late-successional and old-growth forests and larger, older trees:

[ldquo]However, these proposed changes would result in long-term beneficial effects to habitat conditions through the accelerated development of late seral forest characteristics such as large trees, snags, logs, and branch diameters. This would, in turn, result in long-term benefits to T&E species associated with mid- to late-seral forests, with the greatest long-term effects occurring under Alternatives B and D.[rdquo]

Below is a summary of numerous scientific sources, ignored by the DEIS, indicating that mechanical thinning and post-fire logging tend to exacerbate wildfires and increase overall tree mortality, contrary to the conclusory statements in the DEIS. Key findings are quoted and/or summarized, and sources authored or co-authored by U.S. Forest Service scientists are indicated in bold.

Hakkenberg, C.R., et al. 2024. Ladder fuels rather than canopy volumes consistently predict wildfire severity even in extreme topographic-weather conditions. Communications Earth & Environment 5: Article 721.

In a huge analysis of 42 recent (2019-2021) wildfires in California[rsquo]s forests, dense, mature/old forests with higher canopy cover, higher biomass, and higher densities of [ldquo]ladder fuels[rdquo] (defined as seedlings and saplings beneath the forest canopy, less than 33 feet tall), had significantly lower wildfire severity (Figure 3 of the study). Younger forests with lower canopy cover, lower biomass, and intermediate densities of seedlings and saplings had the highest wildfire severity.

Lesmeister, D.B., et al. (co-authored by U.S. Forest Service). 2019. Mixed-severity wildfire and habitat of an old-forest obligate. Ecosphere10: Article e02696.

Denser, older forests with high canopy cover had lower fire severity and [ldquo]buffer the negative effects of climate change[rdquo] regarding wildfires.

[ldquo]Thinned forests have more open conditions, which are associated with higher temperatures, lower relative humidity, higher wind speeds, and increasing fire intensity. Furthermore, live and dead fuels in young forest or thinned stands with dense saplings or shrub understory will be drier, making ignition and high heat more likely, and the rate of spread higher because of the relative lack of wind breaks provided by closed canopies with large trees.[rdquo]

Lesmeister, D.B., et al. (co-authored by U.S. Forest Service). 2021. Northern spotted owl nesting forests as fire refugia: a 30-year synthesis of large wildfires. Fire Ecology 17: Article 32.

More open forests with lower biomass had higher fire severity, because the type of open, lower-biomass forests resulting from thinning and other logging activities have [ldquo]hotter, drier, and windier microclimates, and those conditions decrease dramatically over relatively short distances into the interior of older forests with multi-layer canopies and high tree density[hellip][rdquo]

Reilly, M.J., et al. (co-authored by U.S. Forest Service). 2022. Cascadia Burning: The historic, but not historically unprecedented, 2020 wildfires in the Pacific Northwest, USA. Ecosphere 13: e4070.

Weather conditions primarily determined fire severity, and forest density was not a factor.

[ldquo]We found minimal difference in burn severity among stand structural types related to previous management in the 2020 fires. Adaptation strategies for similar fires in the future could benefit by focusing on ignition prevention, fire suppression, and community preparedness, as opposed to fuel treatments that are unlikely to mitigate fire severity during extreme weather.[rdquo]

North, M.P., S.L. Stephens, B.M. Collins, J.K. Agee, G. Aplet, J.F. Franklin, and P.Z. Fule (co-authored by U.S. Forest Service). 2015. Reform forest fire management. Science 349: 1280-1281.

[ldquo][hellip]fire is usually more efficient, cost-effective, and ecologically beneficial than mechanical treatments.[rdquo]

Lydersen, J. M., M. P. North, and B. M. Collins (co-authored by U.S. Forest Service). 2014. Severity of an uncharacteristically large wildfire, the Rim Fire, in forests with relatively restored frequent fire regimes. Forest Ecology and Management 328:326[ndash]334.

In the Rim fire of 2013, the authors found that mature mixed-conifer and ponderosa pine forests with [ldquo]a greater small tree density tend[ed] to burn with lower severity.[rdquo]

Meigs, G.W., et al. (co-authored by U.S. Forest Service). 2020. Influence of topography and fuels on fire refugia probability under varying fire weather in forests of the US Pacific Northwest. Canadian Journal of Forest Research 50: 636-647.

Forests with higher pre-fire biomass are more likely to experience low-severity fire.

Thompson, J.R., Spies, T.A., Ganio, L.M. (co-authored by U.S. Forest Service). 2007. Reburn severity in managed and unmanaged vegetation in a large wildfire. Proceedings of the National Academy of Sciences of the United States of America 104: 10743[ndash]10748.

