January 8, 2024

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RE: Rattail-Trinity Forest Health and Fire-Resilient Rural Communities Project Scoping

Sent via email to addresses above and on the Project webpage.

Dear Supervisor McArthur, Ranger Lark, and Rattail ID Team,

Please accept these comments for the Rattail Project on behalf of the Environmental Protection Information Center, the Klamath Forest Alliance, the Northcoast Environmental Center, and Safe Alternatives for our Forest Environment (S.A.F.E.). Our organizations represent over 35,000 members and supporters, who care deeply about protecting the wild places and rivers of California, particularly the Six Rivers National Forest and the Mad and Van Duzen Rivers. These watersheds are the ancestral homeland for the Nongatl, Wiyot, Lassik and Wailaki Tribes and peoples enrolled in the Scotts Valley Band of Pomo Indians of California, the Grindstone Indian Rancheria of Wintun-Wailaki Indians, and the Round Valley Indian Tribes of the Round Valley Reservation.

The Rattail Project includes 1,500 acres (2.3 square miles) within the Eel River Late Successional Reserve and within the 303(d) listed Van Duzen and Mad River watersheds. It proposes 3.41 miles of "temporary" road construction — 2.27 miles of new constructing and reconstructing 1.14 miles of existing routes. The scoping notice describes proposed actions to include - integrated forest health and fuels reduction treatments (fuels treatments, hazard tree abatement, thinning from below in plantations, and oak woodland restoration), address **a** legacy sediment site, treat invasive species, mitigate hazards to public utilities and values at risk.

WILDFIRE CRISIS STRATEGY

The Rattail project *is not within* (>95%) the Trinity Forest Health and Fire-Resilient Rural Communities landscape and should not qualify for emergency authorizations. The project: does not include prescribed burning; was not designed with local partners and; as proposed, does not comply with Northwest Forest Plan or the Six Rivers Land Resource Management Plan (LRMP). Any authorized emergency actions taken must be conducted consistent with applicable land and resource management plans.[1]

Priority Landscapes

The scoping notice states, "the Forest Service identified landscapes most in need of fuels and forest health treatments." The Wildfire Crisis Strategy states, "Based on a fireshed analysis, our scientists have models for identifying the firesheds most in need of fuels and forest health treatments..."[2] We ask the Mad River Ranger District to work within the designated priority landscapes.

Working with Partners

"Under the plan, we are *working with our partners* to focus our fuels and forest health treatments more strategically and at the scale of the problem, using the best available science as our guide."[3] "Work will begin *in coordination with partners* and in full compliance with the National Environmental Policy Act and other applicable laws."[4] *Together with our partners…*"[5] "*Working together with partners,* we considered collaborative efforts already in place and with opportunities to invest in underserved communities"[6] "*With our partners*, we will continue to seek solutions to the challenges we face, partly by finding new ways of working together. *Working with partners*, we are building public support for the needed work, moving efficiently through environmental review, and coping with the complexity of prescribed fire in the wildland-urban interface."[7]

In the description of the Trinity Forest Health and Fire-Resilient Rural Communities landscape, the Six Rivers National Forest touts its "strong relationships with Tribes and local partners and communities."[8] We ask that the Mad River Ranger District hold true to this intent by working with local stakeholders and collaborators to design a project more in line with the Trinity County Collaborative efforts to expand shaded fuelbreaks along existing roads.

[1] *The Infrastructure Investment and Jobs Act*, Title VIII, Section 40807(b)(3).
[2] USDA, Confronting the Wildfire Crisis. FS-1187f, January 2023. P. 7.
[3] Ibid, P. 7.
[4] Ibid, P. 7.
[5] Ibid, P. 7.
[6] Ibid, P. 8.
[7] Ibid, P. 31.
[8] Ibid, P. 16.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

Please note that NEPA mandates a particular process but not necessarily a particular result, Inland Empire Public Lands Council v. USFS, 88 F.3d 754, 758 (9th Cir. 1996). This process **must proceed without undue bias from the action agency** and ultimate decision maker. The Council of Environmental Quality (CEQ) regulations warn that **a NEPA document may not be used to justify a decision already made**. 40 CFR §1502.2(g).

"NEPA procedures must ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 CFR 1500.1(b). NEPA was enacted to ensure that important environmental effects "will not be overlooked or underestimated only to be discovered after resources have been committed or the die otherwise cast." Robertson v. Methow Valley Citizens, 490 US 332, 348, 109 S.Ct. 1835.

The scoping notice expects the Rattail Environmental Analysis (EA) to be completed in February 2024. How can the Mad River Ranger District expect to write an EA and better yet analyze project impacts to all forest and wildlife resources in 2-6 weeks? It appears that the Mad River Ranger District is not following the spirit and intent of NEPA or considering public comment and that it has already decided one action alternative and prepared the EA.

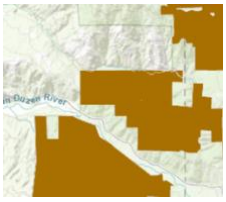
"Hard Look" Requirement

In preparing an EA, the agency must take a "hard look" at the consequences of the proposed action. *Envtl. Prot. Info. Ctr. v. United States Forest Serv.*, 451 F.3d 1005, 1009 (9th Cir. 2006). If the agency determines that an EIS is not necessary, it must provide a "convincing statement of reasons to explain why a project's impacts are insignificant." *Id.* (quoting *Nat'l Parks & Conservation Ass'n v. Babbitt*, 241 F.3d 722, 730 (9th Cir. 2001)). This statement must include information that is "sufficient to establish the reasonableness of the decision," *Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1215 (9th Cir. 2008) (quoting *Found. for N. Am. Wild Sheep*, 681 F.2d at 1178 n. 29 (1982)), and be backed up by evidence with "scientific integrity," 40 C.F.R. § 1502.23 (2020). "General statements about 'possible effects' and 'some risk'" do not meet this standard. *Te-Moak Tribe of W. Shoshone of Nev. v. U.S. Dept. of the Interior*, 608 F.3d 592, 603 (9th Cir 2010) (quoting *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir.1998)). The Forest Service must meet the "hard look" requirement and provide adequate information in the Rattail EA.

