

6 March 2026

To: Carmel-by-the-Sea City Council and Staff

Re: Carmel-by-the-Sea 2025 Forest Management Plan (Feb. 2026 Version)

Dear Councilmembers and Staff,

As wildfire scientists, we are writing to convey some serious risks and threats to community safety, and to wildlife, that would result if the Carmel-by-the-Sea 2025 Forest Management Plan (Proposal) is approved and implemented. Based on the following, this Proposal should simply be withdrawn, and should then be re-written exclusively in terms of the only measures that are proven to protect homes and lives from wildfires: home hardening, defensible space pruning, and evacuation planning (Cohen 2000, Gibbons et al. 2012, Syphard et al. 2014, Calkin et al. 2023). As we discuss in greater detail below, the Proposal would *increase*, not decrease, wildfire threats to homes and lives in Carmel-by-the-Sea by removing hundreds of mature trees, which would result in a hotter, drier, and windier microclimate that would exacerbate wildfire potential and rate of spread. In addition, we note below that there may be marbled murrelets nesting in the area, and the proposed logging of hundreds of mature trees would adversely impact this imperiled, ESA-listed species.

The Proposal envisions intensive logging of large, mature/old trees and attempts to promote this logging as a community wildfire protection measure. Table 2 of Appendix B of the Proposal states that the logging company plans to log 239 live, mature trees between 1 and 4 or more feet in diameter, in addition to 162 trees 7-12 inches in diameter. As we discuss below, this would increase, not decrease, wildfire threats to homes and lives in the community. The Proposal should delete this logging component, and instead focus on home hardening and defensible space pruning, especially within the first 30 feet from each home. Only seedlings and saplings immediately adjacent to homes should be removed. For trees over 7 inches in diameter (trees larger than saplings), lower limbs (those less than 6 feet from the ground) should be removed, and branches that touch or nearly touch the sides or roofs of houses should be removed, but the trees should be retained. Notably, not only do mature trees provide essential cooling shade, more ambient moisture in the air, and a less fire-prone microclimate, they also catch wind-blown embers if a wildfire is nearby, preventing those embers from landing on roofs of houses. Alarming, the Proposal treats home hardening and defensible space pruning as an afterthought, devoting merely a single paragraph to each, with no meaningful details (Sections 5.2 and 5.3). Abundant, easily-digestible information about home hardening and defensible space pruning can be found on the website of Headwaters Economics, particularly the work of wildfire scientist and home protection expert, Dr. Kimiko Barrett, whose reports can be downloaded for free. None of the relevant information and details necessary to create fire-safe communities are found in the

Proposal, which heavily emphasizes unnecessary and counter-productive logging of commercially valuable mature trees.

On page 8 and Figure 7 the Proposal attempts to justify its emphasis on logging mature, live trees by claiming that 9% are in “poor” condition—an assertion for which it offers no definition or evidence. Also on page 8 and in Figure 7, the Proposal attempts to justify the logging of hundreds of live, mature trees by claiming that native forest cover has declined slightly from a 1981-1984 inventory to a 2005-2008 inventory. However, the Proposal does not provide any details on these inventories, including whether they used the same, or different, methods and definitions—i.e., whether they perhaps represent an “apples to oranges” comparison. More importantly, the Proposal does not attempt to explain the illogic behind proposing to remove hundreds of live, mature, native trees ostensibly to address an alleged decline in forest canopy cover. The removal of the mature trees comprising the forest canopy would, of course, substantially accelerate and worsen any reduction of forest cover that may or may not have occurred since the 1980s.

Based on the foregoing, and the following, and given that the Proposal, if approved, would authorize specific removal of hundreds of mature trees, if the Proposal is not withdrawn, an Environmental Impact Report (EIR) will be required under CEQA.

Mechanical Thinning and Other Forest Management and Tree Removal Activities Do Not Protect Communities from Wildfires; Instead, Such Logging Increases Wildfire Threats to Communities and is Associated with Large Losses of Homes and Lives to Fires Recently

The Proposal appears to assume that mechanical thinning and other tree removal activities would stop wildfires from reaching homes, or at least would curb wildfires to such an extent, greatly reducing their intensity and slowing them, that fire suppression forces would be able to reliably suppress the fires before they reached homes. Current science, and evidence from real-world recent examples, shows these assumptions to be incorrect, counter-productive, and dangerous. Mechanical thinning, post-fire logging, and other logging activities are likely to increase, not decrease, the threats of wildfire to communities for three main reasons. First, thinning and other tree removal activities reduces the windbreak effect that denser forests have, and causes winds to move much faster through forests, which increases the speed of wildfires, giving communities less time to safely evacuate and first responders less time to arrive and help. A comprehensive recent study by Balch et al. (2024: <https://www.science.org/doi/10.1126/science.adk5737>) found that higher speed is the main factor associated with large losses of homes and lives in wildfires. Balch et al. (2024) noted that wildfires spread much faster through less dense vegetation with “low wind friction”. Second, when local governments or agencies conduct thinning and other tree removal in forests, and tell communities that such logging will stop wildfires from reaching homes, this can give communities a dangerous false sense of security, which can reduce motivation to conduct the only proven and highly effective community fire safety activities, such as home hardening, defensible space pruning, and evacuation planning. By focusing on forest

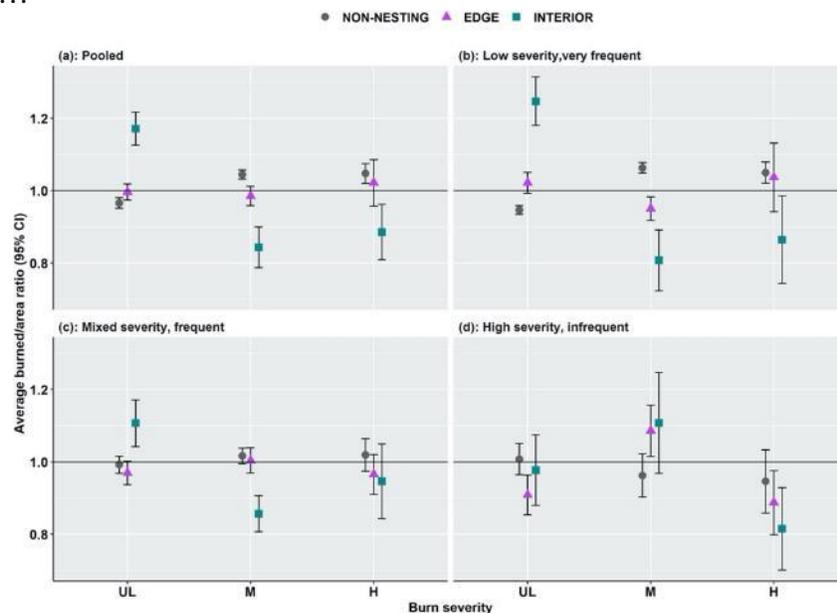
management, instead of creating fire-safe homes and sound evacuation plans, land managers put communities at greater risk, as scientists recently concluded in Calkin et al. (2023: <https://www.pnas.org/doi/10.1073/pnas.2315797120>). Third, this proposal to allow intensive logging, ostensibly to curb wildfires and protect the community, ignores the fact that a large body of science from government, university, and NGO scientists finds that mechanical thinning actually increases wildfire intensity. Below are citations to a number a scientific sources finding that mechanical thinning and other logging increases fire intensity, denser forests burn less intensely, and that the only zone relevant to protecting communities from fire is the home itself and pruning (not logging) in the defensible space zone within dozens of feet or less around each home or other human structure:

Lesmeister, D.B., et al. 2019. Mixed-severity wildfire and habitat of an old-forest obligate. *Ecosphere*10: Article e02696.

“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.”

Lesmeister, D.B., et al. 2021. Northern spotted owl nesting forests as fire refugia: a 30-year synthesis of large wildfires. *Fire Ecology* 17: Article 32.

Lower-density forests had higher fire severity, because such forests have “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...”



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

Countryman, C.M. 1956. Old-growth conversion also converts fire climate. *Fire Control Notes* 17: 15-19.

Fire will spread 4.5 times faster in an open forest area compared to a dense forest area, and fire in an open forest will require 20 times the fire suppression effort as fire in a dense forest.

SNEP. 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.