[ldquo]Areas that were salvage-logged and planted after the initial fire burned more severely than comparable unmanaged areas.[rdquo]

Thompson, J.R., Spies, T.A. (co-authored by U.S. Forest Service). 2009. Vegetation and weather explain variation in crown damage within a large mixed-severity wildfire. Forest Ecology and Management 258: 1684-

1694.

Mature forests with higher canopy cover had lower fire severity.

Thompson, J., and T.A. Spies (co-authored by U.S. Forest Service). 2010. Exploring Patterns of Burn Severity in the Biscuit Fire in Southwestern Oregon. Fire Science Brief 88: 1-6.

[ldquo]Areas that burned with high severity[hellip]in a previous wildfire (in 1987, 15 years prior) were more likely to burn with high severity again in the 2002 Biscuit Fire. Areas that were salvage-logged and planted following the 1987 fire burned with somewhat higher fire severity than equivalent areas that had not been logged and planted.[rdquo]

Graham, R., et al. (U.S. Forest Service). 2012. Fourmile Canyon Fire Findings. Gen. Tech. Rep. RMRS-GTR-289. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 110 p.

Thinned forests [ldquo]were burned more severely than neighboring areas where the fuels were not treated[rdquo], and 162 homes were destroyed by the Fourmile Canyon Fire (see Figs. 45 and 46).

Morris, W.G. (U.S. Forest Service). 1940. Fire weather on clearcut, partly cut, and virgin timber areas at Westfir, Oregon. Timberman 42: 20-28.

[ldquo]This study is concerned with one of these factors - the fire-weather conditions near ground level - on a single operation during the first summer following logging. These conditions were found to be more severe in the clear-cut area than in either the heavy or light partial cutting areas and more severe in the latter areas than in virgin timber.[rdquo]

Countryman, C.M. (U.S. Forest Service). 1956. Old-growth conversion also converts fire climate. Fire Control Notes 17: 15-19.

Partial cutting (thinning) increases wildfire severity, due to microclimate impacts, regardless of whether or how the slash debris is treated.

[ldquo]Although the general relations between weather factors, fuel moisture, and fire behavior are fairly well known, the importance of these changes following conversion and their combined effect on fire behavior and control is not generally recognized. The term [lsquo]fireclimate,[rsquo] as used here, designates the environmental conditions of weather and fuel moisture that affect fire behavior. It does not consider fuel created by slash because regardless of what forest managers do with slash, they still have to deal with the new fireclimate. In fact, the changes in wind, temperature, humidity, air structure, and fuel moisture may result in greater changes in fire behavior and size of control job than does the addition of more fuel in the form of

slash.[rdquo]

[ldquo]Conversion which opens up the canopy by removal of trees permits freer air movement and more sunlight to reach the ground. The increased solar radiation in turn results in higher temperatures, lower humidity, and lower fuel moisture. The magnitude of these changes can be illustrated by comparing the fireclimate in the open with that in a dense stand.[rdquo]

[ldquo]A mature, closed stand has a fireclimate strikingly different from that in the open. Here nearly all of the solar radiation is intercepted by the crowns. Some is reflected back to space and the rest is converted to heat and distributed in depth through the crowns. Air within the stand is warmed by contact with the crowns, and the ground fuels are in turn warmed only by contact with the air. The temperature of fuels on the ground thus usually approximates air temperature within the stand.[rdquo]

[ldquo]Temperature profiles in a dense, mixed conifer stand illustrate this process (fig. 2). By 8 o'clock in the morning, air within the crowns had warmed to 68[deg] F. Air temperature near the ground was only 50[deg]. By 10 o'clock temperatures within the crowns had reached 82[deg] and, although the heat had penetrated to lower levels, air near the surface at 77[deg] was still cooler than at any other level. At 2:00 p.m., air temperature within the stand had become virtually uniform at 87[deg]. In the open less than one-half mile away, however, the temperature at the surface of pine litter reached 153[deg] at 2:00 p.m.[rdquo]

[ldquo]Because of the lower temperature and higher humidity, fuels within the closed stand are more moist than those in the open under ordinary weather conditions. Typically, when moisture content is 3 percent in the open, 8 percent can be expected in the stand.[rdquo]

[ldquo]Moisture and temperature differences between open and closed stands have a great effect on both the inception and the behavior of fire. For example, fine fuel at 8-percent moisture content will require nearly one-third more heat for ignition than will the same fuel at 3-percent moisture content. Thus, firebrands that do not contain enough heat to start a fire in a closed stand may readily start one in the open.[rdquo]