EEL RIVER LATE SUCCESSIONAL RESERVE (LSR RC- 307)

The Rattail project, as proposed, is not consistent with Northwest Forest Plan, Six Rivers LRMP, or recommendations in the Six Rivers Late Successional Reserves Assessment (LSRA). LSRs must be managed to protect and enhance mature forest ecosystems, which serve as habitat for late-successional and old-growth dependent plant and animal species. Timber harvest in the reserves may only occur if it is *required to maintain habitat* quality, ecosystem health or if it *is crucial to improve the quality of habitat.*

Northern Spotted Owl (NSO) Activity Centers and Critical Habitat in LSR



The Eel River LSR was delineated to include NSO Habitat Areas in the southern part of the forest and to provide a block of suitable habitat that ties with the Mendocino National Forest to the south and scattered BLM parcels to the south and west. The project area is entirely within Critical Habitat for the *endangered* owl (warranted but precluded).

Prior to the 2020 August Complex the LSR supported 24 NSO Activity Centers (ACs). In 1999, fourteen NSO home ranges in the LSR were above the "take" threshold, having deficient habitat. The EA should disclose the current habitat status and suitability in the LSR and how the project would cumulatively affect the LSR's ability to support NSO survival, ACs and Critical Habitat.

Habitat Connectivity

The north to west connection of the Eel River LSR is important for landscape connectivity. It is contiguous with the North Fork Eel Wild River corridor, which in turn is connected to the North Fork and Yolla Bolly Wilderness Areas. It provides connectivity for multiple surrounding 100-acre LSRs in the Matrix, the Hayfork Adaptive Management Area and BLM parcels. Old-growth and dense forest canopy dependent species which rely on this habitat connectivity, such as Northern goshawk and Pacific fishers, are known to occur in the Eel River LSR.

The forthcoming EA must consider the impacts of the proposed logging, road, and landing construction on habitat connectivity to the Eel River LSR.

The proposed project is contrary to the Council on Environmental Quality's Guidance for Federal Departments and Agencies on Ecological Connectivity and Wildlife Corridors, issued on March 21, 2023. The guidance underscores the importance of connectivity and wildlife corridors for biodiversity, climate adaptation, and ecosystem services. It *requires* federal agencies to develop policy "to *conserve, enhance, protect, and restore corridors and connectivity during planning and decision-making."* See also Climate and Connectivity section of these comments.

Roads and Landings in LSR

The Rattail project, as proposed, appears to eviscerate habitat quality, connectivity, and suitability. Of the 2.3 square mile project area, roughly ½ is proposed for road building, landing construction, and commercial logging — resulting in a road density of up to 4 miles of road per square mile. Given the steepness and character of the hillside the concentrated forest cutting would require dozens of log landings to facilitate heavy equipment and logging trucks, often 18-wheelers. Roadbuilding and over 60 newly constructed landings to facilitate commercial logging in old-growth and mature forest stands, in LSR, clearly violates the Northwest Forest Plan and Six Rivers LRMP and recommendations in the Eel River LSRA.

The Eel River LSR and Van Duzen River (VDR) watersheds are extensively roaded. Seven of the ten sub-watersheds in the VDR watershed have been identified as having high road densities above three miles per square mile. *Open road densities should be reduced within most*

subwatersheds of the in the VDR watershed.[9] Reducing the road densities in these watersheds should reduce sediment levels and benefit aquatic habitats. Reducing roads densities will also benefit a variety of wildlife species, including fisher, marten, and black-tailed deer.[10]

Old Growth Standard and USFS Direction

The Eel River LSR has a very small portion of older forest habitat. In 1999, old-growth and late mature stands comprised only 20% of the LSR.[11] And, the Forest was below even the minimum Recommended Management Range (RMR) for old-growth seral stage in almost every vegetation series and Zone, and was also near or below minimum RMR for the late mature seral stage in many cases.[12] "The size class 4 trees may also reflect old growth but the percentage of this size class is also low (15%)."[13] This was prior to the 2020 August Complex! The EA should disclose how much old-growth and mature forest (habitat) was lost in the LSR, which likely now contains less than 15%. There must be no further reduction of mature and old-growth trees or habitat.

The Rattail project, as proposed, would remove significant amounts of old-growth and mature trees due to highly concentrated logging and extensive road and landing construction.