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

Chen, J., et al. 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: 288–297.

A more severe fire weather microclimate is created in open forests compared to denser forests.

Lydersen, J. M., M. P. North, and B. M. Collins. 2014. Severity of an uncharacteristically large wildfire, the Rim Fire, in forests with relatively restored frequent fire regimes. *Forest Ecology and Management* 328:326–334.

Forests with “a greater small tree density tend[ed] to burn with lower severity.”

Meigs, G.W., et al. 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. 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.

Hardage, K., et al. 2022. Soil moisture and micrometeorological differences across reference and thinned stands during extremes of precipitation, southern Cascade Range. *Frontiers in Forests and Global Change* 5: Article 898998.

Windspeeds were 15 to 20 times higher in thinned forests relative to unthinned forests.

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

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

Reilly, M.J., et al. 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.

“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.”

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 plus prescribed burning resulted in the largest fire in New Mexico’s recorded history and burned down multiple towns.

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

Calkin, D.E., Barrett, K., Cohen, J.D., Finney, M.A., Pyne, S.J., and Quarles, S.L. 2023. Wildland-urban fire disasters aren’t actually a wildfire problem. *Proceedings of the National Academy of Sciences of the United States of America*. 120: e2315797120.

Thinning, and other logging and vegetation removal under the rubric of fuel reduction, in wildlands ostensibly to protect communities from wildfire is ineffective and counterproductive; instead, the only effective tactics are home hardening, defensible space pruning immediately adjacent to each home, and evacuation planning.

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/>):

“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.”

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

“[C]ommercial logging conducted under the guise of “thinning” and “fuel reduction” 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’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.

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.

“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...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).”
(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.

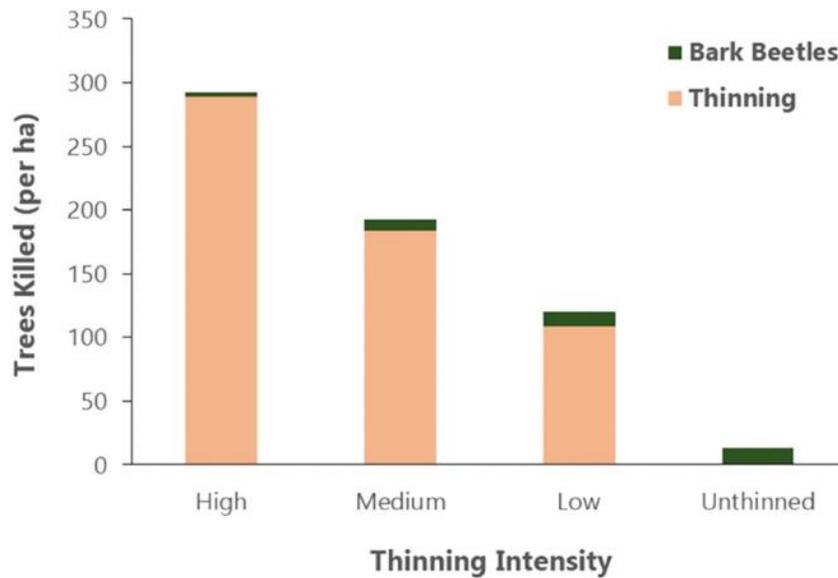
DellaSala et al. (2022, Section 5.2) also reviewed several U.S. Forest Service studies relied upon by Prichard et al. (2021) for the claim that commercial thinning is an effective fire management approach and found that the actual results of these cited studies did not support that conclusion.

Hanson, C.T. 2025. Correction: Hanson, C.T. Cumulative Severity of Thinned and Unthinned Forests in a Large California Wildfire. *Land* 2022, 11, 373. *Land* 14: Article 1489.

Mechanical thinning, including thinning plus burning, killed significantly more trees than it prevented from being killed.

Lindenmayer, D., P. Zylstra, C. Hanson, D. Six, and D. DellaSala. 2025. When Active Management of high conservation value forests may erode biodiversity and damage ecosystems. *Biological Conservation* 305: Article 111071.

Mechanical thinning, conducted ostensibly to reduce tree mortality from drought and bark beetles, kills vastly more trees than it prevents from being killed (see Figure 2 of Lindenmayer et al. 2025, reproduced below).



Lindenmayer, D.L., D.A. DellaSala, E. Bowd, B.E. Law, P.J. Burton, C.T. Hanson, P. Zylstra, and W.J. Ripple. 2026. Ecological trade-offs of mechanical thinning in temperate forests. *Biological Conservation* **316**: Article 111748.

The ecological and financial costs of mechanical thinning and other logging, conducted ostensibly as fuel reduction, vastly outweigh any perceived or claimed benefits, including with regard to wildfire management.

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 “causes a higher rate of tree mortality than wildfire.”

Kelp, M., et al. 2025. Effect of recent prescribed burning and land management on wildfire burn severity and smoke emissions in the western United States. *AGU Advances* **6**: Article e2025AV001682.

There was no significant effect of thinning on wildfire severity, including thinning in combination with other actions like pile burning and post-thinning prescribed fire, while previous burning (prescribed fire) significantly reduced wildfire severity.

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.

Cohen, J.D. 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 pruning within dozens of feet or less from each home—not forest management or logging mature trees.

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 60 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 “low wind friction” due to sparse or absent tree cover which is associated with a dominance of grasses. Firefighters quickly become “overwhelmed” by fast-moving fires.

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’s forests, dense, mature/old forests with higher canopy cover, higher biomass, and higher densities of “ladder fuels” (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.

Hanson, C.T. 2021. Is “Fuel Reduction” 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.

“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.”

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

“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...Postfire logging alone was notably incongruent with fuel reduction goals.”

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.

“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...Mechanical thinning increased fire severity on the sites currently available for study on national forests of the Sierra Nevada.”

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. Geogr.* 96: 455-470.

“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.”

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: 377–398.

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

“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’s surface and crown rate of fire spread models with Van Wagner’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.”

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:

“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.”

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.

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.

In real-world examples, where “forest management” has been pursued as a supposed community wildfire safety measure, it has actually been associated with large-scale losses of lives and homes.

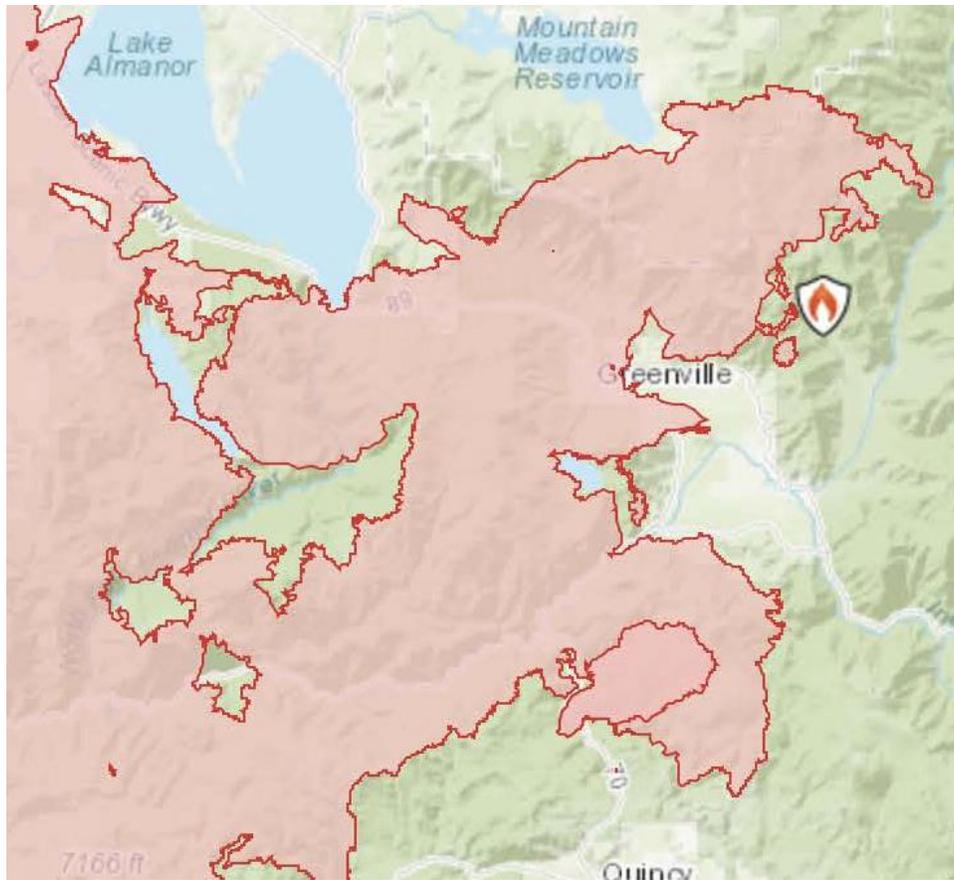
The approach of this Project—logging mature and old trees and calling it community wildfire protection—is associated with large-scale losses of homes and lives in wildfires. Previous mechanical thinning and other logging was wildly ineffective and counter-productive as a wildfire management and community protection approach when the Dixie fire occurred, for example. 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 Canyondam, along with the smaller town of Indian Falls.