[ldquo]When a standard fire weather station in the open indicates a temperature of 85[deg] F., fuel moisture of 4 percent, and a wind velocity of 15 m.p.h.--not unusual burning conditions in the West--a fire starting on a moderate slope will spread 4.5 times as fast in the open as in a closed stand. The size of the suppression job, however, increases even more drastically.[rdquo]

[ldquo]Greater rate of spread and intensity of burning require control lines farther from the actual fire, increasing the length of fireline. Line width also must be increased to contain the hotter fire. Less production per man and delays in getting additional crews complicate the control problem on a fast-moving fire. It has been estimated that the size of the suppression job increases nearly as the square of the rate of forward spread. Thus, fire in the open will require 20 times more suppression effort. In other words, for each man required to control a surface fire in a mature stand burning under these conditions, 20 men will be required if the area is clear cut.[rdquo]

[ldquo]Methods other than clear cutting, of course, may bring a less drastic change in fireclimate. Nevertheless, the change resulting from partial cutting can have important effects on fire. The moderating effect that a dense stand has on the fireclimate usually results in slow-burning fires. Ordinarily, in dense timber only a few days a year have the extreme burning conditions under which surface fires produce heat rapidly enough to carry the fire into the crowns. Partial cutting can increase the severity of the fireclimate enough to materially increase the number of days when disastrous crown fires can occur.[rdquo]

SNEP (co-authored by U.S. Forest Service). 1996. Sierra Nevada Ecosystem Project, Final Report to Congress: Status of the Sierra Nevada. Vol. I: Assessment summaries and management strategies. Davis, CA: University of California, Davis, Center for Water and Wildland Resources.

[ldquo]Timber harvest, through its effects on forest structure, local microclimate, and fuel accumulation, has increased fire severity more than any other recent human activity.[rdquo]

Chen, J., et al. (co-authored by U.S. Forest Service). 1999. Microclimate in forest ecosystem and landscape ecology: Variations in local climate can be used to monitor and compare the effects of different management regimes. BioScience 49: 288[ndash]297.

When moving from open forest areas, resulting from logging, and into dense forests with high canopy cover, [ldquo]there is generally a decrease in daytime summer temperatures but an increase in humidity[hellip][rdquo]

The authors reported a 5[deg] C difference in ambient air temperature between a closed-canopy mature forest and a forest with partial cutting, like a commercial thinning unit (Fig. 4b), and noted that such differences are even greater than the increases in temperature predicted due to anthropogenic climate change.

Dombeck, M. (U.S. Forest Service Chief). 2001. How Can We Reduce the Fire Danger in the Interior West. Fire Management Today 61: 5-13.

[ldquo]Some argue that more commercial timber harvest is needed to remove small-diameter trees and brush that are fueling our worst wildlands fires in the interior West. However, small-diameter trees and brush typically have little or no commercial value. To offset losses from their removal, a commercial operator would have to remove large, merchantable trees in the overstory. Overstory removal lets more light reach the forest floor, promoting vigorous forest regeneration. Where the overstory has been entirely removed, regeneration produces thickets of 2,000 to 10,000 small trees per acre, precisely the small-diameter materials that are causing our worst fire problems. In fact, many large fires in 2000 burned in previously logged areas laced with roads. It seems unlikely that commercial timber harvest can solve our forest health problems.[rdquo]

Hanson, C.T. 2021. Is [ldquo]Fuel Reduction[rdquo] Justified as Fire Management in Spotted Owl Habitat? Birds 2: 395-403.

Thinning followed by burning and post-fire logged areas had higher overall fire

severity.

[ldquo]Within the forest types inhabited by California Spotted Owls, high-severity fire occurrence was not higher overall in unmanaged forests and was not associated with the density of pre-fire snags from recent drought in the Creek Fire, contrary to expectations under the fuel reduction hypothesis. Moreover, fuel-reduction logging in

California Spotted Owl habitats was associated with higher fire severity in most cases. The highest levels of high-severity fire were in the categories with commercial logging (post-fire logging, private commercial timberlands, and commercial thinning), while the three categories with lower levels of high-severity fire were in forests with no recent forest management or wildfire, less intensive noncommercial management, and unmanaged forests with re-burning of mixed-severity wildfire, respectively.[rdquo]

Baker, B.C., and C.T. Hanson. 2022. Cumulative tree mortality from commercial thinning and a large wildfire in the Sierra Nevada, California. Land 11: Article 995.

Thinning followed by burning increases overall fire severity.

