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Comment on the River Complex Risk Reduction Project Draft Environmental Assessment

We Advocate Thorough Environmental Review, more commonly known as W.A.T.E.R., is a grassroots, nonprofit 501(c)(3) organization dedicated to protecting Mount Shasta's waters and other natural attributes for the benefit of current and future generations. In our ten-plus years as an organization (seven-plus years as a nonprofit) we have focused on protecting our water resources from depletion by extraction and corporate privatization, protecting surface and groundwater from contamination by industrial activity, and protecting the environment from other inappropriate and polluting industrial/commercial activities. Our work has clarified for us the following realities:

- The climate crisis is the most urgent existential threat to humanity.
- "Environmentalism" in the 21st century cannot exist without addressing economic and social justice issues.
- Achieving social, economic, environmental, and climate justice requires confronting the dysfunctional economic and political systems that are ruining the planet and stonewalling efforts to change.
- Local issues are not strictly local; they are impacted by what happens regionally, statewide, nationally, and globally. And what we do in our communities can have far-reaching impacts around the globe.
- It is a moral obligation to protect Mount Shasta's water and other natural attributes.

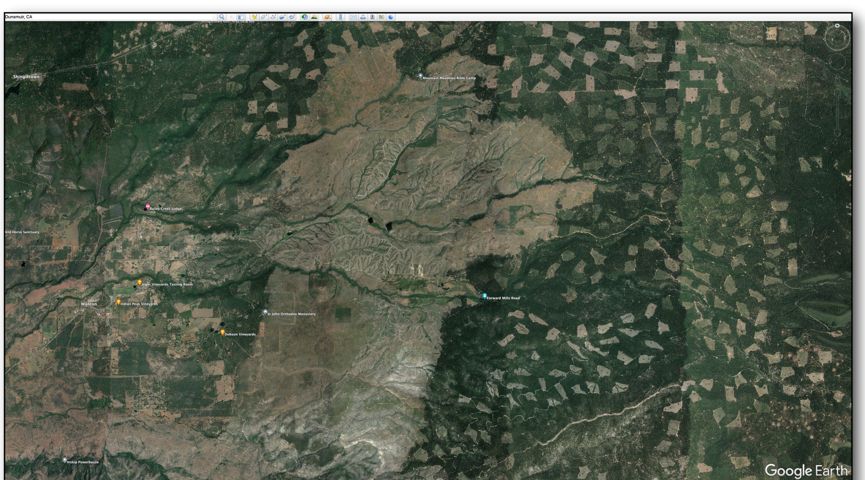
We believe in the inherent value of all Life. This planet is our only home and each generation has the responsibility to steward the Earth so the biosphere can regenerate and thrive now and for countless generations to come.

The Draft Environmental Assessment (EA) acknowledges that proposals for this project (i.e., salvage logging, site preparation and planting and fuels reduction) are contentious and rightly so. These actions are purported to "Accelerate the re-establishment of conifers within large patches of high severity fire".

Problems with Salvage Logging

Current (2022) Google Earth image of the Bagley Fire 2012

Current satellite imagery of the Bagley Fire which burned ten years ago in 2012 show the large sections that were salvage logged to be woefully lacking in regrowth other than along riparian buffers that mostly didn't burn compared to the sections which appear to have been allowed to regenerate naturally. Since restocking is required after salvage logging, it seems the effort failed to accelerate restoration. Admittedly we are in the midst of a megadrought[1] which is not favorable for rapid growth.



Current (2022) Google Earth image of the Ponderosa Fire 2012

The satellite imagery of the Ponderosa Fire that also burned in 2012 similarly shows very little regrowth ten years postfire and after salvage logging. These are two examples of large severe burns in the region that were salvage logged which definitely call into question the assertion that similar treatments will accelerate forest restoration in the River Complex treatment areas more quickly than natural regeneration.

Several pieces of legislation passed over the years defined the role of the US Forest Service.[2]

- *Multiple Use - Sustained Yield Act of 1960 (June 12, 1960) (P.L. 86-517; 16 U.S.C. §§ 528–531).* This act declares that the purposes of the national forests include outdoor recreation, range, timber, watershed, and fish and wildlife.
- *National Environmental Policy Act (January 1, 1970) (P.L. 91–190; 42 U.S.C. §§ 4321–4347).* This act requires Federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions.
- *Endangered Species Act (December 28, 1973) (16 USC 1531–36, 1538–40).* This act governs the process of identifying threatened and endangered species, provides protections for such species, and governs Federal actions that could affect such species or their habitat.

Salvage logging has many negative consequences impacting the intertwined Climate and Biodiversity Crises occurring. Leading climate and biodiversity experts recently concluded that we must tackle both crises together to protect a livable future for all of earth's inhabitants[3] including the creatures we share the Earth with. This amounts to changing how we look at Nature and breaking away from destructive ideas about economic progress.[4] This must include jettisoning the destructive notion that we must convert forests to tree plantations on short harvest cycles to maximize timber production to the detriment of other values.

This country has pledged support for two goals to be achieved by 2030: a 50% reduction in US Greenhouse Gas emissions and an end to deforestation. But we are lacking any goals or approaches for addressing the biodiversity crisis.

Salvage logging is detrimental to long-term forest development, wildlife habitat, and other eco-system functions.[5] The gravest consequence of salvage logging is blocking and preventing the development of the complex early seral forest state in a regenerating severely-burned forest stand which in turn reduces biodiversity.

> "Our data show that postfire logging, by removing naturally seeded conifers and increasing surface fuel loads, can be **counter-productive to goals of forest regeneration and fuel reduction**."[6] (emphasis added)
>
> "Ecologically detrimental management of Complex early seral forests (CESFs), or unburned forests that may become CESF's following fire, is degrading the region's globally outstanding qualities. Early seral forests are generated by disturbances that reset successional processes and follow a pathway that is influenced by biological legacies (e.g., large live and dead trees, downed logs, seed banks, resprout tissue, fungi, and other live and dead biomass) that were not removed during the initial disturbance. Where these legacies are intact, complex early successional forests (CESFs) develop with rich biodiversity due to the function of the remaining biomass in providing resources to many life forms and because of habitat heterogeneity provided by mixed-severity fires that generated them.

> In terms of their contribution to biodiversity and vital life-history stages of many species, CESFs have disproportionately important ecological roles in the overall ecological integrity of forested landscapes. Suppression of fire and removal of biomass after a fire are thus causes of reduced biodiversity and ecological integrity."[7]

In a study considering postfire snag-management guidelines, the author stated:

> "(E)xisting postfire salvage-logging studies reveal that most postfire specialist species are completely absent from burned forests that have been (even partially) salvage logged. I note that the biology of the most fire-dependent bird species suggests that even a cursory attempt to meet their snag needs would preclude postfire salvage logging in those severely burned conifer forests wherein the maintenance of biological diversity is deemed important.
>
> **The ecological cost of salvage logging speaks for itself**, and the message is powerful. I am hard pressed to find any other example in wildlife biology where the effect of a particular land-use activity is as close to 100% negative as the typical postfire salvage-logging operation tends to be. (emphasis added)
>
> Remarkably, at least one fourth of all bird species in western forests and perhaps even as much as 45% of native North American bird populations are snag-dependent; that is, they require the use of snags at some point in their life cycle."[8]

A recent landmark United Nations report delivered an alarming assessment of the fate of animal life and biodiversity on Earth. The authors report how natural habitats are declining at rates "unprecedented in human history," as species extinction is accelerating "with grave impacts on people around the world now likely."