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, Canyondam, 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—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.



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.

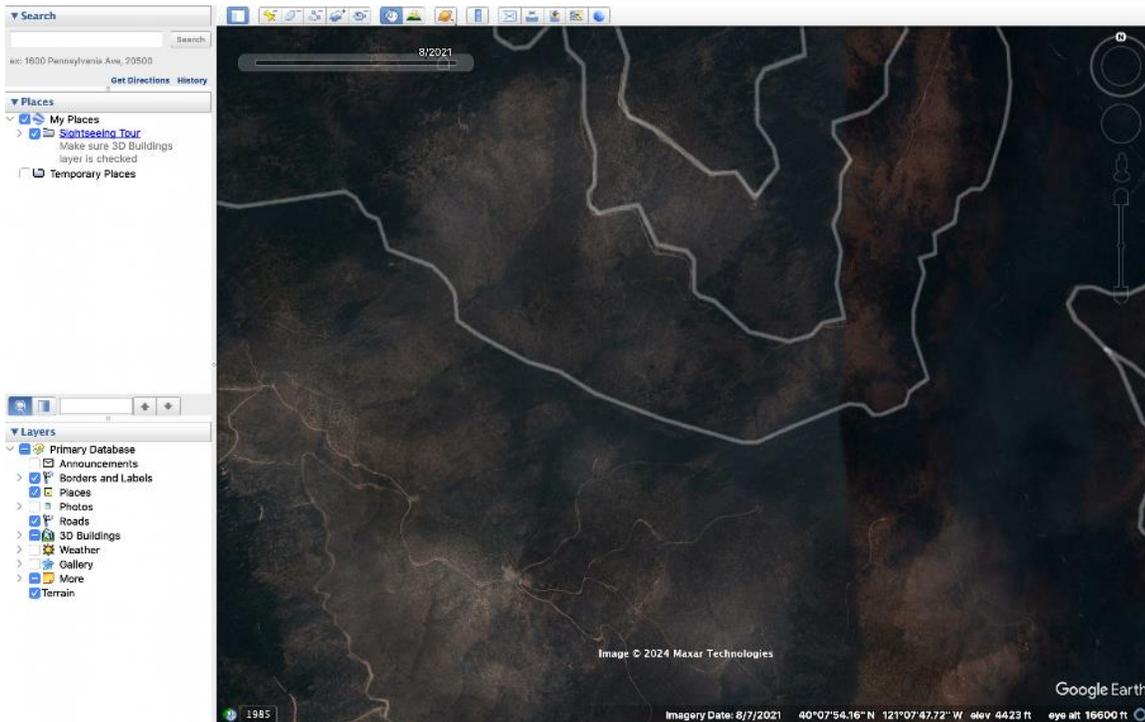
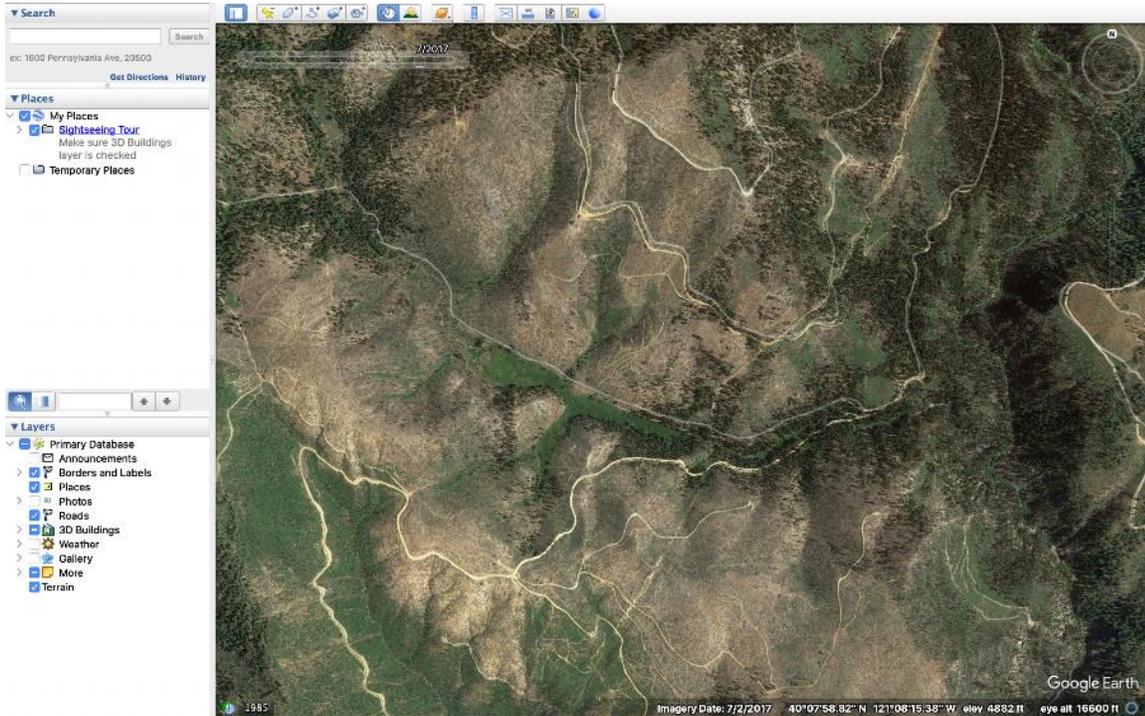


Image Pair #2: A large area that was mechanically thinned south of Canyondam. The first image is from May 24, 2009, after thinning, and the second image is from July 7, 2022 (note the almost total absence of live, green trees remaining in the thinned areas after the Dixie fire).