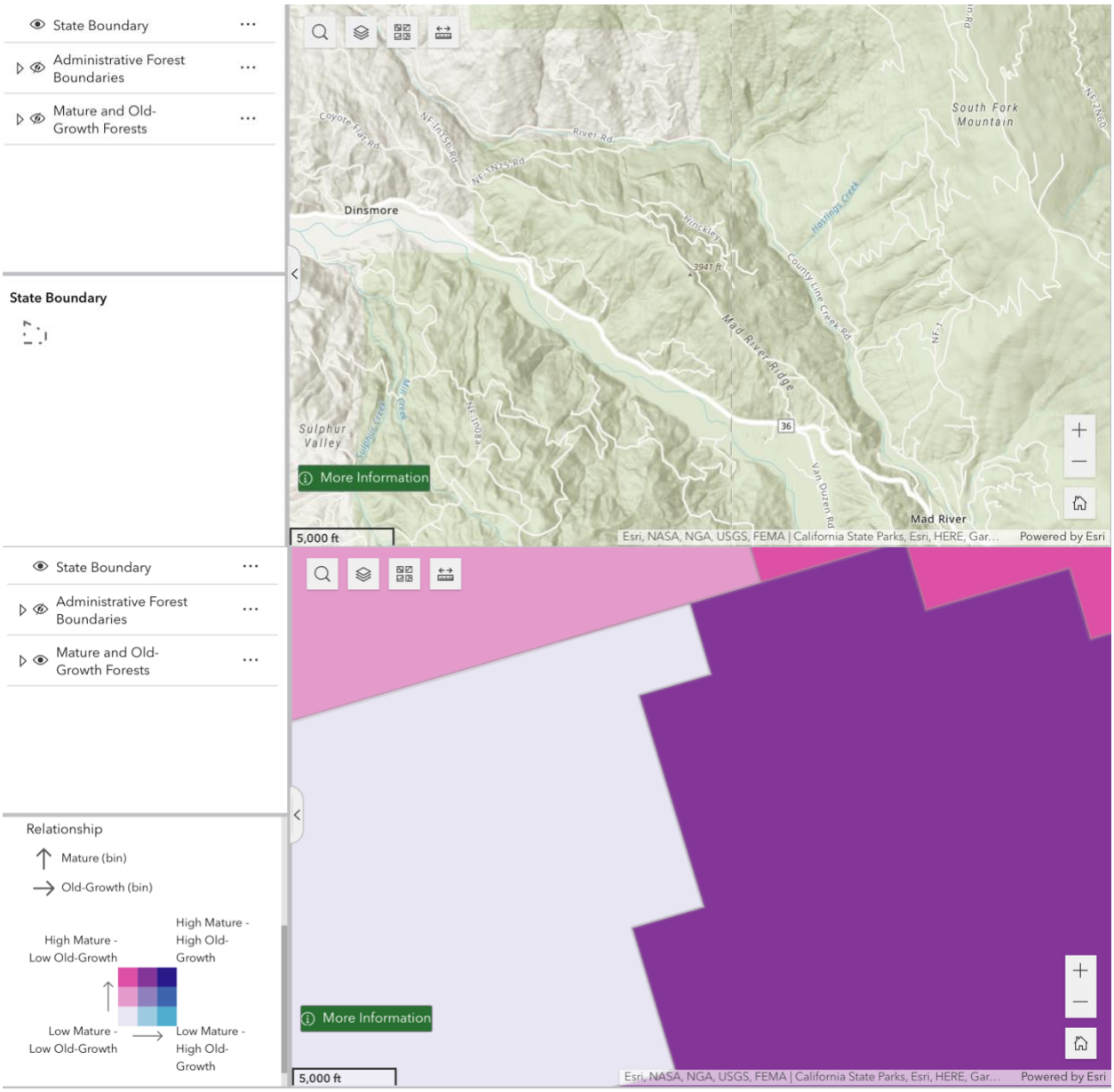
On December 18, 2023, the following direction from USFS Deputy Chief Christopher French was made official; "The purpose of this letter is to reserve to the National Forest System Deputy Chief the decision-making authority over management of old growth forest conditions on National Forest System lands during the amendment process. Effective immediately, any projects proposing vegetation management activities that will occur where old growth forest conditions (based on regional old growth definitions) exist on National Forest System lands shall be submitted to the National Forest System Chief for review and approval." Deputy Chief French states in his letter that specific instructions for the review process will be released soon. The agency must provide the Rattail project to be reviewed National Forest System Chief. Further, the habitat in the project area is what the Forest Service's "National Old-Growth Amendment" is being developed to protect.

Google Earth Satellite images show concentration of logging and roadbuilding on steep slopes in unroaded mature and old-growth forest stands, particularly lower northwest facing slopes.

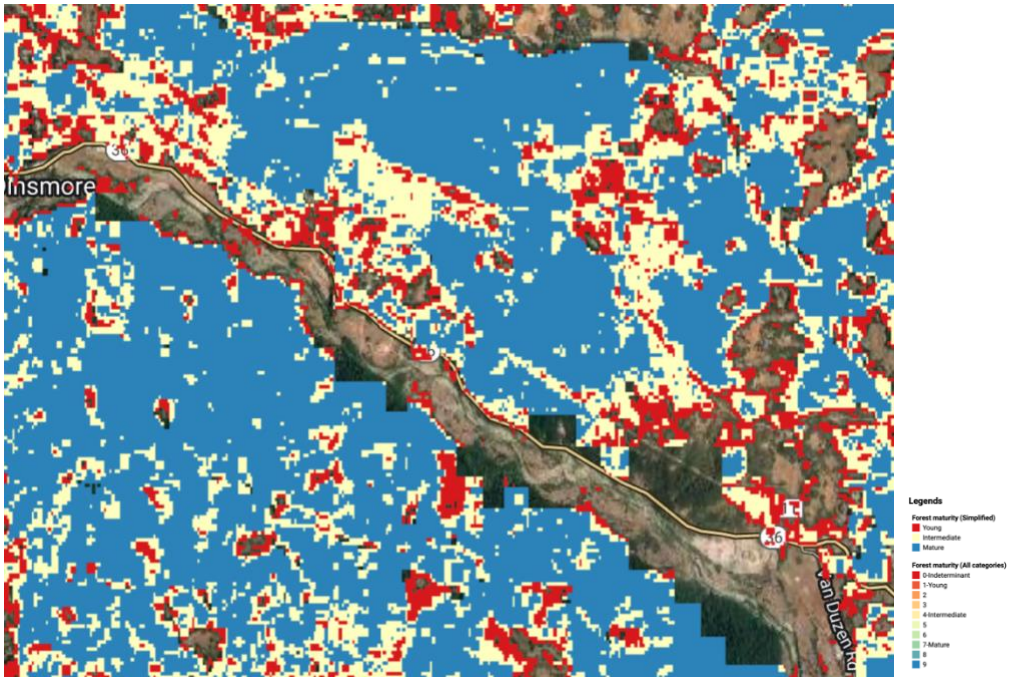
[9] Six Rivers LSR Assessment. USFS 1999, P. 5-7.
[10] Ibid, P. 3-159.
[11] Ibid, P. 3-147.
[12] Ibid, P. 4-3.
[13] Van Duzen River Watershed Analysis, 1999, P. 1- 4