"The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever," said Sir Robert Watson, chair of the United Nations Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), which issued the report. "We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide." Trend lines reveal unrelenting human activity is accelerating biodiversity loss.[9]

The Klamath National Forest in the vicinity of the River Complex Fire is habitat for several listed species under the Endangered Species Act (ESA) and/or the California Endangered Species Act (CESA). The Black-backed Woodpecker is a CESA candidate and is undoubtedly present. Fire suppression and salvage logging pose particular threats to the Black-backed Woodpecker, a pioneering cavity-excavating species, as both result in what is essentially habitat loss for this and other species.

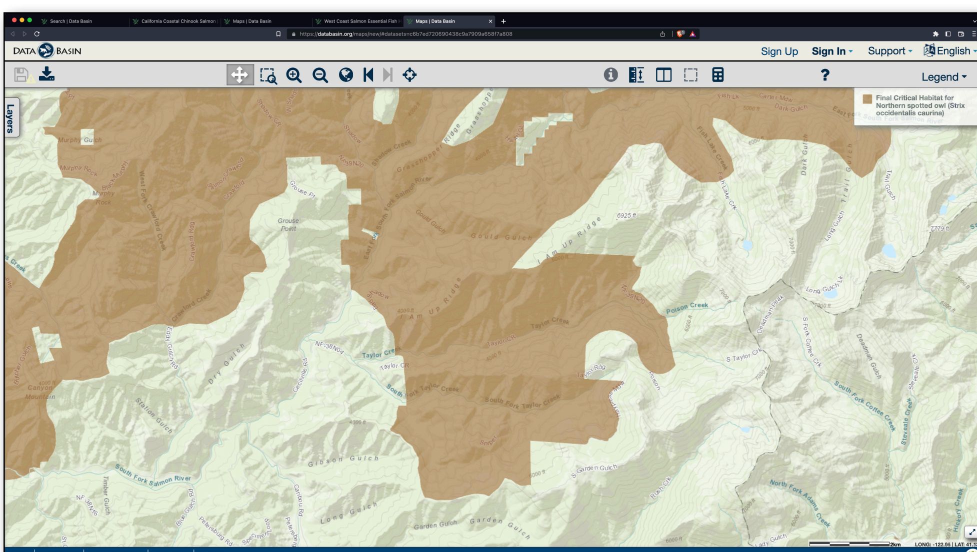
> "Researchers have found that Black-backed Woodpeckers play a key role in providing cavities that help other animals repopulate burned forests. These secondary cavity users, including birds such as the Mountain Bluebird and White-breasted Nuthatch, and small mammals such as flying squirrels, help disperse seeds, keep insect

populations in check, and serve as prey for larger carnivores during post-fire forest regeneration."[10]

A study of the association between listed ESA species and state listed species in relation to early-seral forest ecosystems in the Pacific Northwest concluded that 61 percent of listed native bird species, 80 percent of listed mammal species and 91 percent of listed butterfly and moth species are associated with this early-seral forest habitat. 22 of these species are obligates found only in this type of forest ecosystem.[11]

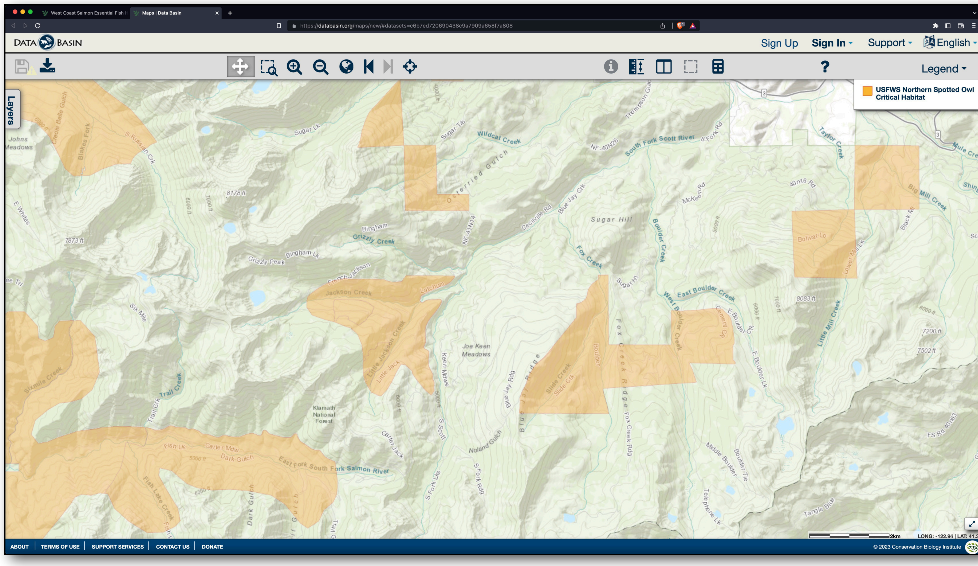
"One of the problems associated with the lack of appreciation of the impacts of salvage logging lies in the terminology itself. Dictionary definitions of the term salvage associate it with "recover or save" or "saving of anything from loss or danger". Although salvage logging removes wood from burned areas, such practices generally do not help regenerate or save ecosystems, communities, or species. Most documented effects of salvage logging are negative from an ecological standpoint."[12]

"Post-disturbance ecosystems are also often rich in biological legacies, including surviving organisms and organically derived structures, such as woody debris. These legacies and post-disturbance plant communities provide resources that attract and sustain high species diversity, including numerous early-successional obligates, such as certain woodpeckers and arthropods. Early succession is the only period when tree canopies do not dominate the forest site, and so this stage can be characterized by high productivity of plant species (including herbs and shrubs), complex food webs, large nutrient fluxes, and high structural and spatial complexity. Management activities, such as post-disturbance logging and dense tree planting, can reduce the richness within and the duration of early-successional ecosystems. Where maintenance of biodiversity is an objective, the importance and value of these natural early successional ecosystems are underappreciated."[13]`



Both the Taylor Creek and the Boulder/Bolivar side of the River Complex Fire encompass critical habitat for the Northern Spotted Owl (NSO), an ESA listed species in continual serious decline known to be intolerant of logging[14] in and near to its territory.

Critical Habitat for Northern Spotted Owl (Strix occidentalis caurina)
Taylor Creek side
acquired at Data Basin https://databasin.org/



USFWS Northern Spotted Owl Critical Habitat
Boulder/Bolivar side
acquired at Data Basin https://databasin.org/

"Research has found these owls preferentially select high-severity fire areas, characterized by high levels of snags and native shrubs, for foraging in forests that were not logged after fire, suggesting that removal of this foraging habitat might impact occupancy.