[ldquo]Similar to the findings of Hanson (2022) in the Antelope Fire of 2021 in northern California, in our investigation of the Caldor Fire of 2021 we found significantly higher cumulative severity in forests with commercial thinning than in unthinned forests, indicating that commercial thinning killed significantly more trees than it prevented from being killed in the Caldor Fire[hellip]Despite controversy regarding thinning, there is a body of scientific literature that suggests commercial thinning should be scaled up across western US forest landscapes as a wildfire management strategy. This raises an important question: what accounts for the discrepancy on this issue in the scientific literature? We believe several factors are likely to largely explain this discrepancy. First and foremost, because most previous research has not accounted for tree mortality from thinning itself, prior to the wildfire-related mortality, such research has underreported tree mortality in commercial thinning areas relative to unthinned forests. Second, some prior studies have not controlled for vegetation type, which can lead to a mismatch when comparing severity in thinned areas to the rest of the fire area given that thinning necessarily occurs in conifer forests but unthinned areas can include large expanses of non-conifer vegetation types that burn almost exclusively at high severity, such as grasslands and chaparral. Third, some research reporting effectiveness of commercial thinning in terms of reducing fire severity has been based on the subjective location of comparison sample points between thinned and adjacent unthinned forests. Fourth, reported results have often been based on theoretical models, which subsequent research has found to overestimate the effectiveness of thinning. Last, several case studies draw conclusions about the effectiveness of thinning as a wildfire management strategy when the results of those studies do not support such a conclusion, as reviewed in DellaSala et al. (2022).[rdquo] (internal citations omitted)

DellaSala, D.A., B.C. Baker, C.T. Hanson, L. Ruediger, and W.L. Baker. 2022. Have western USA fire suppression and megafire active management approaches become a contemporary Sisyphus? Biological Conservation 268: Article 109499.

Thinning followed by burning increases overall fire severity.

With regard to a previous U.S. Forest Service study claiming that commercial thinning effectively reduced fire severity in the large Wallow fire of 2011 in Arizona, DellaSala et al. (2022, Section 5.1) conducted a detailed accuracy check and found that the previous analysis had dramatically underreported high-severity fire in commercial thinning units, and forests with commercial thinning in fact had higher fire severity, overall.

DellaSala et al. (2022, Section 5.2) also reviewed several U.S. Forest Service studies relied upon by Prichard et al. (2021) for the claim that commercial thinning is an effective fire management approach and found that the actual results of these cited studies did not support that conclusion.

Beschta, R.L.; Frissell, C.A.; Gresswell, R.; Hauer, R.; Karr, J.R.; Minshall, G.W.; Perry, D.A.; Rhodes, J.J. 1995. Wildfire and salvage logging. Eugene, OR: Pacific Rivers Council.

[ldquo]We also need to accept that in many drier forest types throughout the region, forest management may have set the stage for fires larger and more intense than have occurred in at least the last few hundred years.[rdquo]

[ldquo]With respect to the need for management treatments after fires, there is generally no need for urgency, nor is there a universal, ecologically-based need to act at all. By acting quickly, we run the risk of creating new problems before we solve the old ones.[rdquo]

[ldquo][S]ome argue that salvage logging is needed because of the perceived increased likelihood that an area may reburn. It is the fine fuels that carry fire, not the large dead woody material. We are aware of no evidence supporting the contention that leaving large dead woody material significantly increases the probability of reburn.[rdquo]

Morrison, P.H. and K.J. Harma. 2002. Analysis of Land Ownership and Prior Land Management Activities Within the Rodeo & Chediski Fires, Arizona. Pacific Biodiversity Institute, Winthrop, WA. 13 pp.

Previous logging was associated with higher fire severity.

Donato DC, Fontaine JB, Campbell JL, Robinson WD, Kauffman JB, Law BE. 2006. Science 311: 352.

[ldquo]In terms of short-term fire risk, a reburn in [postfire] logged stands would likely exhibit elevated rates of fire spread, fireline intensity, and soil heating impacts[hellip]Postfire logging alone was notably incongruent with fuel reduction goals.[rdquo]

Hanson, C.T., Odion, D.C. 2006. Fire Severity in mechanically thinned versus unthinned forests of the Sierra Nevada, California. In: Proceedings of the 3rd International Fire Ecology and Management Congress, November 13-17, 2006, San Diego, CA.

[ldquo]In all seven sites, combined mortality [thinning and fire] was higher in thinned than in unthinned units. In six of seven sites, fire-induced mortality was higher in thinned than in unthinned units[hellip]Mechanical thinning increased fire severity on the sites currently available for study on national forests of the Sierra Nevada.[rdquo]

Platt, R.V., et al. 2006. Are wildfire mitigation and restoration of historic forest structure compatible? A spatial modeling assessment. Annals of the Assoc. Amer. Geographers 96: 455-470.