On April 22nd, 2022 Executive Order 14072 was issued *Strengthening the Nation's Forests, Communities, and Local Economies*. The Order called for an inventory of the Mature & Old Growth (MOG) Forest on our National Forest lands and the protection of those forests. A year later the Forest Service released the MOG Forest Report and mapped inventory. The report defines what mature and old growth forests are, establishes the inventory, and shows their distribution across lands currently managed by the Forest Service and BLM.

The inventory map identifies under half of the Rattail project as- *Low Mature/Low Old-Growth* and the lower more eastern portion as- almost "*High Mature/High Old-Growth*." Please note that there is no *High Mature/High Old-Growth* forests in California and that the map is a very coarse scale. Existing MOG stands, such as these, are the areas that Executive Order 14072, the Northwest Forest Plan and the Six Rivers LRMP were meant to retain and protect.



Forest Maturity mapping[14] in higher detail shows the targeted roadbuilding and commercial logging, particularly in Sections 12 & 2, in unroaded LSR and NSO Critical Habitat in mature forest stands.



[14]Dominick A. DellaSala, Brendan Mackey, Patrick Norman, Carly Campbell, Patrick J. Comer, Cyril F. Kormos, Heather Keith and Brendan Rogers (2022) Mature and Old-Growth Forests Contribute to Large-Scale Conservation Targets in the Conterminous USA. *Front. For. Glob. Change* doi: https://www.frontiersin.org/articles/10.3389/ffgc.2022.979528/full
https://www.matureforests.org/forest-maturity-map

NORTHERN SPOTTED OWL AND CRITICAL HABITAT

The Northern spotted owl (*Strix occidentalis caurina* (NSO or *Strix)*) is an umbrella species for hundreds of rare and increasingly threatened late-successional species. From 1995 to 2019 populations have shrunk to 20% or 30% of their original size.[15] [16] The Six Rivers National Forest has a duty to work towards recovery and to maintain and restore suitable NSO habitat, not only for the owl but also for mature and old-growth closed canopy dependent species.

Modeling in the 2012 Final Critical Habitat Analysis estimated 2,680 owls may be present in the Klamath-Siskiyou region (aka Klamath and Coastal Provinces). From 2013 to 2018, federal land managers in the Klamath-Siskiyou region received 211 "take" permits, potentially removing 8% of the population in just five years. The 2020 wildfire season in California alone, affected nearly 5% of the Activity Centers (ACs) known to exist in the Klamath and Coastal Provinces or Recovery Units.

There are multiple current timber sales that include "take" of at least 18 NSO (including 3 reproductive pairs) and others that would "Likely Adversely Affect" the *Strix* because of habitat removal. This level of take and habitat loss associated with federal land management in the region is significant and has not been adequately analyzed on a regional or provincial scale.

That last meta-analysis was done prior to 2020. With the loss of 92,000 acres of nesting and roosting habitat in the August Complex and all subsequent wildfires, fire suppression actions and post-fire logging, the situation for the *Strix* is dire and the cumulative effects are not fully understood. The California Recovery Units have experienced concentrated fire effects, including the nearby 2023 3-9 Fire of the South Fork Complex.

With NSO considered functionally extinct in Washington and most of Oregon, the Klamath and Coastal Recovery Units represent the last stronghold for the species. This is extremely troubling given current "take" and habitat removal, in what is left of the owls' range. The Klamath and Coastal Recovery Units may now be considered its last remaining source population.

According to the 2019 Klamath National Forest Monitoring Plan, of the 135 activity centers surveyed, there were 22 singles, 4 non-reproductive pairs and only 2 reproductive pairs reported on the Forest. We do not have estimated counts from the Six Rivers, Mendocino, or Shasta-Trinity National Forests because they have not produced any of the required annual monitoring reports. The owl is nearly extinct, with few reproductive pairs in existence, yet agencies do not know accurate population numbers because regional surveys have not been completed in decades.

The change in baseline habitat conditions throughout the region has not been adequately updated. Consultation for the effects of fire suppression actions has not yet been completed for multiple fires. This must be completed to get an adequate baseline for habitat conditions. The August

[15] Franklin et al. Range-wide declines of northern spotted owl populations in the Pacific Northwest: A meta-analysis. Biological Conservation 259 (2021) 109168.
[16] Dugger er al. The effects of habitat, climate, and Barred Owls on long-term demography of Northern Spotted Owls. Condor Ornithological Society, Volume 118, 2016, pp. 57–116, 2016.

Complex alone included over 700 miles of bulldozed ridgetops and the nearby 2023 3-9 Fire, although under 4,000 acres, included roughly 30 miles dozerline. There must be an up-to-date habitat baseline analyzed and fire suppression consultation with the US Fish and Wildlife Service completed and provided to the public prior to any project decision.

Protocol surveys must be completed to adequately assess the location and presence of NSO's throughout the region and specifically in areas proposed for logging activities. It is likely that owls surviving after the August Complex may be dispersing into the project area. Please provide survey information for the project area and the Mad River Ranger District.