The authors found a significant adverse effect of such logging and no effect of high-severity fire alone. These results indicate it is post-fire logging, not large fires themselves, that poses a conservation threat to this imperiled species."[15]

"Contrary to current perceptions and recovery efforts for the Spotted Owl, mixed-severity fire does not appear to be a serious threat to owl populations; rather, wildfire has arguably more benefits than costs for Spotted Owls. The preponderance of evidence presented here shows mixed-severity forest fires, as they have burned through Spotted Owl habitat in recent decades under current forest structural, fire regime, and climate conditions, have no significant negative effects on Spotted Owl foraging habitat selection, or demography, and have significant positive effects on foraging habitat selection, recruitment, and reproduction."[16]

The decline of the threatened Northern Spotted Owl is a serious concern for biodiversity. NSO act as a surrogate delineating the extent of mature and old-growth forest still capable of serving as habitat for NSO. Canada's environment minister plans to use a rare emergency order to protect the last of this endangered owl species in an area where critical old-growth forest is slated for further clearcutting. Before industrial logging in south-west British Columbia, there were nearly 1,000 spotted owls in the old-growth forests, according to the Wilderness Committee. But now, only one wild-born northern spotted owl and two bred in captivity and recently released in the wild remain in British Columbia.[17]

However, despite the horrific loss of old-growth forest in British Columbia, spotted owl territories are not exclusively comprised of mature and old-growth forest.

"Spotted owls inhabit areas burned in wildland fires and actively forage in the snag forest habitat created by high-severity fire patches, and post-fire logging of even a seemingly minor portion of such habitat is associated with substantial loss of spotted owl occupancy.

Ponderosa pine and mixed-conifer forests inhabited by California spotted owls are experiencing substantial natural conifer regeneration after large, high-severity wildland fires, contrary to the assumptions underlying current prevailing land management policies dominated by extensive post-fire clearcutting and tree plantation establishment in spotted owl territories.

Our findings indicate that forests inhabited by spotted owls do not require assistance for recovery and are capable of naturally regenerating quite well at much farther distances from live trees than previously suggested.

Future choices made by land managers regarding post-fire habitats, and emerging science about post-fire succession, will be consequential for spotted owls. Despite ongoing methodological differences between researchers, there is broad agreement that current post-fire management—characterized by clearcutting of snag forest habitat, spraying of herbicides to eliminate native shrubs, and creation of tree plantations—is harmful to declining spotted owl populations."[18]

"After accounting for distance, spotted owls selected burned areas for foraging over unburned forest, with the greatest selection for high-severity burned areas. Several of the parameters in our best model for distinguishing owl habitat structure among burn-severity classes may be associated with increased abundance or accessibility of prey.

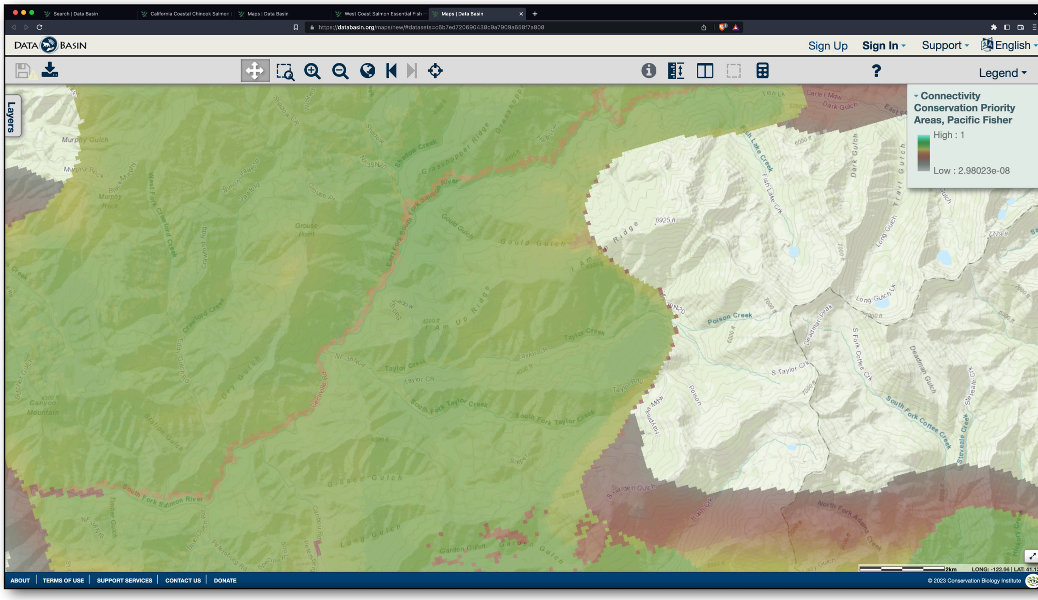
Snags provide shelters for prey species like woodrats and flying squirrels. Northern flying squirrel population densities in Oregon, USA, were correlated with the occurrence of suitable nesting cavities in trees and early decay–stage snags with diameters >50 cm.

In summary, the most likely explanation for the greater probabilities of use by spotted owls of forest patches burned at high severity was increased presence of prey promulgated by enhanced habitat conditions, which we documented as increased shrub and herbaceous cover, and number of snags.

Because our sample of California spotted owls in the McNally Fire did not avoid burned areas for nesting, roosting, and foraging, burned forest may have provided some benefits to this species. We recommend that burned forests within 1.5 km of nests or roosts of California spotted owls not be salvage-logged until long-term effects of fire on spotted owls and their prey are understood more fully."[19]

Pacific Fishers

Pacific Fishers are present in the Taylor Creek side of the project. This area of the project is almost entirely within Connectivity Conservation Priority Areas. There are few studies to definitively shed light on habitat preferences of the Pacific Fisher.



Fishers have been extirpated from more than 50% of their previous range and only two native populations survive in California, one near the California-Oregon border and one in the southern Sierra Nevada.

Connectivity Conservation Priority Areas, Pacific Fisher
Taylor Creek side
acquired at Data Basin https://databasin.org/

The southern Sierra Nevada fisher population was listed as a threatened species by the California Fish and Game Commission in August 2015.[20]

The Pacific fisher was denied a spot on the Endangered Species List as a threatened species for the second time by the U.S. Fish and Wildlife Service (USFWS) in 2016. Fishers in northern California and southern Oregon are said to have benefitted from several conservation partnerships between the U.S. Fish and Wildlife Service and state and private timber companies that have kept them from being listed under the Endangered Species Act.[21]

In 2008, both populations were nearly double the 2016 numbers according to a Fish and Wildlife document. Northern California and Oregon fisher populations at that time were estimated at 4,018 and Sierra Nevada populations were estimated at 598. Fishers face many potential threats to the population which included habitat loss, wildfire, timber harvesting practices and toxic substances associated with rodenticides. Conservation groups within Northern California have filed a lawsuit against the federal agency.[22]

This precipitous decline argues for special effort to preserve habitat for the Fishers even though studies to determine habitat features are few.

> "Fishers selected sites for resting that had steeper slopes, cooler microclimates, denser overhead cover, a greater volume of logs, and a greater prevalence of large trees and **snags** than were generally available."[23] (emphasis added)

A study contemporary to the above reported the results from using two trained dogs to search for fisher locations.