[ldquo]Compared with the original conditions, a closed canopy would result in a 10 percent reduction in the area of high or extreme fireline intensity. In contrast, an open canopy [from thinning] has the opposite effect, increasing the area exposed to high or extreme fireline intensity by 36 percent. Though it may appear counterintuitive, when all else is equal open canopies lead to reduced fuel moisture and increased midflame windspeed, which increase potential fireline intensity.[rdquo]

Cruz, M.G, and M.E. Alexander. 2010. Assessing crown fire potential in coniferous forests of western North America: A critique of current approaches and recent simulation studies. Int. J. Wildl. Fire. 19: 377[ndash]398.

The fire models used by the U.S. Forest Service falsely predict effective reduction in crown fire potential from thinning:

[ldquo]Simulation studies that use certain fire modelling systems (i.e. NEXUS, FlamMap, FARSITE, FFE-FVS (Fire and Fuels Extension to the Forest Vegetation Simulator), Fuel Management Analyst (FMAPlus), BehavePlus) based on separate implementations or direct integration of Rothermel[rsquo]s surface and crown rate of fire spread models with Van Wagner[rsquo]s crown fire transition and propagation models are shown to have a significant underprediction bias when used in assessing potential crown fire behaviour in conifer forests of western North America. The principal sources of this underprediction bias are shown to include: (i) incompatible model linkages; (ii) use of surface and crown fire rate of spread models that have an inherent underprediction bias; and (iii) reduction in crown fire rate of spread based on the use of unsubstantiated crown fraction burned functions. The use of uncalibrated custom fuel models to represent surface fuelbeds is a fourth potential source of bias.[rdquo]

DellaSala et al. (2013) (letter from over 200 scientists):

[ldquo]Numerous studies also document the cumulative impacts of post-fire logging on natural ecosystems, including[hellip]accumulation of logging slash that can add to future fire risks[hellip][rdquo]

DellaSala et al. (2015) (letter from over 200 scientists):

[ldquo]Post-fire logging has been shown to eliminate habitat for many bird species that depend on snags, compact soils, remove biological legacies (snags and downed logs) that are essential in supporting new forest growth, and spread invasive species that outcompete native vegetation and, in some cases, increase the flammability of the new forest. While it is often claimed that such logging is needed to restore conifer growth and lower fuel hazards after a fire, many studies have shown that logging tractors often kill most conifer seedlings and other important re-establishing vegetation and actually increases flammable logging slash left on site. Increased chronic sedimentation to streams due to the extensive road network and runoff from logging on steep slopes degrades aquatic organisms and water quality.[rdquo]

Bradley, C.M. C.T. Hanson, and D.A. DellaSala. 2016. Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western USA? Ecosphere 7: article e01492.

In the largest study on this subject ever conducted in western North American, the authors found that the more trees that are removed from forests through logging, the higher the fire severity overall:

[ldquo]We investigated the relationship between protected status and fire severity using the Random Forests algorithm applied to 1500 fires affecting 9.5 million hectares between 1984 and 2014 in pine (Pinus ponderosa, Pinus jeffreyi) and mixed-conifer forests of western United States, accounting for key topographic and climate variables. We found forests with higher levels of protection [from logging] had lower severity values even though they are generally identified as having the highest overall levels of biomass and fuel loading.[rdquo]

Dunn, C.J., et al. 2020. How does tree regeneration respond to mixed-severity fire in the western Oregon Cascades, USA? Ecosphere 11: Article e03003.

Forests that burned at high-severity had lower, not higher, overall pre-fire tree densities.

Moomaw et al. (2020) (letter from over 200 scientists: https://johnmuirproject.org/2020/05/breaking-news-over-200-top-u-s-climate-and-forest-scientists-urge-congress-protect-forests-to-mitigate-climate-crisis/):

[ldquo]Troublingly, to make thinning operations economically attractive to logging companies, commercial logging of larger, more fire-resistant trees often occurs across large areas. Importantly, mechanical thinning results in a substantial net loss of forest carbon storage, and a net increase in carbon emissions that can substantially exceed those of wildfire emissions (Hudiburg et al. 2013, Campbell et al. 2012). Reduced forest protections and increased logging tend to make wildland fires burn more intensely (Bradley et al. 2016). This can also occur with commercial thinning, where mature trees are removed (Cruz et al. 2008, Cruz et al. 2014). As an example, logging in U.S. forests emits 10 times more carbon than fire and native insects combined (Harris et al. 2016). And, unlike logging, fire cycles nutrients and helps increase new forest growth.[rdquo]

Moomaw et al. (2021) (letter from over 200 scientists: https://bit.ly/3BFtIAg):

[ldquo][C]ommercial logging conducted under the guise of [ldquo]thinning[rdquo] and [ldquo]fuel reduction[rdquo] typically removes mature, fire-resistant trees that are needed for forest resilience. We have watched as one large wildfire after another has swept through tens of thousands of acres where commercial thinning had previously occurred due to extreme fire weather driven by climate change. Removing trees can alter a forest[rsquo]s microclimate, and can often increase fire intensity. In contrast, forests protected from logging, and those with high carbon biomass and carbon storage, more often burn at equal or lower intensities when fires do occur.