There is very little suitable habitat in the Eel River LSR and Van Duzen River watershed on the Six Rivers National Forest, primarily because of past logging.[17] It appears that the proposed road and landing construction and commercial logging would remove hundreds of mature and old-growth trees, open canopies and degrade and remove NSO Critical Habitat, contrary to the Northwest Forest Plan, Six Rivers LRMP, and recommendations in the LSRA, Van Duzen River Watershed Analysis and NSO Recovery Plan. Please greatly diminish the project footprint or withdraw the Rattail project to retain and protect suitable NSO habitat.

WILDLIFE AND "CANDIDATE" SPECIES

Please review the following excepts from the Van Duzen River Watershed Analysis concerning wildlife and habitat:

> "The Van Duzen watershed provides important habitat for the peregrine falcon, bald eagle and critical habitat for the spotted owl and marbled murrelet. The historic abundance of these species is not known. However, we believe that timber harvest and fire suppression have altered the relative amount of late successional forests." III-47
>
> "Habitat quantity and quality is limited for those species dependent on late-successional and old growth habitat conditions…" IV-24
>
> "The Van Duzen watershed provides habitat for northern goshawk, Pacific fisher, red tree vole, northern red legged frog, western pond turtle and yellow-legged frog, however suitable and potentially suitable land that occurs on state and federal lands may be limited and habitat quantity and quality is declining in several areas." IV-28
>
> "The federal LSRs are expected to, through natural succession and accelerated management, to eventually provide more mature and older forest habitat…" IV-28
>
> "Survey for special habitats, including caves, mines, ponds, seeps, and talus deposit. Survey for Special Status Species (including S&M species)." V-13
>
> "Monitor NSO activity centers in LSRs." "Resurvey known northern goshawk territories and evaluate occupied territories for adequate habitat deficiencies. Monitor known goshawk nest stands." "Conduct surveys and inventories for other TES and S&M species likely to occur in

[17] Van Duzen River Watershed Analysis, 1999. P. IV-22.

the Van Duzen watershed and within the designated LSRs, with emphasis on Peregrine falcon, Humboldt marten, and Bald eagle (up to Grizzly Creek SP). Within LSRs survey for NSO, fisher, Northern goshawk, and Del Norte salamander." V-23

"There is an extensive road network on federal lands in the Van Duzen watershed." "A reduction of road densities within the LSR to less than two miles/sq. mi., and within key deer range to less than 3 mi/sq. mi. would maintain moderate quality habitat for fisher and other species dependent on mature late successional forest conditions and the black tailed deer respectively. Seasonal closures may also be necessary in the immediate vicinity of occupied T & E or Sensitive species (peregrine falcon, spotted owl or northern goshawk) nest sites, to minimize disturbance and potential displacement." V-34

"Three fisher and one marten management areas have been delineated in LSR 307 by the Forest Service, but no surveys have been conducted." I-11

"There is sufficient habitat within the Van Duzen portion of the LSR 307 to support two fisher management areas (Red Rock and Buck Mountain) and a part of the North Fork Eel fisher area." III-53

"There are three northern goshawk sites on Six Rivers land and two sites on BLM land." I-11

"There are three known Northern goshawk territories in the Van Duzen part of the Six Rivers NF." IV-23

As required by the Six Rivers LRMP please provide: protocol survey information for NSO, Pacific fisher, Northern goshawk, and Del Norte salamander; maps and site-specific management plans for the Northern goshawk, Pacific fisher, and marten management areas and; survey information for special habitats.

The western pond turtle should be surveyed for as it is expected to be listed under the Endangered Species Act. There is also a great concern for the Foothill yellow-legged and Northern red-legged frog as well as multiple salamander species given the invasion of the Barred owl and its voracious predation on amphibians.

As required by the Six Rivers LRMP 8-2, please provide restricted periods of loud or continuous noise (e.g., timber harvest, road construction, hauling, blasting, frequent vehicle traffic etc.) that will be restricted for the 13 species during the periods shown on Table IV-11.

Throughout the LRMP and other documents for the Forest, there is emphasis on how LSRs and Riparian Reserves will aid in the protection of wildlife. The loss of late successional habitat and forest fragmentation is the greatest threat to species within these watersheds. We are concerned that multiple, of the 41 Management Indicator Species, FS Sensitive, Candidate and, special concern species, as well as neotropical migratory birds would be affected by the concentrated road and landing construction and commercial logging proposed in the project. The forthcoming NEPA must take a hard look at the effects of the project on these species and better yet avoid the suite of negative impacts associated with road and landing construction and commercial logging.

WATER QUALITY

Please review the following excerpts from the Van Duzen River Watershed Analysis concerning: roads and logging; water quality and; sedimentation.

> "Restore or enhance channel and habitat conditions through watershed restoration with emphasis on landslide treatments, flood proofing and decommissioning roads..." IV-11

> "Some of the management that occurred in the middle and lower basins appears to have had a considerable effect on the increased sediment loads in the Van Duzen." "Roads have tended to produce more severe and widespread landslide problems than timber harvest. Road construction and poor road maintenance practices can have moderate to large effects on hillslope erosion in mélange terrain." V-8

> "Roads may undercut or place unstable fills on weak slopes and alter groundwater flow conditions, any of which can increase landslide potential in terrain near its threshold of stability. Stream crossing locations and design are also critical where roads are constructed in mélange because they pose high potential for accelerated erosion or gullying if drainage diversion occurs. Lack of proper maintenance can result in chronic sedimentation from continued cutslope failure, gullying of roadbeds when debris plugs inboard ditches, and culvert plugging from excess sedimentation." IV-13

> "Inadequate or untimely road maintenance can greatly exacerbate these problems. Given the unstable and erodible nature of parts of the watershed, roads pose a moderate to high risk of creating or contributing to erosion during a large storm event." V-10

> "Specific logging impacts such as tractor and high lead trails probably have caused the most problems by creating new conduits for runoff and sediment." IV-13

Roads are the greatest contributor of sediment to these 303(d) listed sediment impaired watersheds. Road construction/maintenance and timber harvest related activities, which accelerate sedimentation processes are the dominant controllable sources of sediment in the basin. As noted above, road density in the VDR watershed averages over 3 miles of roads per square mile. The Rattail project proposes an even higher rate on currently unroaded slopes and up to one dozen stream crossings! Further, even though there are multiple Legacy Sediment Sites within the project, the scoping notice states that only one would be treated.