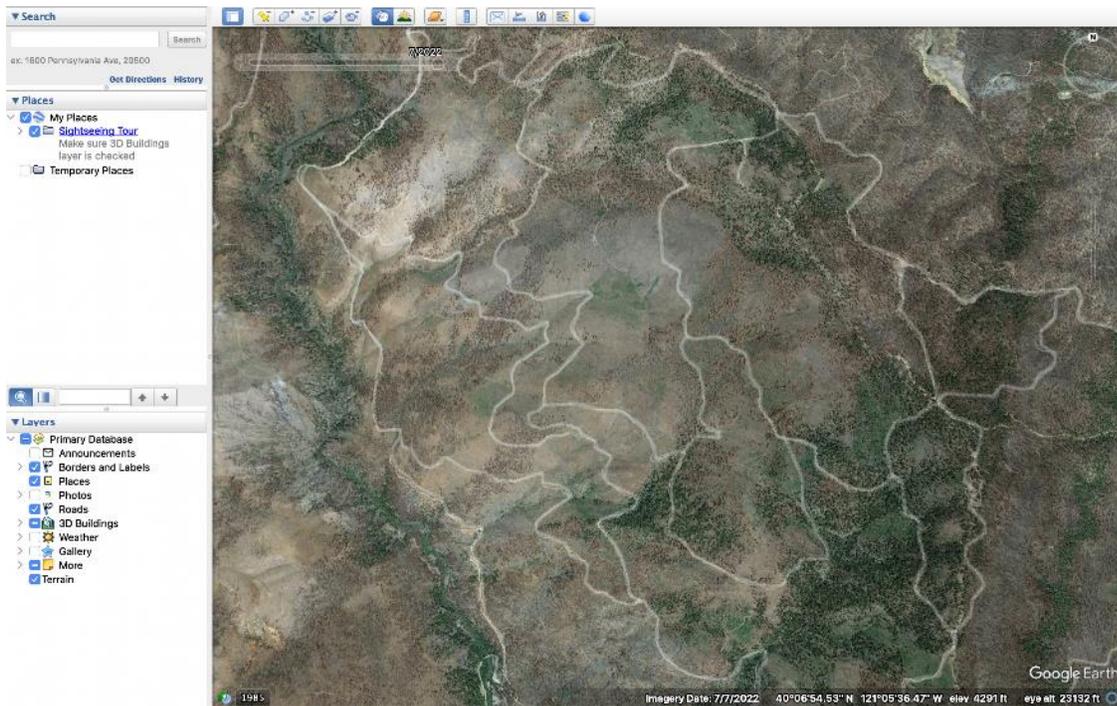
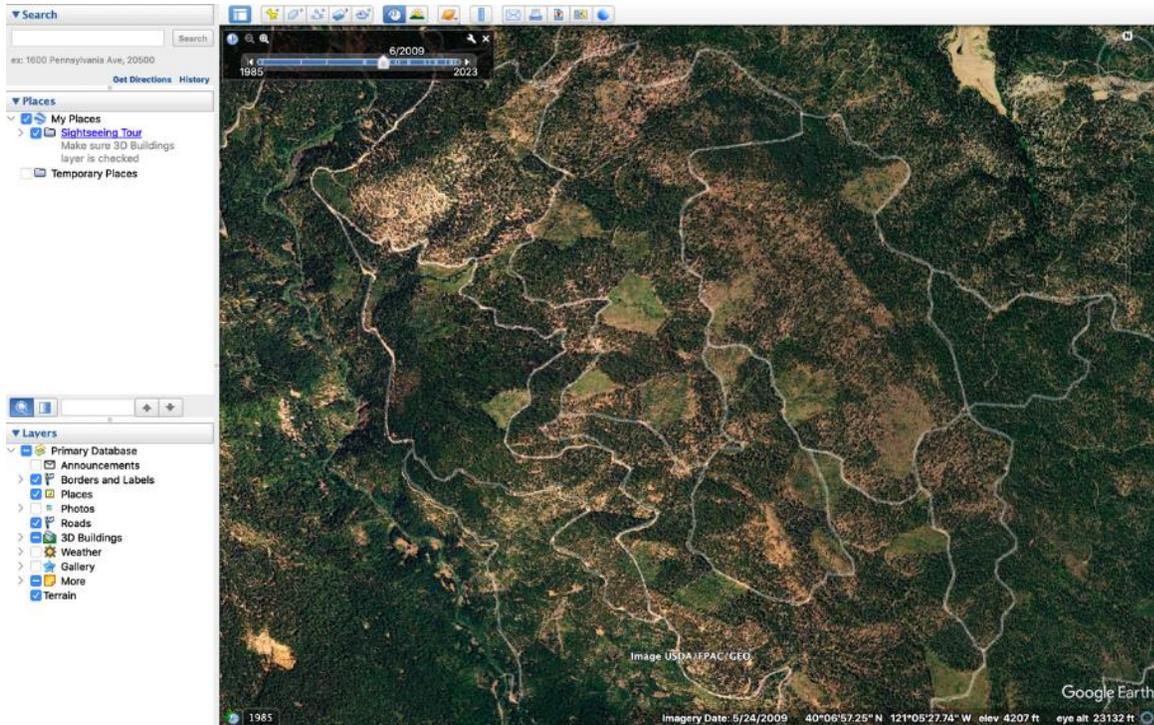


Image Pair #3: Mechanical thinning on the Plumas National Forest, south of Indian Falls. The first image is from May 24, 2009, after thinning, and the second is from July 7, 2022, after the Dixie fire. Note that nearly all of the thinned forest burned at high intensity, with 100% tree mortality in most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

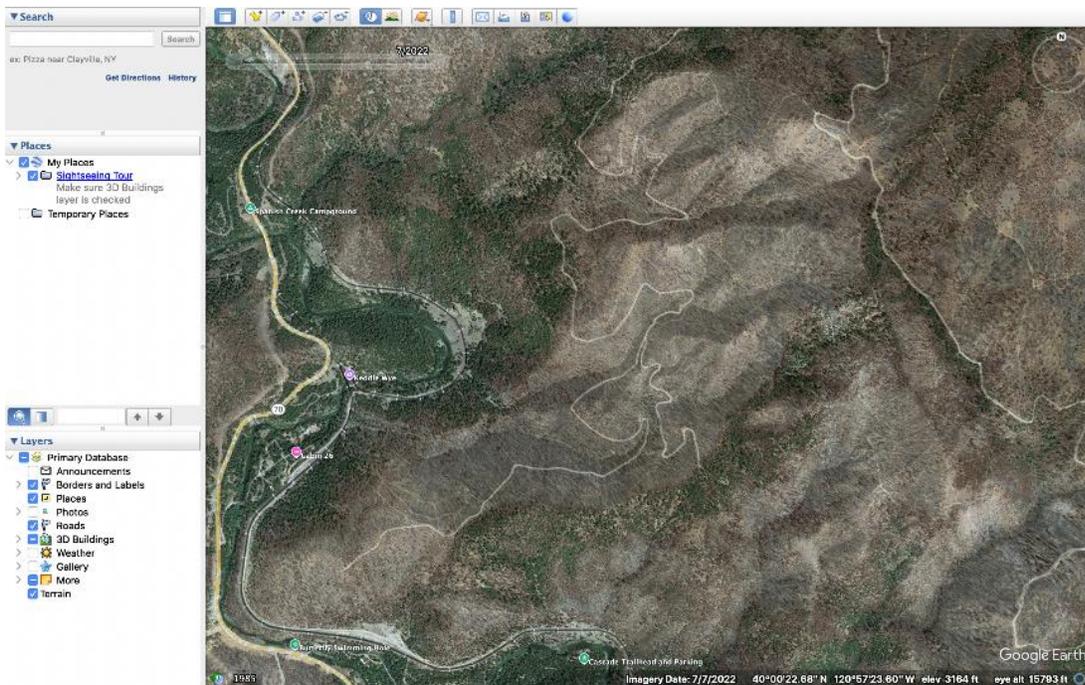
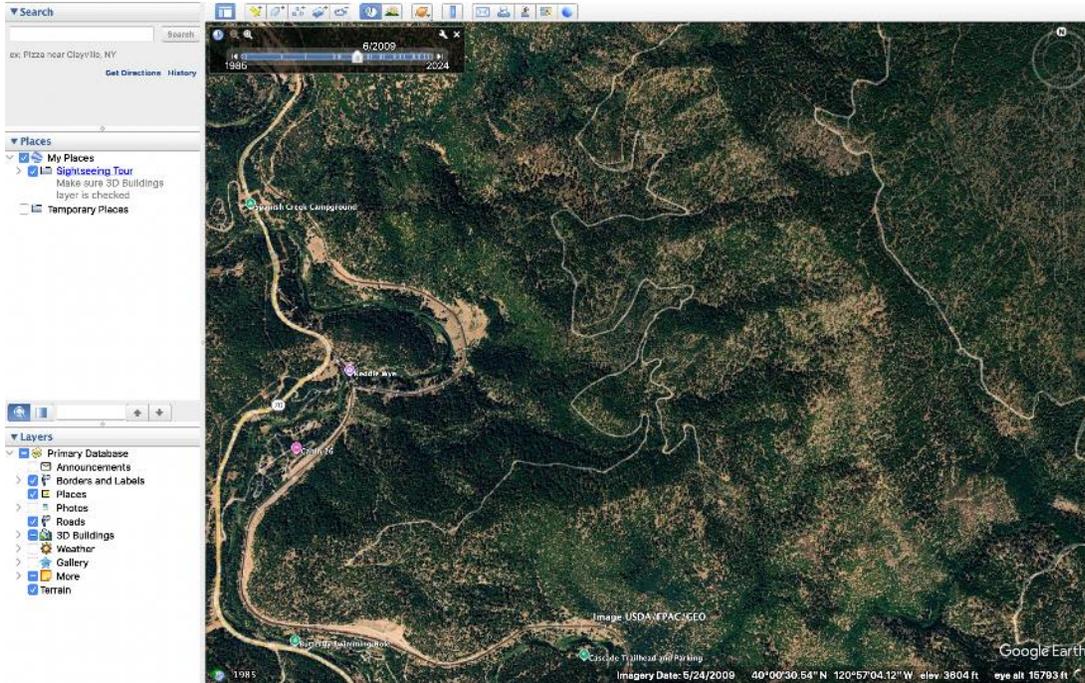


Image Pair #4: Mechanical thinning south of Greenville on the Plumas National Forest. The first image is from May 24, 2009. The second is from July 7, 2022, showing almost complete high-intensity fire effects in the thinned area.