Bartowitz, K.J., et al. 2022. Forest Carbon Emission Sources Are Not Equal: Putting Fire, Harvest, and Fossil Fuel Emissions in Context. Front. For. Glob. Change 5: Article 867112.

The authors found that logging conducted as commercial thinning, which involves removal of some mature trees, substantially increases carbon emissions relative to wildfire alone, and commercial thinning [ldquo]causes a higher rate of tree mortality than wildfire.[rdquo]

Evers, C., et al. 2022. Extreme Winds Alter Influence of Fuels and Topography on Megafire Burn Severity in Seasonal Temperate Rainforests under Record Fuel Aridity. Fire 5: Article 41.

The authors found that dense, mature/old forests with high biomass and canopy cover tended to have lower fire severity, while more open forests with lower canopy cover and less biomass burned more severely.

Baker, W.L., C.T. Hanson, M.A. Williams, and D.A. DellaSala. 2023. Countering Omitted Evidence of Variable Historical Forests and Fire Regime in Western USA Dry Forests: The Low-Severity-Fire Model Rejected. Fire 6: Article 146.

A pattern of omissions of peer-reviewed, published reply articles, which refuted and discredited U.S. Forest Service response articles, created a [ldquo]falsification[rdquo] of the scientific record regarding historical forest density and fire regimes. The corrected record shows that historical forests were much denser on average than assumed by the Forest Service

Failure to take a hard look at reasonably foreseeable impacts, failure to use reliable data, and failure to ensure scientific accuracy and integrity regarding the analysis of impacts of the proposed action and other action alternatives on increased wildfire threats to communities

The entirety of the DEIS[rsquo]s analysis of wildfire threats to communities amounts to a single paragraph (DEIS, p. 3-42), which does not address the abundant evidence indicating that increased thinning and other logging can increase threats of wildfire to human communities by: (a) increasing the rate of wildfire spread to communities, given people less time to evacuate and first responders less time to help with safe evacuation as well as structure defense; (b) creating a false sense of security in communities, as the federal land management agencies misleadingly claim that increased mechanical thinning and post-fire logging will somehow curb wildfires to such an extent that they will be easily suppressed and therefore will not reach towns[mdash]this is a dangerous falsehood; and (c) diverting resources into backcountry logging, instead of helping communities become fire-safe, including through defensible space pruning at the boundary of federal lands and private residential or business properties.

Below is a summary of some scientific sources indicating that the approach of thinning and other logging in forest wildlands, ostensibly to protect communities from wildfires, actually tends to increase threats to communities. Key findings are quoted and/or summarized, and sources authored or co-authored by U.S. Forest Service scientists are indicated in bold (see also all studies cited and briefly described in the previous section, above).

Calkin, D.E., Barrett, K., Cohen, J.D., Finney, M.A., Pyne, S.J., and Quarles, S.L. (co-authored by U.S. Forest Service). 2023. Wildland-urban fire disasters aren[rsquo]t actually a wildfire problem. Proceedings of the National Academy of Sciences of the United States of America. 120: e2315797120.

[ldquo]The best way to make existing wildfire-vulnerable developments ignition resistant is to work within the limited area of the [lsquo]home ignition zone[rsquo][mdash]a home and its surroundings within 100 feet (which may include neighboring homes).[rdquo]

The authors noted that wildfires are driven by climate and climate change, and criticized the current federal management approach embodied in the 2022 Wildfire Crisis Strategy, and in the 2021 Infrastructure Act and 2022 Inflation Reduction Act, that is focused on thinning tens of millions of acres of public, private, and Tribal forests in the western U.S. The scientists concluded that the [ldquo]best way[rdquo] to protect homes and lives is to focus attention and resources directly on communities, using proven methods to make them fire safe, noting that the current approach is leading to more, not fewer, losses of homes and lives. They promoted [ldquo]direct funding and technical assistance to communities[rdquo], instead of spending many billions of dollars managing forests distant from homes. The authors concluded that we must recognize that wildfire in forests and other wildlands is not only inevitable, but also there is an [ldquo]ecological necessity[rdquo] that wildfires occur for native biodiversity benefits.