In plain language please provide the current sedimentation levels in these watersheds and details of how the project would increase TMDL sediment loads and effect water quality. Better, avoid the negative effects to water quality by greatly diminishing or withdrawing the Rattail project.

HYDROLOGY AND GEOLOGY

Please review the following excerpts from the Van Duzen Watershed Analysis concerning hydrology and geology:

"Large deep-seated slides are common, especially earthflows in melange terrain." I-8

"The watershed was severely impacted by the 1964 flood which caused extensive landsliding and delivered large amounts of sediment to streams." "The large amount of sediment carried by the river has filled in many pools, reduced dissolved oxygen levels in redds, and smothered many food organisms." "Large amounts of sediment remain stored in channels throughout the watershed, particularly in the mainstem and major tributaries." I-9

"Between two and six intense rainstorms typically occur each winter. The resulting streamflows transport most of the sediment yield." III-19

"Sedimentation rates are high in the Van Duzen because of high uplift and stream incision rates into relatively weak bedrock units, particularly in the middle and lower watershed." III-22

"The extent of unstable streambanks increased over 10-fold in steep headwater reaches due to debris avalanches. These headwater source areas release large volumes of previously stored sediment during the 1964 flood (591,000 tons in the Little Van Duzen). They have continued to be chronic source of sediment for decades." III-31

"However, there is still considerable fine sediment mixed in with the coarse flood deposits which greatly impairs aquatic habitat quality." III-32

"The Van Duzen has exceptionally high base erosion rates because of the abundant erodible mélange terrain and a long history of catastrophic landsliding that appears to recur in headwater basins every few hundred years." IV-12

"The sediment budget indicates that hillslope erosion and earthflow mass movement comprise about three-quarters of total sediment delivery, while shallow landsliding and streambank erosion comprise the other one-quarter." IV-12

"The sediment loads delivered to the little Van Duzen and mainstem Van Duzen below Dinsmore during the 1964 flood were exceptional and probably higher per unit area than any other North Coastal basin." V-7

"In terms of sediment volume, the most severe problems associated with logging in Franciscan terrain have resulted from tractor logging on moderate to steep slopes, especially those underlain by old landslide deposits." V-9

"Selection and approval of logging systems in Franciscan terrain should generally require some level of geologic/geomorphic assessment." V-10

"The markedly different types of geologic/geomorphic terrain in the Van Duzen need to be identified and evaluated on a site-scale basis during project planning with regard to their different sediment production processes and sensitivities to management disturbance." V-12

> "Road construction and maintenance (or lack of) can have moderate to large effects on hillslope erosion rates in mélange terrain. Intense logging practices can have similar erosional effects on forested sandstone terrain." IV-12

> "The section of the upper Van Duzen on NF land extends 11.75 miles from Kuntz Creek to its confluence with West Fork. This section is aggraded, with downcutting in progress and it probably has a significant quantity of subsurface flow." III-39

Road, landing and skid trail use, reconstruction and construction and log hauling impede forest ecosystem and hydrological health, which: compacts soils; reduces shade; introduces or spreads invasive species; causes soil erosion when trees are dragged across hillslopes; and delivers sediment to streams. Surface and fluvial erosion from areas disturbed by timber harvest activities is most often related to skid trails and harvest operations that result in impervious surfaces and increased rainfall runoff. Numerous studies have shown that roads, landings, and skid trails reduce infiltration and surface cover and can concentrate overland flow, resulting in increased surface runoff and erosion.

Roads can intercept and concentrate hillslope runoff and eroded sediment derived from sheet, rill, and gully erosion as well as high rates of cutbank erosion and colluvial raveling processes along bare road cuts which contribute accelerated erosion to the inboard ditch.[18] Surface and fluvial erosion during storms from areas disturbed by timber harvest activities is most often related to several different surface disturbance activities, primarily skid trails and harvest operations that result in impervious surfaces and increased rainfall-runoff.

Hydrological and geological impacts may be a significant issue for this project, especially given that it is within melange terrain. Please use plain language when describing the current conditions, and analyzing the hydrological and geological impacts from the proposed concentrated road and landing construction, commercial logging, and stream crossings on these steep and potentially unstable slopes. Please provide a clear description of the data input used in modeling. Effects analysis cannot effectively rely on Best Management Practices or Project Design Features.

RIPARIAN RESERVES

The Rattail project appears to include commercial logging, road building with up to one dozen stream crossings, and possibly landing construction in Riparian Reserves. This is not consistent with the Northwest Forest Plan Aquatic Conservation Strategy or the Six Rivers LRMP. Further this is directly contrary to the direction in the LSRA and the Van Duzen Watershed Analysis. In concern of logging the LSRA at page 6-37 explicitly states, "…no heavy equipment in the Riparian Reserves. Options for fuels treatment in RRs include hand piling and burning and lop and scatter; the type of treatment will be determined on site-specific conditions."

[18] Mad River Watershed Assessment. 2010. Final report. Prepared by Stillwater Sciences, Arcata, California in association with Redwood Community Action Agency, and Natural Resources Management Corp. Eureka, California.