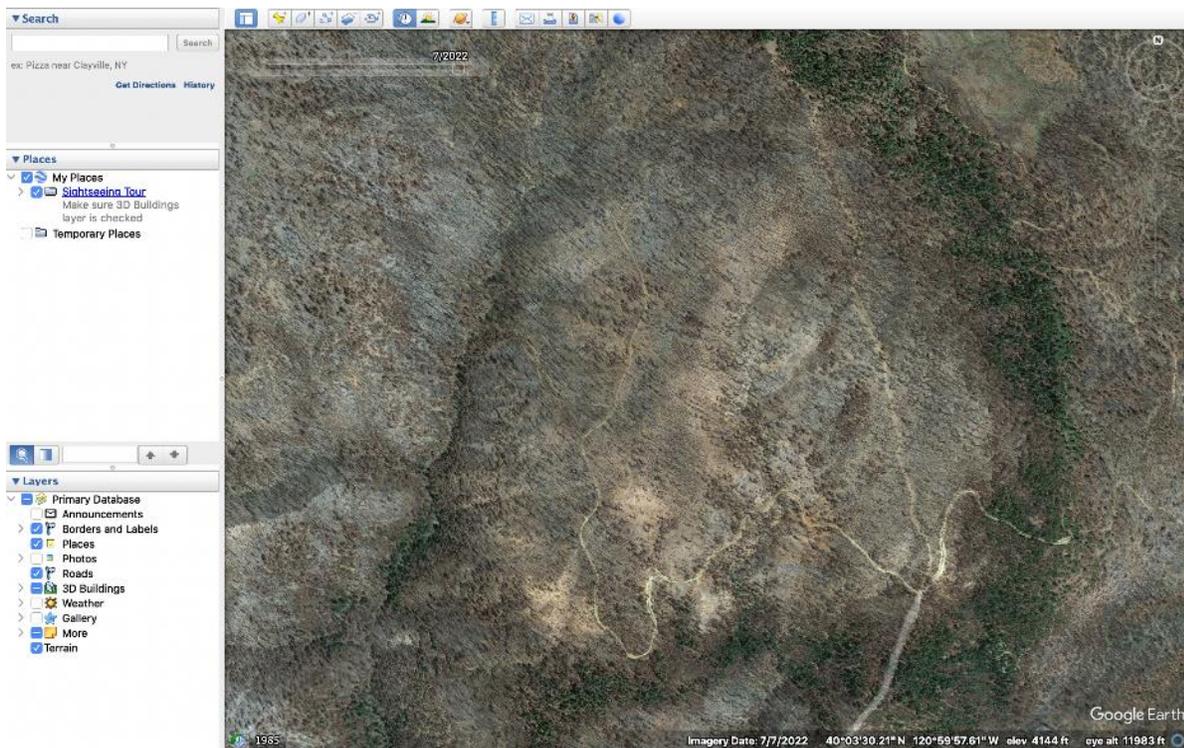
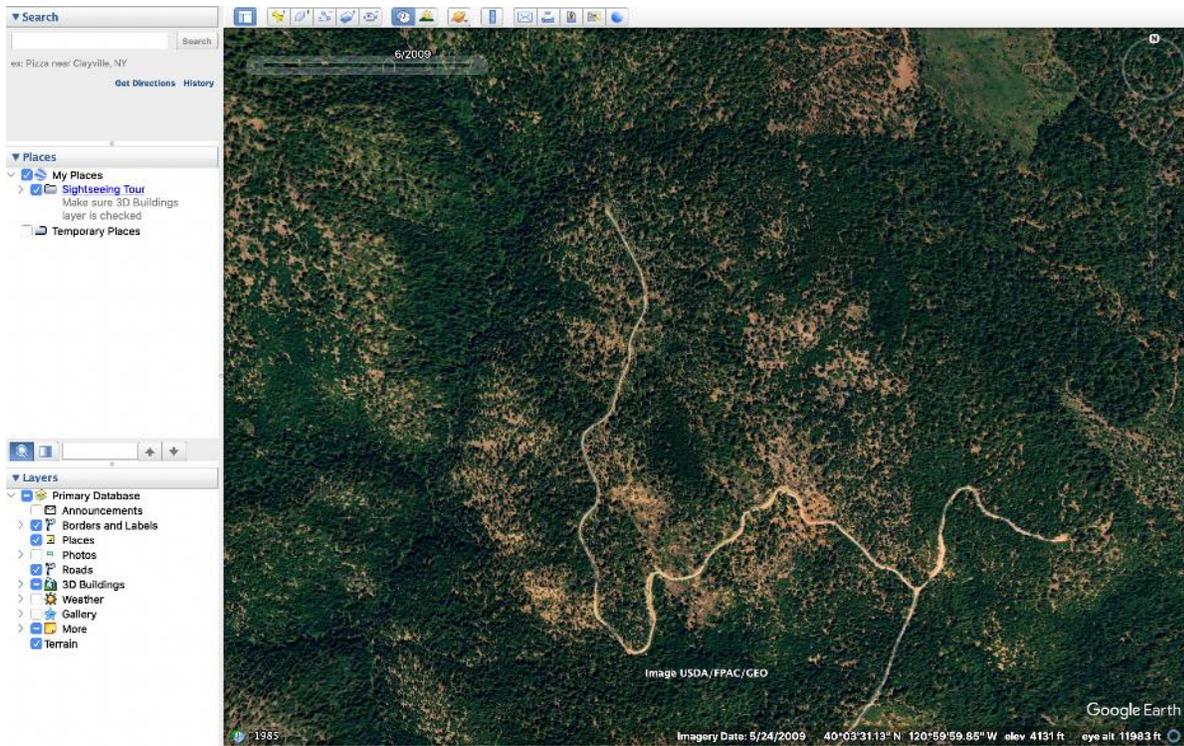


Image Pair #5: Postfire logging and mechanical thinning west of Greenville and south of Canyondam on the Plumas National Forest. The first image is from May 24, 2009, and the second is from July 7, 2022, after the Dixie fire. Once again, note that the thinned area is heavily dominated by high-intensity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