Cohen, J.D. (U.S. Forest Service). 2000. Preventing disaster: home ignitability in the wildland-urban interface. Journal of Forestry 98: 15-21.

The only relevant zone to protect homes from wildland fire is within approximately 100 feet or less from each home[mdash]not out in wildland forests.

Gibbons P, van Bommel L, Gill MA, Cary GJ, Driscoll DA, Bradstock RA, Knight E, Moritz MA, Stephens SL, Lindenmayer DB. 2012. Land management practices associated with house loss in wildfires. PLoS ONE 7: Article e29212.

Defensible space pruning within less than approximately 100 feet from homes was effective at protecting homes from wildfires, while vegetation management in remote wildlands was not.

Syphard, A.D., T.J. Brennan, and J.E. Keeley. 2014. The role of defensible space for residential structure protection during wildfires. Intl. J. Wildland Fire 23: 1165-1175.

Vegetation management and removal beyond approximately 100 feet from homes provides no additional benefit in terms of protecting homes from wildfires.

Balch, J.K., et al. 2024. The fastest-growing and most destructive fires in the U.S. (2001-2020). Science 386: 425-431.

The authors concluded that fast-moving wildfires comprise less than 3% of all U.S. fire events but account for 89% of all structures damaged or destroyed, and that fires move fastest in ecosystems that have [ldquo]low wind friction[rdquo] due to sparse or absent tree cover which is associated with a dominance of grasses. Firefighters quickly become [ldquo]overwhelmed[rdquo] by fast-moving fires.

USFS (U.S. Forest Service). 2022. Gallinas-Las Dispensas Prescribed Fire Declared Wildfire Review. U.S. Forest Service, Office of the Chief, Washington, D.C.

Thinning followed by burning caused a massive fire that destroyed communities.

Thinning reduced canopy cover, increasing growth of combustible grasses; associated pile burning caused a huge wildfire, spreading rapidly through thinned areas, burning many homes.

The images below, from the Washington Post, show the devastation of the town of Greenville, after the Dixie fire swept up from the southwest, moving rapidly northeast through vast areas that had been mechanically thinned, before destroying most of the towns of Greenville and Canyon dam, along with the smaller town of Indian Falls.

[SEE PDF for images of fire in an urban setting]

The images below, from Google Earth, show numerous large areas of pre-fire mechanical thinning and earlier post-fire logging (after the 2012 Chips fire around Butt Valley Reservoir) on the Plumas National Forest, southwest, south, and southeast of the Greenville, Canyon dam, and Indian Falls areas, through which the Dixie fire swept before destroying most of the homes and businesses. For each location a pair of images is shown[mdash]one after mechanical thinning but before the Dixie fire, and the other after the Dixie fire. GPS coordinates of the imagery locations are shown at the bottom right margin of each. Most of the mechanically thinned and post-fire logged forests burned at high intensity, as the post-fire images show.

The images below represent all areas of mechanical thinning and/or post-fire logging of any significant size that could be identified as occurring within 15 years or so prior to the 2021 Dixie fire, and which were within the path of the fire as it approached Greenville, Canyondam, and Indian Falls. As the images show, the Dixie fire burned mostly or entirely at high intensity through all such areas. For spatial context, each of these images shows an area that is several thousand acres in size.

[SEE PDF for map

Dixie fire perimeter map showing the area on August 7, 2021, immediately after the fire, moving from the southwest to the northeast, destroyed Greenville and Canyondam. The map is from the inter-agency wildfire site, Inciweb: https://inciweb.wildfire.gov

Image Pair #1: Extensive previous post-fire logging on the Plumas National Forest, northeast of Butt Valley Reservoir, and a short distance southwest of Canyondam. The first image is from July 2, 2017, after post-fire logging, and the second is from August 7, 2021, just one day after the Dixie fire burned through this area and destroyed Canyondam.

[SEE PDF for images]

Image Pair #2: A large area that was mechanically thinned south of Canyondam. The first image is from May 24, 2009, after thinning, and the second image is from July 7, 2022 (note the almost total absence of live, green trees remaining in the thinned areas after the Dixie fire).

[SEE PDF for images]

Image Pair #3: Mechanical thinning on the Plumas National Forest, south of Indian Falls. The first image is from May 24, 2009, after thinning, and the second is from July 7, 2022, after the Dixie fire. Note that nearly all of the thinned forest burned at high intensity, with 100% tree mortality in most areas.

[SEE PDF for images]

Image Pair #4: Mechanical thinning south of Greenville on the Plumas National Forest. The first image is from May 24, 2009. The second is from July 7, 2022, showing almost complete high-intensity fire effects in the thinned area.