The forthcoming EA must provide explicit and clear details of the current conditions within each reserve, what exactly is being proposed and the impacts and effects of this concentrated assault on these fragile and complex ecosystems.

Excerpts from the Van Duzen River Watershed Analysis concerning Riparian Reserves:

> "Accurate information on the riparian plant communities throughout this watershed is lacking." I-4
>
> "We need to delineate Riparian Reserves to determine the extent to which they will contribute to mature and older successional habitats." V-22
>
> "However, the riparian corridors will likely provide some cover for dispersing spotted owls." IV-22
>
> "We need to establish RRs along streams and unique riparian areas consistent with ACS." V-23

Riparian Reserves serve multiple critical and complex ecosystem functions. The reserves include areas upslope and outside of riparian plant vegetation. Water in rivers and streams is delivered via the critical zone (CZ)—the living skin of the Earth, extending from the top of the vegetation canopy through the soil and down to fresh bedrock and the bottom of significantly active groundwater. Consequently, the success of stream-rearing salmonids depends on the structure and resulting water storage and release processes of this zone. Physical processes below the land surface (the subsurface component of the CZ) ultimately determine how landscapes "filter" climate to manifest ecologically significant streamflow and temperature regimes. Subsurface water storage capacity of the CZ has emerged as a key hydrologic variable that integrates many of these subsurface processes, helping to explain flow regimes and terrestrial plant community composition.[19]

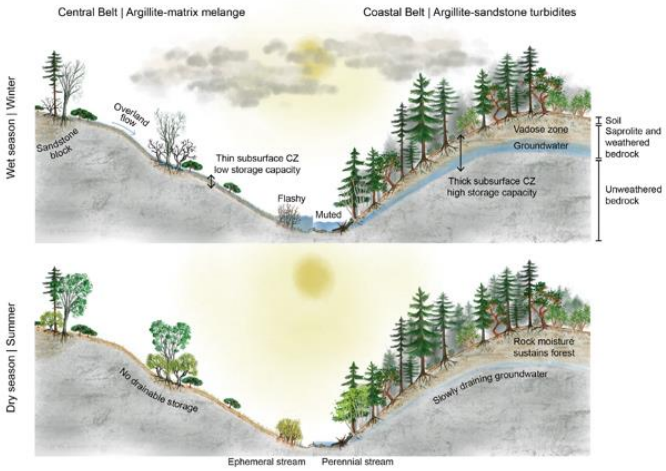


FIGURE 2 Seasonal hydrological dynamics between hillslopes representing two dominant geologies in the Eel River watershed—Central Belt melange (left) and Coastal Belt turbidites (right)—leading to contrasting critical zone (CZ) architectures and water storage capacities. A typical wet-season (winter) snapshot is depicted in the top row, while the bottom row illustrates conditions later in the dry season (summer).

[19] Dralle DN, Rossi G, Georgakakos P, Hahm WJ, Rempe M, Blanchard M, Power ME, Dietrich WE, Carlson SM. 2023. The salmonid and the subsurface: Hillslope storage capacity determines the quality and distribution of fish habitat. *Ecosphere* 14(2): e4436. https://doi.org/10.1002/ecs2.4436.

Please see these excerpts from Dralle et al.2023 concerning the life sustaining importance of intact riparian areas in the Eel and Van Duzen River watersheds:

> The Eel River basin is underlain by the Franciscan Complex, a geological assemblage in Northern California consisting of three north–south running belts (the Coastal Belt, the Central Belt melange, and the Eastern Belt) of different rock types that decrease in age and metamorphic grade from east to west.
>
> While the deep subsurface CZ (the living skin of the Earth, extending from the top of the vegetation canopy through the soil and down to fresh bedrock and the bottom of significantly active groundwater) is increasingly recognized as an essential reservoir for life-sustaining resources to plants, the CZ also includes a complex and dynamic aboveground environment in which leaf-mediated gas exchange occurs, nutrient and water deposition take place and where climatic conditions directly affect plant function and distribution. For example, topographically induced microclimate impacts plant physiology, yet its attendant impacts on subsurface CZ development and function are poorly understood. CZ-related research on radiation and its interactions with topography has explored the role that hillslope aspect plays on plant distribution and energy delivery. There is also evidence that couplings exist between plant life cycles and productivity, hillslope aspect, bedrock weathering, soil production, sediment delivery to channels, and channel incision and migration; together, these processes interact to drive the coevolution of the CZ's topographic form, land-surface energy balance, and ultimately plant ecophysiology. These processes should be fully integrated into our current understanding of topographic impacts on nutrient deposition and subsurface moisture balance resulting from variation in land-surface inputs (e.g. rainfall, cloud, or fog water interception) and losses (e.g. runoff, infiltration, latent and sensible heat flux) in ecophysiological investigations. (References omitted)

Please address the multiple impacts from logging and road building in Riparian Reserves and the general downfall of logging to reduce fire risk in, Conservation of Aquatic and Fishery Resources in The Pacific Northwest: Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan[20]:

> Many thinning projects involve road and landing construction and reconstruction, as well as elevated haul and other use of existing roads, all of which significantly contribute to watershed and aquatic degradation. Even if constructed roads and landings are deemed "temporary," their consequent impacts to watersheds and water bodies are long lasting or permanent. The hydrological and ecological disruptions of road systems and their use, exacerbated by other effects of vehicle traffic, will likely outweigh any presumed restorative benefit to streams and wetlands accruing from thinning and fuels reduction.
>
> Substantial questions remain about the putative ecological benefits of thinning and fuels