"The study area was a 38,400-ha area in the northern Kern Plateau on the southeastern portion of Sequoia National Forest, the majority of which has been affected by several large mixed-severity wildland fires since 2000, including the McNally fire of 2002 and the Manter fire of 2000. Two scat dog teams conducted random transects across all vegetation types and structures in unburned forest and in burned forest (all fire severities) in the study area in July and November of 2012.

The pattern of fisher detections did not evidence a categorical adverse response to large, mixed-severity wildland fires. On the contrary, these results indicate that mixed-severity fire may have some benefits for fishers.

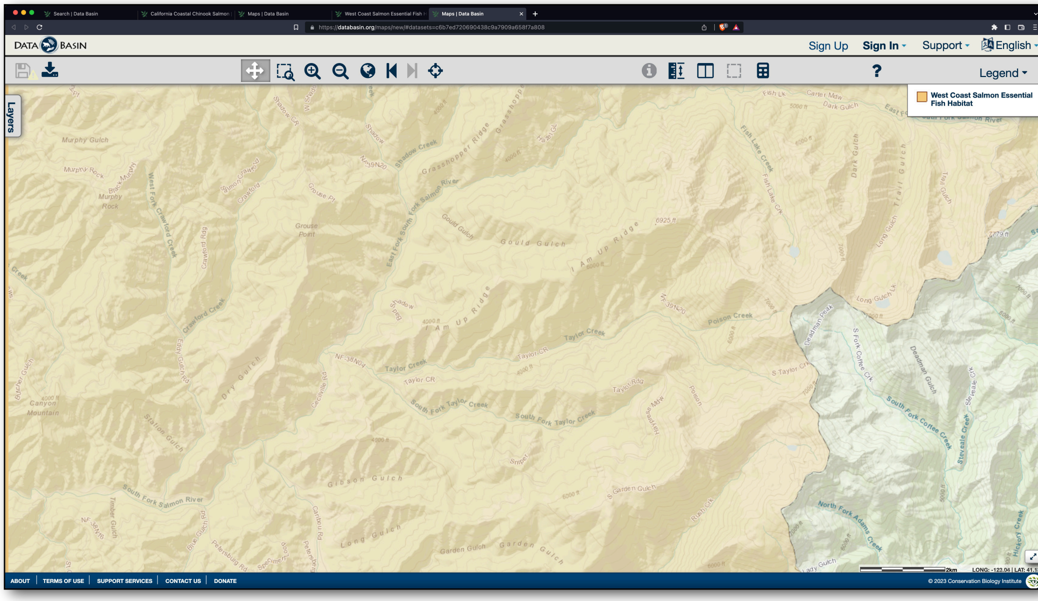
Indeed, detection rates were approximately the same between dense, mature/old mixed-conifer forest with moderate/higher-severity fire and unburned dense, mature/old mixed-conifer, indicating that such post-fire areas represent suitable fisher habitat, and a number of detections were so deep into the McNally fire that most or all of the home ranges of these fishers may be within the fire area, given home range size.

There are a few factors which could explain my results here. First, there may be a "bedroom and kitchen" effect occurring, whereby fishers tend to select unburned forest or lower-severity burned forest for denning and resting, but may select moderate/higher-severity fire areas for foraging, similar to the radiotelemetry results in the McNally fire area for another imperiled old forest species, the California spotted owl. The diet of fishers is substantially comprised of taxa, including small mammal species, which tend to be associated with **complex early seral forest conditions** comprised of montane chaparral, downed logs, snags, and **natural conifer regeneration**—conditions in abundance in higher-severity fire patches in the McNally fire. Such post-fire habitat is rich in small mammals, and spotted owl home ranges in the McNally fire are similar to, or smaller than, those in unburned forests in the Sierra Nevada, indicating high territory fitness in mixed-severity burned forest that has not been subjected to post-fire logging. (emphasis added)

My results indicate that fishers benefit not from moderate/higher-severity fire in general but, rather, moderate/higher-severity fire in mature/old forest with moderate to high pre-fire canopy cover. Such areas have high structural complexity, and can have higher overall biomass (live and dead sources combined) than unburned old forest. Both of these are reduced by post-fire logging, and may be similarly diminished by mechanical thinning, which tends to reduce habitat structures/features important to fishers, such as dense understory and canopy structure, and high snag and downed log density."[24]

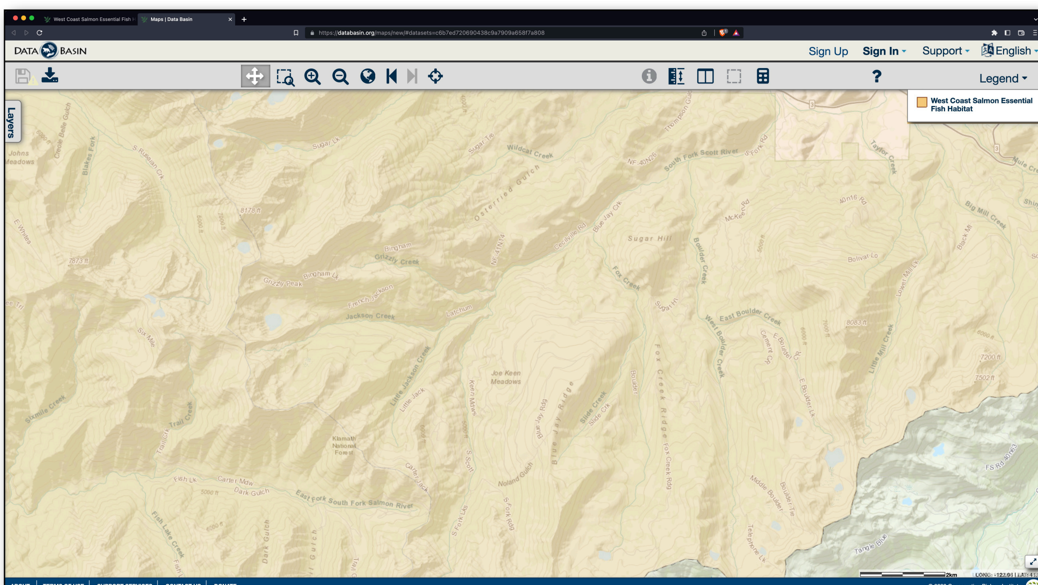
Impacts of Salvage Logging on Salmon

Substantial timber harvest has occurred throughout the Southern Oregon/Northern California Coast (SONCC) coho salmon Evolutionary Significant unit (ESU). Timber harvest is ranked as a high or very high threat in 20 of 39 populations in the ESU. In many of these populations, while timber harvest activity has decreased since the peak over 50 years ago, and practices and management have improved, the effects of future timber harvest continues to be a potential threat to coho salmon.[25]



West Coast Salmon Essential Fish Habitat
Taylor Creek Side
acquired at Data Basin https://databasin.org/

The maps for the River Complex Risk Reduction Project show that the entirety of the project occurs in Essential Fish Habitat for West Coast Salmon.