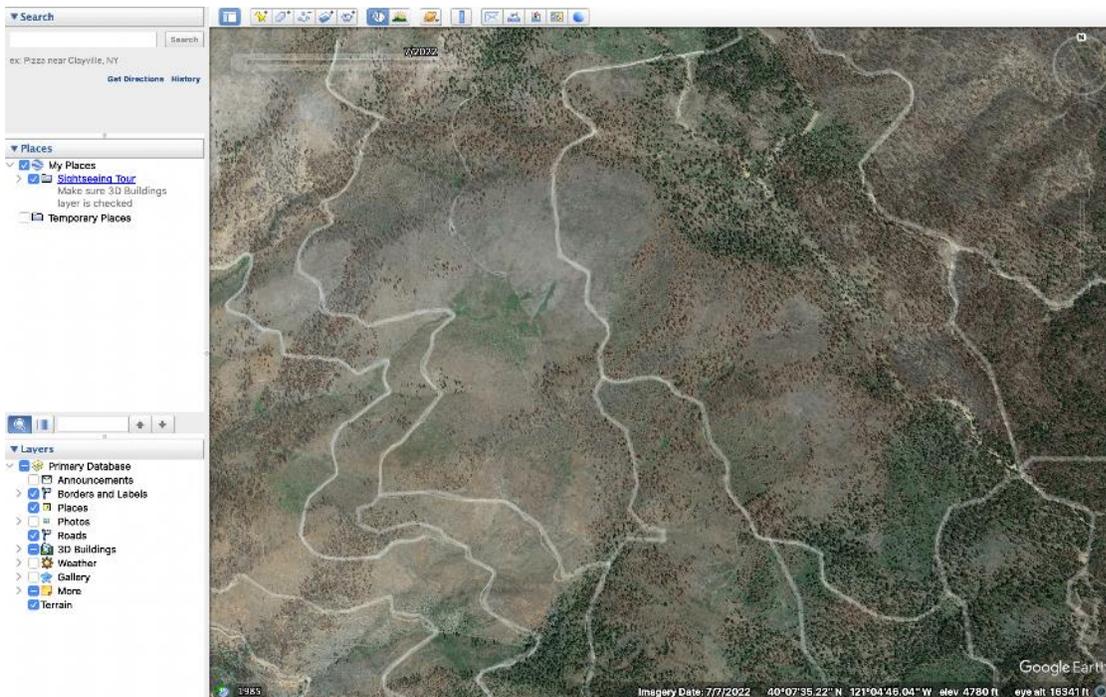
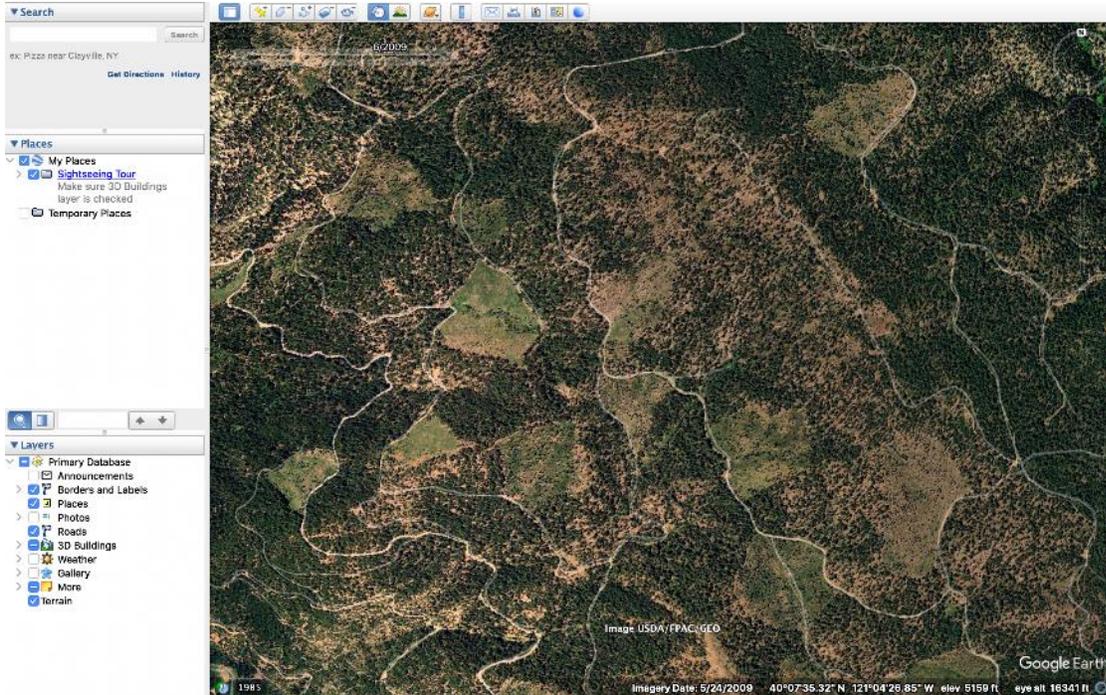
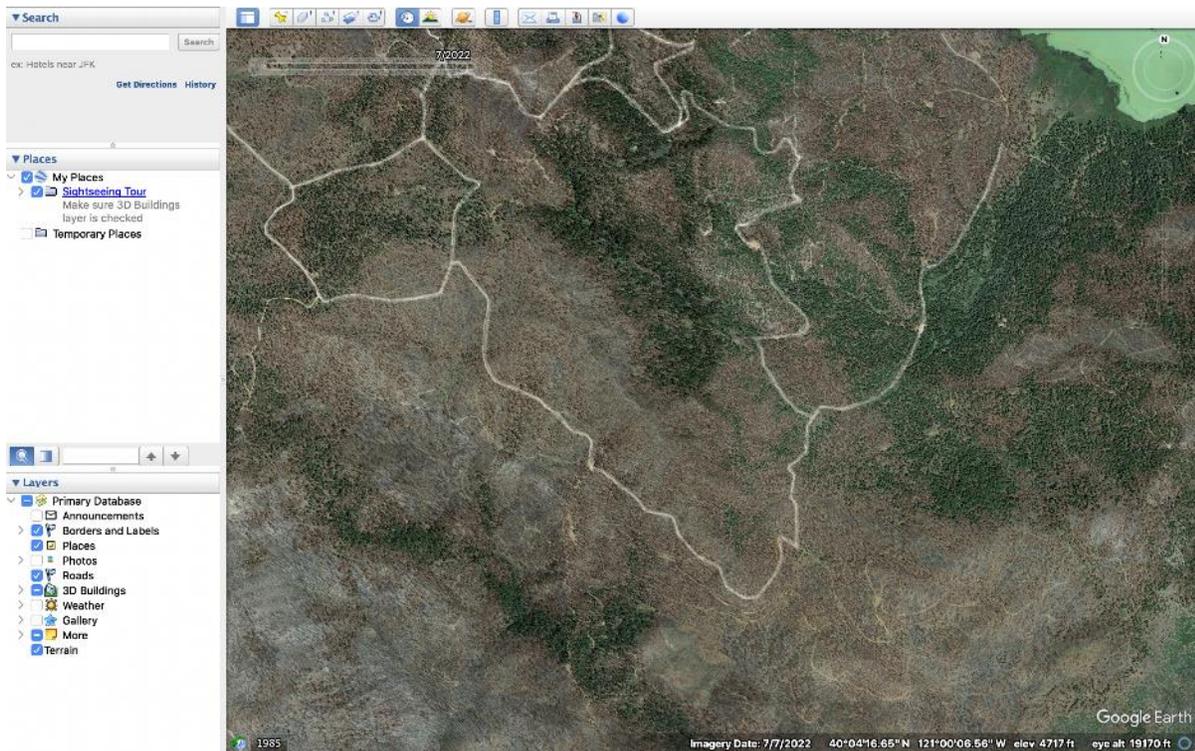
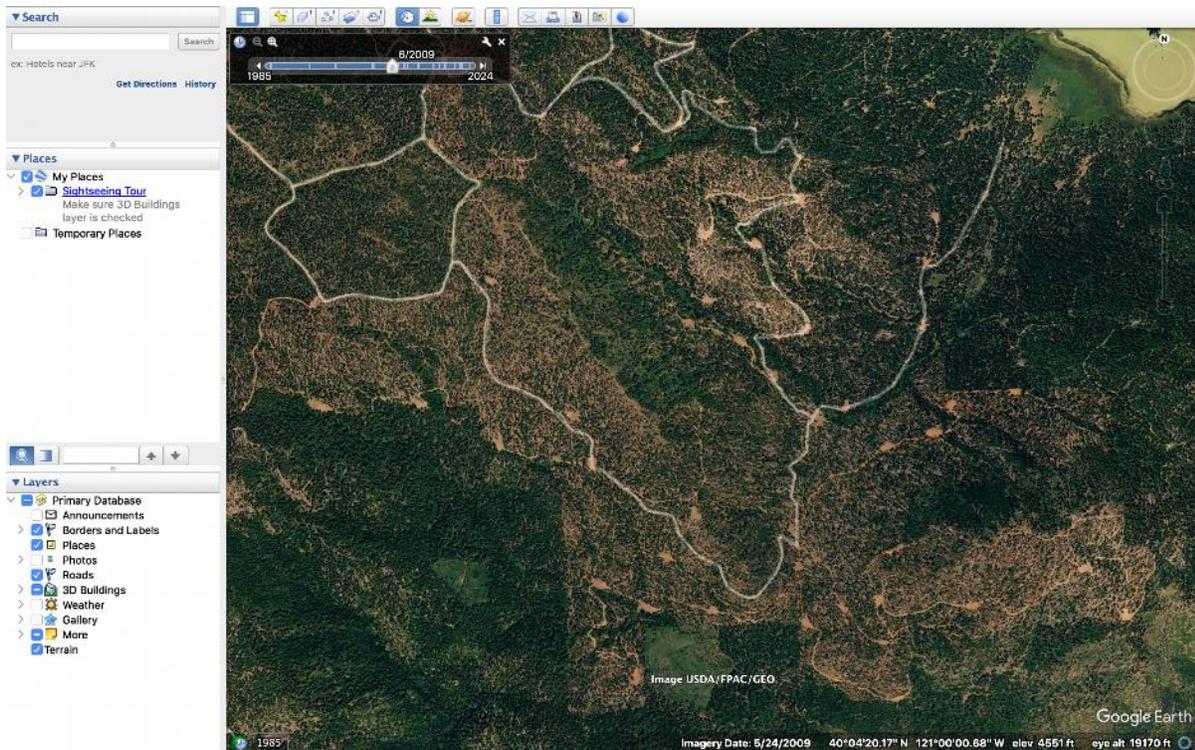
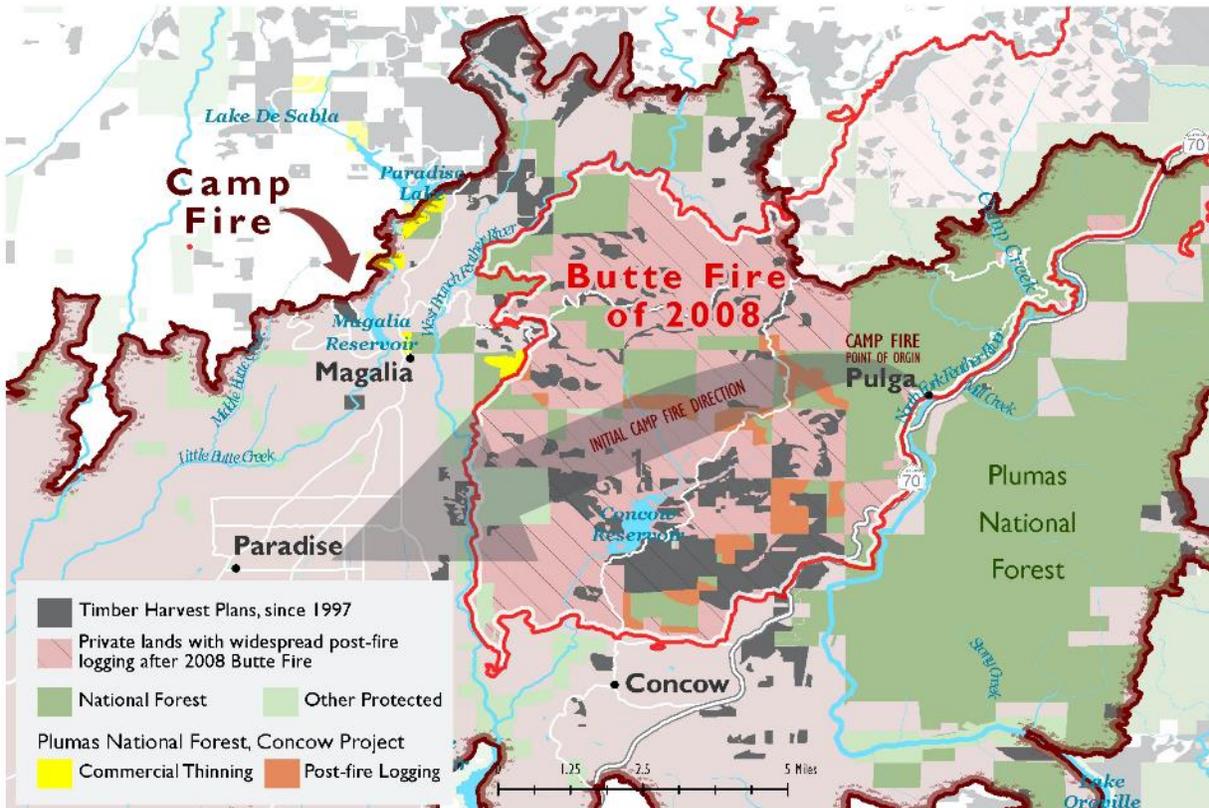
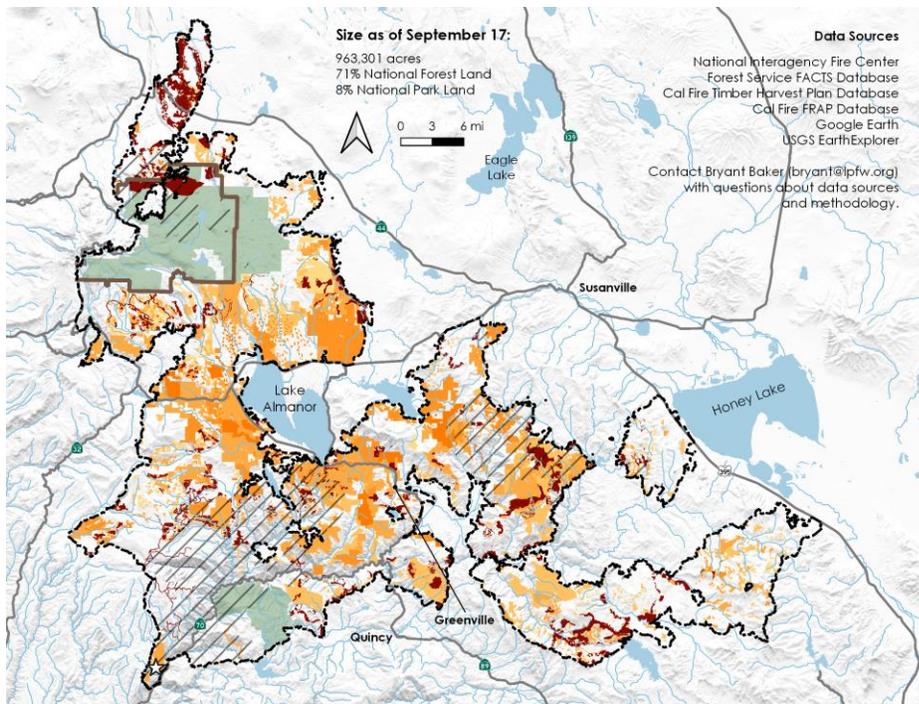