[SEE PDF for images]

Image Pair #5: Postfire logging and mechanical thinning west of Greenville and south of Canyondam on the Plumas National Forest. The first image is from May 24, 2009, and the second is from July 7, 2022, after the Dixie fire. Once again, note that the thinned area is heavily dominated by high-intensity fire.

[SEE PDF FOR images]

Image Pair #6: Mechanical thinning on private timberlands south of Greenville. The first image is from May 24, 2009, and the second is from July 7, 2022, after the Dixie fire, with the thinned areas heavily dominated by high-intensity fire.

[SEE PDF FOR images]

The approach of the DEIS is the same approach that the Forest Service has pursued for many years, except this Project promotes this approach on a much bigger scale. In brief, it involves mechanical thinning and post-fire logging of vast forest areas distant from communities based on the claim that this will either directly stop fires from reaching towns or indirectly stop fires by making fires burn much more slowly and so much less intensely that fire suppression crews can easily halt the fire before it reaches a community. This approach is a proven failure, as we have seen in Paradise (Camp fire of 2018), Greenville (Dixie fire of 2021), Grizzly Flats (Caldor fire of 2021), and Berry Creek and Feather Falls (North Complex fire of 2020), among others. Please see the maps below showing large areas of thinning and other so-called fuel-reduction logging around towns that were largely destroyed by the Camp fire, Dixie fire, and Caldor fire, respectively. In stark contrast, defensible space pruning immediately adjacent to homes is a consistent success, as we saw in Meyers and South Lake Tahoe in the Caldor fire (map below).

[SEE PDF for MAPs described below]

Map from Wildfire Today, showing the Caldor fire racing right through [ldquo]thinning[rdquo] units in wildlands but stopping at or immediately adjacent to private property boundaries, where defensible space pruning had been conducted on private lands and a short distance on to the National Forest. Map accessed here. Black ovals have been added to show where the fire stopped in defensible space areas adjacent to homes.

Failure to take a hard look at reasonably foreseeable impacts, failure to use reliable data, and failure to ensure scientific accuracy and integrity regarding the analysis of impacts to forest carbon storage, carbon emissions, and climate change

The DEIS[rsquo]s Climate Change section contains no analysis of impact of increasing, and potentially tripling, logging levels on forest carbon storage, carbon emissions, and climate change (DEIS, p. 3-90 through 3-93). This violates NEPA. The DEIS claims (p. 3-92) that it is [ldquo]infeasible[rdquo] to include estimates of the impact of tripling logging levels[mdash]mostly of older/larger trees in late-successional/old-growth forest[mdash]on forest carbon storage and carbon emissions, but provides no analysis or meaningful discussion to attempt to justify this unsupported conclusory statement. Moreover, the DEIS[rsquo]s section on climate change omits any mention of peer-reviewed studies that have conducted this very analysis and have responsibly quantified and estimated carbon emissions from thinning versus wildfire alone, finding that thinning kills more trees than it prevents from being killed (Bartowitz et al. 2022, Baker and Hanson 2022), and emits several times more carbon per acre than wildfire alone (Campbell et al. 2012, Bartowitz et al. 2022). Researchers have also quantified, based on detailed field measurements, the amount of tree carbon consumed and emitted in large mixed-intensity wildfires, and that amount is only 1.2% (Harmon et al. 2022; see also Meigs et al. 2009, reporting similar figures), yet the DEIS does not mention this study or compare the percent of tree carbon released by fire fires[mdash]1.2%--to the percent of tree carbon removed and released by mechanical thinning under the action alternatives, including the Proposed Action. In addition, the DEIS[rsquo]s Climate Change section fails to disclose or discuss the abundant scientific research finding that mechanical thinning and forest canopy cover reduction tends to increase and exacerbate wildfire behavior and effects, as discussed in detail above. The DEIS fails to take a hard look at reasonably foreseeable climate change impacts from the proposed tripling of logging levels.

Sincerely,

[], Ph.D., Ecologist

John Muir Project

[], Executive Director

Conservation Congress

[], Co-Director

Blue Mountains Biodiversity Project

[], Director

Protect Our Woods

[], Executive Director

Alliance for the Wild Rockies

[], Director

Battle Creek Alliance &

Defiance Canyon Raptor Rescue

[], Executive Director

Klamath Forest Alliance

[], Forest Policy Director

Friends of the Clearwater

[], President

Gallatin Wildlife Association

[], President

W.A.T.E.R. (We Advocate Through Environmental Review)

[], President

Friends of the Bitterroot

[], Oregon Director

Western Watersheds

ATTACHMENT-LETTER TEXT: NWFP DEIS comments JMP et al. 17Mar25 updated.docx; this is the same content that is coded in text box; it was originally included as an attachment