West Coast Salmon Essential Fish Habitat
Boulder/Bolivar Side
acquired at Data Basin https://databasin.org/

"In many streams, timber harvest in the riparian areas has resulted in reduced inputs of leaf litter, terrestrial insects, and large wood. Reduction of large wood from the harvest of streamside timber has resulted in the reduction of cover and shelter from turbulent high flows. Numerous studies have identified impacts including reduced large woody debris, increased water temperature, and increased erosion and sedimentation. These impacts have been shown to impair the reproductive success of salmon due to increased turbidity, loss of interstitial spaces for use by juveniles, the smothering of eggs by fine sediments, loss of deep pools, and blockage of spawning habitat by landslides.

The threat from future timber harvest lies in the inability of already degraded landscapes to rebound from continued impacts. If detrimental timber harvest (i.e., clear cutting, decreased age of trees removed) continues, cumulative effects and large scale, landscape-size issues may be perpetuated. The continuation of these harmful timber harvest practices will result in decreased cover and reduced storage of gravel and organic debris, and will likely result in continued loss of pool habitat and a reduction in overall hydraulic complexity.

In 1997, at the time of the original listing of the SONCC coho salmon ESU (62 FR 24588, May 6, 1997), timber harvest was identified as a significant threat to the species and their habitat."[26]

"Riparian vegetation is typically quite resilient to fire and rapidly recovers following fire. In landscapes altered by decades of resource extraction or fire suppression, however, the consequences of fire for forest ecosystems may be severe. Furthermore, recovery of stream ecosystems from the effects of fire may be slower, more sporadic, and potentially incomplete in landscapes where natural processes and ecosystem structures have been degraded or impaired.

Evidence continues to mount of a direct relationship between mechanical disturbance to the postfire environment and accelerated erosion. Soil compaction can persist for 50 to 80 years in many forest soils and even longer in areas with high clay content, which is substantially longer than the negative influence on soils that may be associated with fire."[27]

"In California, 44% of the native species in the Klamath province were declining or existed in limited distributions (in 1990).

Logging and thinning intended to remove fuels or to replace fire may ultimately remove a legacy of materials that would structure aquatic habitats in the future. Aggressive management of fire and fuels will often require an infrastructure of roads and stream crossings that will likely perpetuate the disruption to streams and the expansion of non-native taxa.

Management intended to replace or mimic the effects of fire may look nothing like those fires from a watershed perspective. Because management often involves repeated entry and the maintenance of an infrastructure including roads, the negative effects of management can be chronic or persistent compared to the acute and periodic effect of fire. Species that evolved in variable environments may be adapted to the periodic or pulsed events, but not the chronic ones."[28]

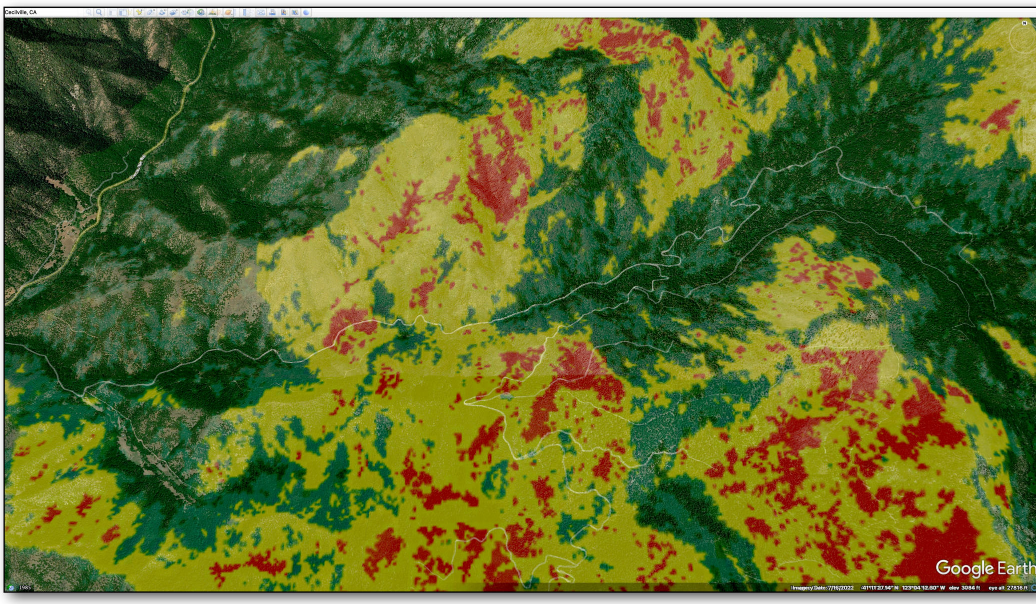
Impact on Taylor Creek of Fuel Reduction along Ingress/Egress Routes

Taylor Creek Road runs alongside Taylor Creek up to the forked junction with roads 38N04 and 38N07 and the confluence of Poison Creek with other tributaries. The Proposed Action map for the Taylor Creek side of the Risk Reduction project clearly shows the extent of fuels reduction along Taylor Creek

Road extending across Taylor Creek in places as well as crossing the many rivulets feeding into the creek.

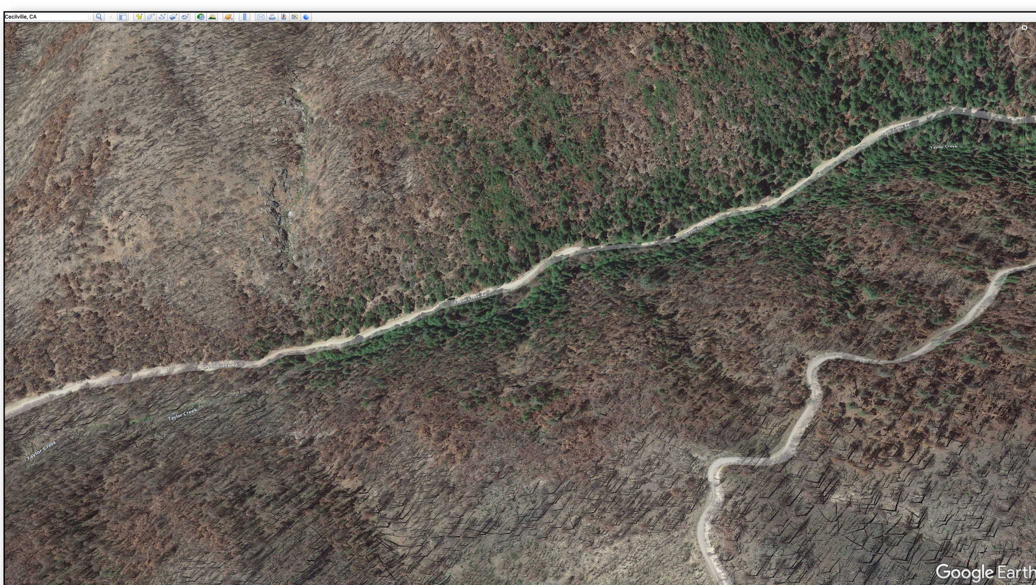
All of the roads designated as Fuel Reduction along Ingress/Egress Routes and Commercial Roadside Hazard logging cross the forks and numerous rivulets feeding into Taylor Creek exposing both Taylor Creek and the Salmon River to sediment flows caused by erosion from logging activities.