Image Pair #6: Mechanical thinning on private timberlands south of Greenville. The first image is from May 24, 2009, and the second is from July 7, 2022, after the Dixie fire, with the thinned areas heavily dominated by high-intensity fire.



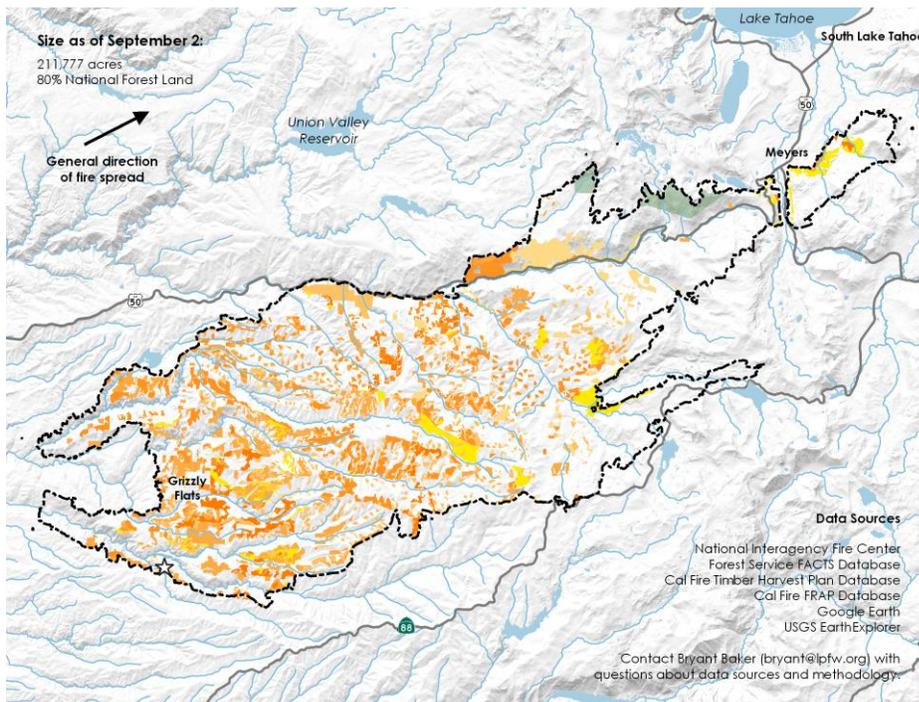
The approach of this Proposal—trying to promote forest management as fuel reduction, forest health, and community safety measures—is not just a proven failure, it is responsible for increasing wildfire threats to communities, as we have seen in Paradise (Camp fire of 2018), Greenville (Dixie fire of 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.