> "Aggressive management of fire and fuels will often require an infrastructure of roads and stream crossings that will likely perpetuate the disruption to streams and the expansion of non-native taxa."[29]



High severity - Red, Moderate - Yellow, Low - Light Green, Unburned- Dark Green

The very large majority of the length of Taylor Creek Road and Service Road 38N04, both marked for Fuel Reduction along Ingress/Egress Routes, was unburned or burned at low severity with only a small percentage burning at moderate severity and even less at high severity.



This image shows a section of Taylor Creek Road near the junction with Service Road 38N07, also shown. The Proposed Action map shows fuel reductions will occur on both banks of the creek in this location.

Removal of any of the trees, especially the live green trees, all along Taylor Creek and its tributaries will impact Taylor Creek's suitability for salmon habitat by exposing the watercourses to sunlight and raising the temperature of the water. The Proposed Actions will also cause sedimentation from erosion and deprive the creek of large woody debris preventing pools from forming.

> "The Aquatic Conservation Strategy (ACS), a primary component of the NWFP (Northwest Forest Plan), was designed to protect salmon and steelhead habitat on federal lands managed by the USFS and BLM by maintaining and restoring ecosystem health at watershed and landscape scales (NMFS - National Marine Fisheries Service 1997). Aquatic ecosystem elements embedded in the ACS include: maintenance of hydrologic function, high water quality, adequate amounts of coarse woody debris, complex stream channels that provide a diversity of aquatic habitat types, and riparian areas with suitable microclimate and vegetation. There are four primary components of the ACS: 1) Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis, and 4) Watershed Restoration.
>
> The riparian reserve network was intended to reverse habitat degradation for at-risk fish species or stocks, including coho salmon, and to serve a terrestrial function by providing a system of old forest structural elements to connect the late-successional reserves. Late-successional reserves provide increased protection for all stream types. Late-successional reserves and riparian reserves serve as core areas of high quality stream habitat, fish refugia, and centers from which degraded aquatic systems can be recolonized once they are restored.
>
> Specifically, NMFS identified inadequacies of the forest practice rules to address large wood recruitment, streamside tree retention, canopy retention standards, monitoring of timber harvest operations, and salvage harvesting."[25]
>
> "Throughout the American West, a century of road building, logging, grazing, and other human activities has degraded stream environments, causing significant losses of aquatic biodiversity and severe contractions in the range and abundance of sensitive aquatic species, including native salmonid fishes.
>
> Postfire salvage logging generally damages soils by compacting them, by removing vital organic material, and by increasing the amount and duration of topsoil erosion and runoff, which in turn harms aquatic ecosystems. The potential for damage to soil and water resources is especially severe when ground-based machinery is used.
>
> Increased runoff and erosion alter river hydrology by increasing the frequency and magnitude of erosive high flows and raising sediment loads. These changes alter the character of river channels and harm aquatic species ranging from invertebrates to fishes.
>
> Construction and reconstruction of roads and landings (sites to which trees are brought, stacked, and loaded onto trucks) often accompany postfire salvage logging. These activities damage soils, destroy or alter vegetation, and accelerate the runoff and erosion harmful to aquatic systems."[30]

> “Large-scale salvage logging has similar impacts on aquatic ecosystems as clear-cut logging. Standard guidelines for the protection of riparian zones should, therefore, apply. Logging in riparian zones can result in increased sedimentation, water temperature changes and the long-term depletion of coarse woody debris.
>
> Sedimentation can interfere with foraging by fish, reduce aquatic insect abundance and, for species that broadcast their eggs, it can decrease oxygen to eggs and may block fry emergence. The removal of insect-damaged or fire-killed trees from streambanks can result in water temperatures as much as 10°C higher than normal for up to 15 years (until a substantial canopy regenerates). Such changes have negative impacts on coldwater species.
>
> The depletion of coarse woody debris through salvage logging in riparian areas can also significantly alter water conditions and aquatic productivity. Coarse woody debris provides habitat by creating large, deep pools of slow-moving water which species like salmonids require to manage their energy demands and as cover from predators. This type of debris also creates areas of lower stream gradient important for juvenile and spawning habitat.”[31]
>
> “Accelerating rates of species extinction are a matter of global concern as exemplified in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) report that predicted the loss of over 1 million species in the foreseeable future, which will also have significant impacts on the delivery of ecosystem services.
>
> Multiple explanations have been given for this low rate of recovery including: (a) a pattern of not protecting species until their populations have reached very low levels, which increases both the time to recovery and the likelihood that species will vanish entirely due to environmental, genetic, and demographic stochasticity; (b) a lack of incentives to landowners to participate actively in efforts to increase populations of endangered species; and (c) inadequate funding for recovery actions.”[32]

Under the Endangered Species Act, the Forest Service has been tasked with identifying threatened and endangered species and providing protections for such species. “In addition, the legislative history…reveals an explicit congressional decision to require agencies to afford **first priority to the declared national policy of saving endangered species**. The pointed omission of the type of qualifying language previously included in endangered species legislation reveals a conscious decision by Congress to **give endangered species priority over the ‘primary missions’ of federal agencies.**” *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 185 (1978). (emphasis added)

It can not be any more clear that habitat suitable for all of these listed species must be preserved and protected.

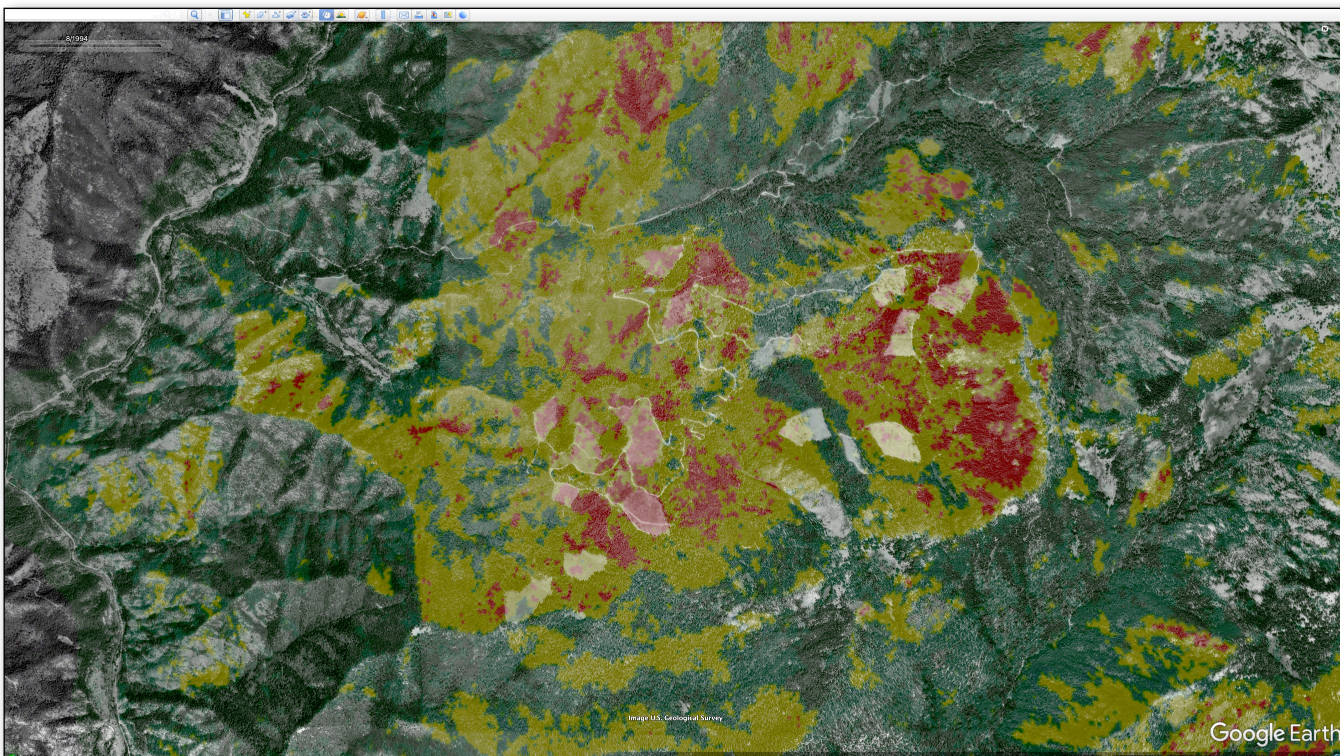
> “We have noticed a disturbing trend in the USFS's recent timber-harvesting and timber-sale activities. It has not escaped our notice that the USFS has a substantial financial interest in the harvesting of timber in the National Forest. We regret to say that in this case, like the others just cited, **the USFS appears to have been more interested in harvesting timber than in complying with our environmental laws.**” (emphasis added)

Earth Island Inst. v. US Forest Service, 442 F. 3d 1177, 1178 (9th Cir. 2006)

Site Preparation and Planting

The negative consequences of salvage logging are well known. Besides its effect on ESA critical habitat, salvage logging reduces forest resilience by removing the natural regeneration process resulting in a more homogenous forest with lower biodiversity and reduced ecological functions thus depriving many species of habitat. The heavy machinery used in salvage logging causes soil compaction and erosion, affecting soil fertility and nutrient cycling. Salvage logging delays forest recovery by removing the organic matter that is essential for soil development and nutrient cycling.

But it has also not gone without notice that many of the areas in the River Complex Fire that burned at high severity were located at the sites of tree plantations or adjoining them. Overlaying a 1994 Google Earth image of the Taylor Creek project area onto an image of the same area displaying the soil burn severity map[33] readily reveals this relationship.



Almost all of the plantations or significant portions of them burned at high severity with very little escaping unburned. There have been several studies in the last couple of decades affirming this relationship between tree plantations and fire severity.

> "(I)n the landscape we studied, intensive plantation forestry appears to have a greater impact on fire severity than decades of fire exclusion. Plantations burned at higher severity, and this implies they are a higher source of risk to adjacent forest ownerships."[34]

> "(T)ree plantations experienced twice as much severe fire as multi-aged forests. We concluded that fuel buildup in the absence of fire did not cause increased fire severity as hypothesized. Instead, fuel that is receptive to combustion may decrease in the long absence of fire in the closed forests of our study area, which will favor the fire regime that has maintained these forests. However, plantations are now found in one-third of the roaded landscape. Together with warming climate, this may increase the size and severity of future fires, favoring further establishment of structurally and biologically simple plantations."[35]

> "We found that where fires occurred, the odds of high-severity fire on "private industrial" lands were 1.8 times greater than on "public" lands and 1.9 times greater than on "other" lands (that is, remaining lands classified as neither private industrial nor public). Moreover, high-severity fire incidence was greater in areas adjacent to private industrial land, indicating this trend extends across ownership boundaries."[36]

An image in the River Complex Risk Reduction Fuels Resource Report by Ezekiel Jones shows a view of an area in the Whites Fire of 2014. It shows many snags and a lush profusion of Ceanothus. Although it's unknown if any restoration occurred for the Whites Fire, there is no image of a restored forest patch for comparison. Ceanothus is a very beneficial drought tolerant shrub native to California that improves soil fertility through biological nitrogen fixation thanks to the nitrogen-fixing activity of actinomycete bacteria living inside the plant's roots[37]. Its blossoms attract a myriad of insects including pollinators and beneficial insects, native bumble bees and honeybees of many kinds, hover flies and tiny beneficial wasps[38]; in turn attracting wild birds thus commencing a period of increasing biodiversity.

The drought tolerance of Ceanothus may explain why it is so lush after the years of drought that have been occurring[1]. Drought may also explain why regenerating conifers aren't visibly present. Sprouted conifer seedlings that have not grown very rapidly due to the dry conditions may indeed be present underneath the cover of the Ceanothus if searched for. The Ceanothus may be serving to shade and protect the seedlings until conditions allow them to emerge.

The report goes on further to express concern for the build-up of fuels that is arising in the River Complex Project area, perhaps similar to that in the Whites Fire. Expected Fireline Intensity from the combustion of these fuels is projected to exceed "1000 British Thermal Units per foot per sec". A study covering twenty-five years of observation on the efficacy of traditional silvicultural systems[39] reported a Fireline Intensity value for unthinned plantations of as much as 3880 kW per minute. Converting this value to Btus still yields a value three and a half times greater than the Fireline Intensity anticipated in a complex early seral forest. Under 97.5th percentile weather conditions unthinned plantations also have over four times the rate of spread compared to unmanaged forest.

> "Mechanical treatments in forests can produce negative ecosystem effects such as soil disturbance and compaction, disruption of nutrient cycling, damage to residual trees, and enhancement of root pathogens. The majority of the traditional silvicultural systems examined in this work (all plantation treatments, overstory removal, individual tree selection) did not effectively reduce potential fire behavior and effects, especially wildfire induced tree mortality

> at high and extreme fire weather conditions. In both pre-commercially thinned and un-thinned plantations, overall tree mortality is well above 80% at all modeled fire weather conditions.
>
> In California alone, nearly 120,000 hectares of forest plantations have never been treated since their initial site preparation and planting of seedlings. The majority of the traditional silvicultural systems used in the Sierra Nevada over the last several decades do not produce forests that can incorporate fire without high levels of tree mortality. Reserves performed better than most of the silvicultural systems investigated in this work."[40]

The 1994 satellite imagery of much of the River Complex Fire area showed that many plantations around there were about thirty years old. Median Fire Return Intervals for seven sites from the Klamath Mountains, where the mixed conifer-ponderosa pine forest types are similar to those in the northern Sierra, were seven to fifteen years, with a range of three to fifty-five years.[41] The probability of a reburn in this project area before new plantations mature is rather high.

Another recent study's title asks if fire suppression and active fire management approaches have become a contemporary Sisyphus. This is an exceedingly apt analogy for salvage logging a burn scar which destroyed tree plantations, preparing the site in the usual manner damaging the fecundity of the soil, then planting seedlings to establish even larger tree plantations subject to almost complete destruction in high severity fires. Sisyphus' boulder gets even bigger.