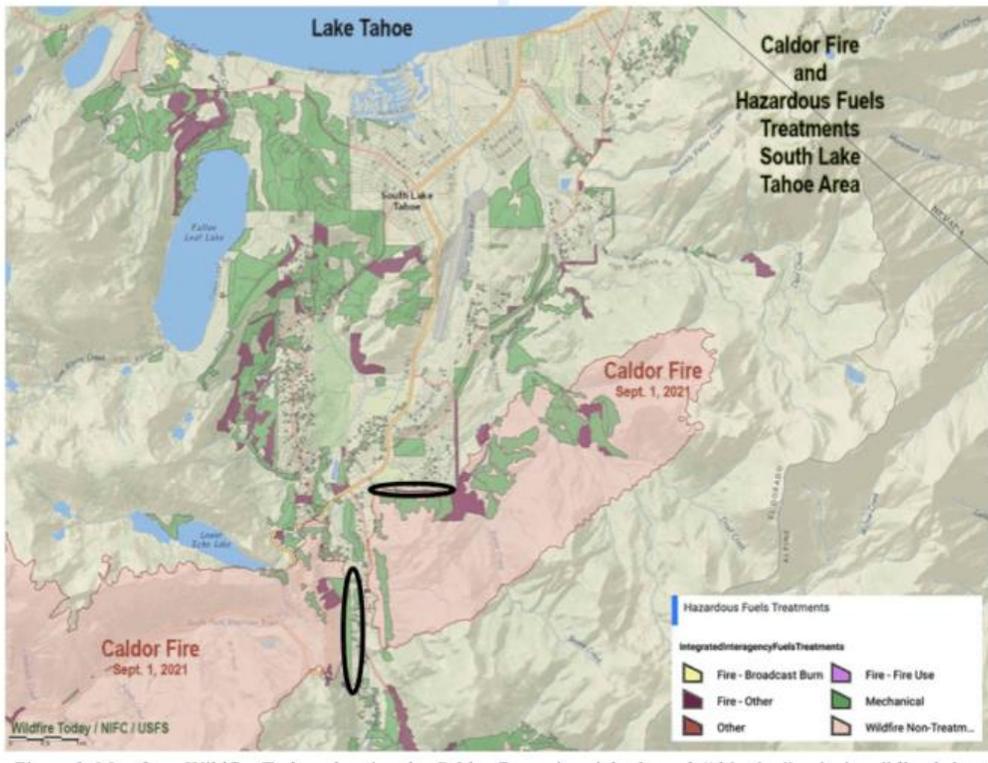
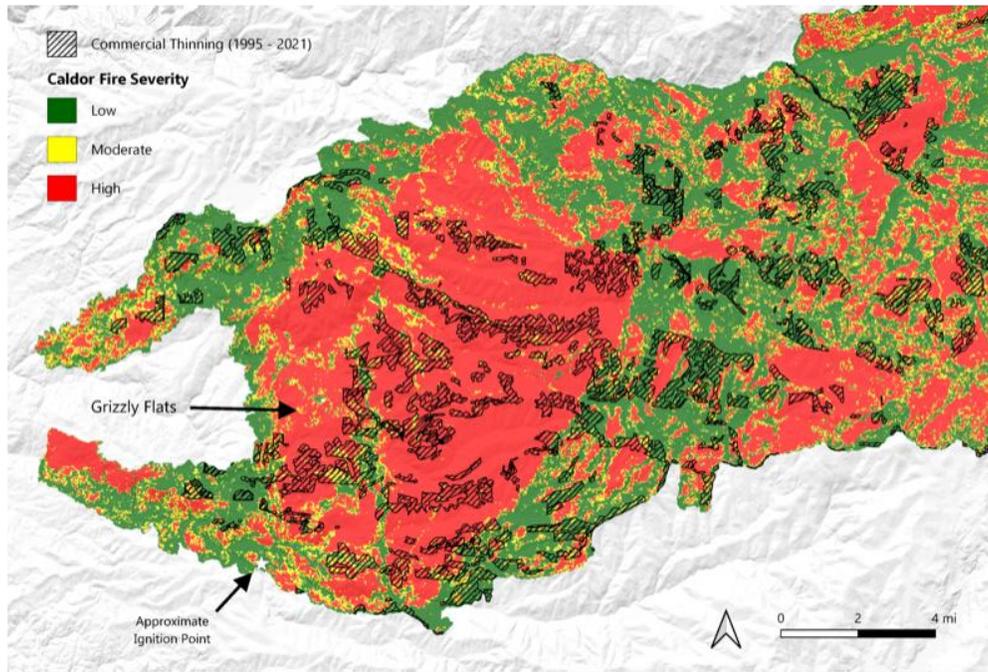
2021 Dixie Fire Area Management History

- Major Road
- Stream
- Fire Perimeter (Sept. 8)
- Ignition Area
- Lassen Volcanic NP
- Designated Wilderness
- Previous Fire (1995 - 2020)
- Prescribed Fire and Other Fuels Reduction Activities 2000 - 2020



2021 Caldor Fire Area Management History

- Major Road
- Stream
- Fire Perimeter (Sept. 2)
- Ignition Area
- Prescribed Fire and Other Fuels Reduction Activities 2002 - 2021
- Desolation Wilderness



Map from Wildfire Today, showing the Caldor fire racing right through “thinning” 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.

Dead Trees Do Not Increase Wildfire Behavior.

The Proposal assumes that dead trees increase wildfire hazard, and that removing dead trees will reliably reduce wildfire intensity and behavior. However, the overwhelming weight of science from the largest and most comprehensive studies find either no effect of higher densities of snags (standing dead trees) on wildfire intensity/severity (Bond et al. 2009, Hart et al. 2015, Hart and Preston 2020, Hanson 2021), or finds lower overall wildfire severity in areas with higher levels of snags and downed logs from previous tree mortality resulting from drought and native bark beetles (Meigs et al. 2016). Removing dead trees (“salvage logging”), on the other hand, tends to increase wildfire intensity and effects, often by leaving behind a portion of the combustible logging slash debris and by the spreading of combustible invasive grasses by logging machinery (Donato et al. 2006, Thompson et al. 2007, Thompson and Spies 2010, Hanson 2021). If a dead tree is within falling distance of a home, it should of course be felled (away from the home) so it is no longer a falling hazard, but the assumption that dead trees or downed logs are a wildfire hazard is contradicted by most science. Instead, downed logs act more like giant sponges, soaking up and retaining dozens of times more water per cubic foot than the surrounding soil (Amaranthus et al. 1989).

Adverse Impacts to Rare and Imperiled Wildlife

It is well documented that mechanical thinning, including removal of mature trees, causes serious adverse impacts to numerous rare and imperiled wildlife species, especially birds (DellaSala and Hanson 2024: <https://shop.elsevier.com/books/mixed-severity-fires/dellasala/978-0-443-13790-7>). In particular, we are concerned about impacts of the Proposal—especially the removal of mature trees—to the marbled murrelet (*Brachyramphus marmoratus*), a small seabird, listed under the federal Endangered Species Act, that nests in larger, mature trees within dense, older forests. Marbled murrelets have recently been confirmed nesting in and around nearby Big Basin Redwoods State Park, so there is a substantial chance that marbled murrelets are also nesting in the mature forests of Carmel. This species is very small and fast-moving, flying from the sea to the upper canopy of mature forests. It is notoriously hard to detect, without significant expertise, survey effort, and monitoring. Disturbing or otherwise harming any marbled murrelet would be a violation of the Migratory Bird Treaty Act and the Endangered Species Act.

We would be happy to discuss any of these points with decision-makers, and provide pdfs of cited studies, if there is interest.

Sincerely,

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