Deficiencies in the Environmental Assessment

Ultimately, the greatest failing of this Environmental Assessment is found in the specious statements: "Siskiyou County is currently in attainment for all criteria pollutants including 8-hour ozone, therefore Conformity Rule analysis is not required" and "The Project is compliant with the Clean Air Act and the Conformity Rule." With this country's pledge to reduce carbon emissions by half or more by 2030 and achieve Net Zero emissions by 2050 and California targeting even greater reductions, business as usual is completely inadequate.

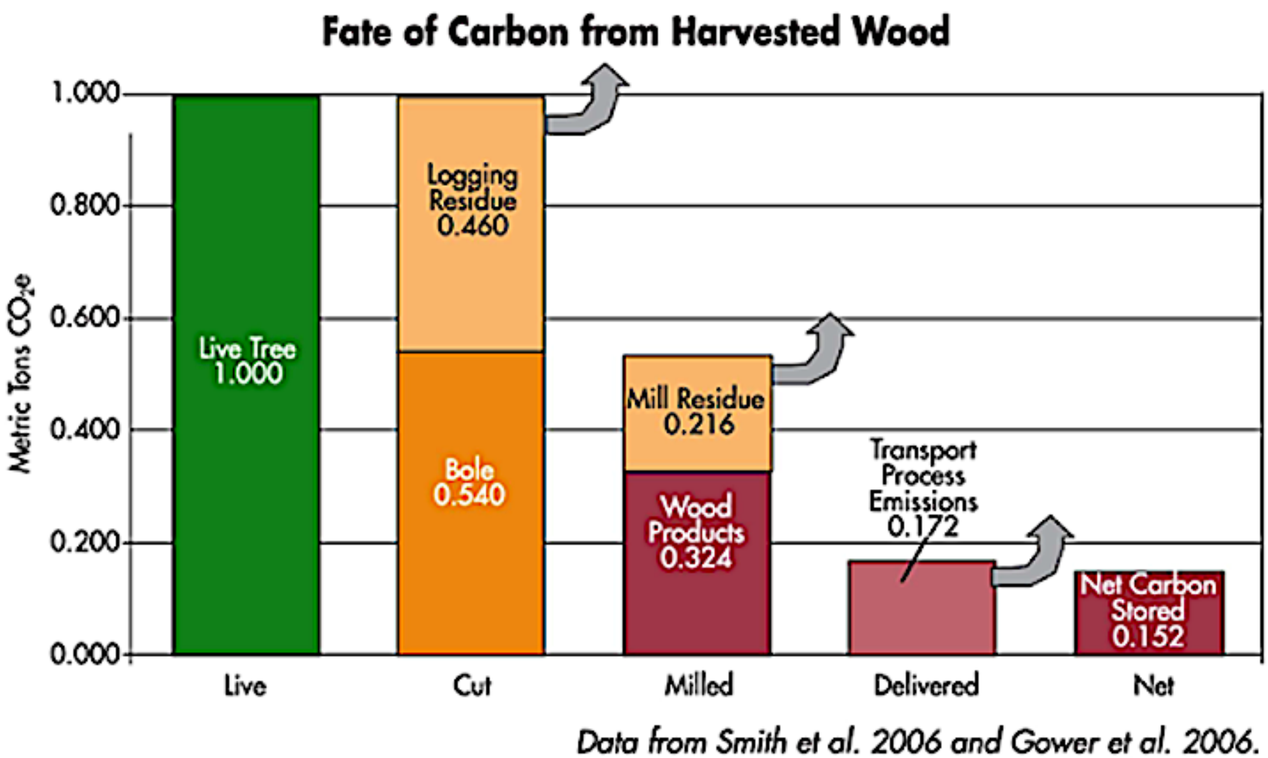
There is absolutely no analysis of the emissions that would be produced by this project.

> "Timber harvest activities generate emissions associated with the loss of carbon stored on site, the foregone sequestration of clearcut lands, the decay and combustion of logging residuals (slash) left behind after harvest, application of chemical herbicides, pesticides and fertilizers, soil disturbance, transportation, and operation of equipment.
>
> Timber harvest emission calculations were limited since data on the amount, types, and frequency of chemical and fertilizer applications are lacking in existing greenhouse gas (GHG) inventory methods. Emissions from soil disturbance are also difficult to quantify at this time. For purposes of this analysis, timber harvest related emissions are calculated as follows:

ETH = (REM – STOR) + FS + DR, where

ETH = timber harvest related emissions (million metric tons CO2-e per year)
REM = CO2-e removed from site by timber harvest
STOR = CO2-e removed from site and stored in long-lived (100+ years) wood products
FS = Foregone sequestration from recently clearcut lands
DR = Decay and combustion of logging residuals"[42]

This project proposes Hazard Tree Removals, Fuel Reductions along roads and trails, a Ridgetop fuel break and Salvage Logging all yielding merchantable timber. Wood product emissions are the result of fuel burned by logging equipment, the hauling of timber, milling, wood burned during forestry activities, and the ongoing decomposition of trees after they are cut. In the most favorable accounting of the amount of carbon emissions from the milling of logs, over 84 percent of the carbon stored in the wood is spewed back up into the atmosphere.



This Environmental Assessment ignores the science demonstrating the degree of carbon release during post-fire logging and the connection between post-fire logging and increased release of Greenhouse Gases. The EA contains no accounting of the carbon budget neither from the wood extracted nor the emissions from machinery and transportation that, in this project, includes harvesting using helicopters. There is no calculation determining how long it will take to resequester the amount of carbon emitted from these activities even assuming that the trees resequestering the carbon will not be harvested prior to that time when they will have drawn down the emitted carbon, neither of which is a surety.

This Environmental Assessment offers absolutely no analysis of the River Complex Risk Reduction Project's impact on Climate Crisis or the Biodiversity Crisis. A Finding of No Significant Impact will not suffice.

> "NEPA requires agencies to consider all important aspects of a problem.
>
> In its responses to these comments and in its finding of no significant impact, the USFS reiterated its conclusions about vegetation management but did not engage with the substantial body of research cited by Appellants. This dispute is of substantial consequence because variable density thinning is planned in the entire Project area, and fire management is a crucial issue that has wide-ranging ecological impacts and affects human life. When one factor alone raises "substantial questions" about whether an agency action will have a significant environmental effect, an EIS is warranted." *Bark v. U.S. Forest Serv.*, No. 19-35665 (9th Cir. 2020)
>
> "When we manage ecosystems we don't manage them to flourish. We push them to the brink of collapse — taking as much as we possibly can."[43]

Based on the contentions expressed about the Project in the comments addressing the Notice of Preparation and for all the reasons enumerated in this comment, No Action on the River Complex Risk Reduction Project should be pursued based on this Environmental Assessment. An Environmental Impact Statement should be prepared.

Thank you for this opportunity to address the River Complex Risk Reduction Project Draft Environmental Assessment.

Sincerely,

Frank Toriello
President
We Advocate Thorough Environmental Review

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