[20] Frissell, Christopher A., Baker, Rowan. J., DellaSala, Dominick A., Hughes, Robert M., Karr, James R., McCullough, Dale A., Nawa, Richard. K., Rhodes, Jon, Scurlock, Mary C., Wissmar, Robert C. *Conservation of Aquatic And Fishery Resources In The Pacific Northwest: Implications of New Science for the Aquatic Conservation Strategy of the Northwest Forest Plan. Final Report 2014*.

reduction. This is critical because agency proponents commonly argue that the desired ecological benefits outweigh the adverse environmental effects of logging and fuels treatments. Dispute among federal agencies about claimed ecological benefits of thinning in moister, Douglas-fir-dominated forest types (widespread in the Pacific Northwest) led to an interagency scientific review in 2012-2013. That panel concluded that increased tree growth might be better obtained from thinning very young, high-density stands--which very seldom produces commercially saleable logs. They further concluded that thinning produces unusually low-stem-density forests and causes long–term depletion of snag and wood recruitment that is likely detrimental in most Riparian Reserves. Further depletion of wood recruitment in headwater streams can adversely affect the behavior of debris flows in Pacific Northwest watersheds in ways that further reduce residual wood debris and its important functions over extensive portions of streams and rivers, where present-day wood abundance is decimated compared to historical conditions. Finally, recent reviews also raise compelling, unanswered questions about the effectiveness of thinning forests for attempted control of insect outbreaks.

The effect of thinning on fire behavior and effects within riparian areas has been little studied. For western North American forests in uplands the literature is replete with ambiguous and conflicting results regarding the effects of thinning and other mechanical fuels treatments on fire severity, rate of spread, and recurrence. Moreover, the probability of a fire burning through a treated stand within the limited time window of potential effectiveness of a fuels treatment has been shown to be very small. Any presumed benefit is even less persistent in Riparian Reserve areas where woody vegetation regrows rapidly after treatment, and where in moister forest types fire tends to recur with lower frequency. Equally important, we question whether managers should be striving to reduce fire severity in riparian areas as a rule, considering that high-severity fire plays a natural and historical role in shaping riparian and stream ecosystems. Other natural forest disturbances, including windthrow, insect outbreaks, and landslides on forested slopes, appear to play a similarly important role in generating pulses of wood debris recruitment to streams, establishing a long-lasting source of ecological and habitat complexity.

Considering the difficult-to-justify costs and recognized inherent risks of adverse impact associated with such operations in sensitive areas, balanced against the uncertainty in intended benefits, we conclude the following: Thinning and fuels reduction by means of mechanized equipment or for commercial log removal purposes should be generally prohibited in Riparian Reserves and Key Watersheds. Any thinning or fuels treatment that does occur as a restorative treatment in Riparian Reserves (e.g., to remove non-native tree species from a site) should retain all downed wood debris on the ground. Thinning projects that involve road and landing (including those deemed “temporary”) construction and/or reconstruction of road segments that have undergone significant recovery through non-use should also be prohibited, due to their long-term impacts on critical watershed elements and processes. (Citations omitted).

Riparian areas are generally cooler and have greater moisture content than upslope areas. These conditions provide a natural barrier to fire spread or slow fire spread. The cooler temperatures, moister air and less flammable vegetation can combine to retard fire intensities. Logging in

riparian reserves is generally prohibited by the NWFP. There is an exception where silviculture is "needed" to attain aquatic objectives, but there is no exception for logging intended to meet fuel objectives, especially given that the project area is not a priority area for fire risk reduction. Again, we urge the Six Rivers Mad River Ranger District to greatly diminish or withdraw the Rattail project to reach the objectives and intent of the Aquatic Conservation Strategy and direction from the LRMP, LSRA and Mad River and Van Duzen Watershed Analyses.

FISHERIES

Please review excerpts from the Van Duzen Watershed Analysis concerning roads and fisheries:

> "The Van Duzen provides habitat for nine native and three introduced fish species…" I-9

> "In the sub drainages with the best remaining fish habitat, protect Federal lands where good conditions exist and restore deteriorated areas where feasible. Emphasize decommissioning and floodproofing of roads in these sub watersheds, especially areas underlain by mélange, to maximize the likelihood of cost-effective restoration efforts." V-8

> "Direct and indirect impacts to streams and fish habitat are generally greater from denser road networks in lower or mid slope positions." III-35

In the Van Duzen River (VDR) Upper Basin, just upriver of the Rattail project area, fine sediment levels, as indicated by embeddedness measurements, may potentially be impacting spawning gravel and pool habitat for steelhead in the South Fork VDR. The steep headwater areas of the South Fork VDR and West Fork VDR are capable of supplying large volumes of sediment to the lower depositional reaches thereby impacted steelhead spawning habitat (as occurred as a result of the 1964 event). The main concern in the upper basin is to avoid additional disturbance of sensitive hillslope areas and to correct potential sediment delivery problems associated with existing roads, thereby protecting downstream resources.[21]

The Coastal Multispecies Recovery Plan provides a framework for the conservation and survival of the listed species [ESA section 4(f)(1)] that focuses and prioritizes threat abatement and restoration actions necessary to recover, and eventually delist, a species. Entire communities, businesses, and cultures have been built around north coast fisheries. Based on evaluation of current habitat conditions and ongoing and future threats, all life stages of Coho and Chinook salmon and steelhead are impaired by degraded habitat. Impairments are due to a lack of complexity and shelter formed by instream wood, high sediment loads, lack of refugia during winter, low summer flows, reduced quality and extent of coastal estuaries and lagoons, and reduced access to spawning and rearing habitat. The major sources of these impairments are **roads**, water diversions and impoundments, **logging,** residential and commercial development, severe weather patterns, and channel modification.[22] Recovery Plan priority objectives begin with reducing the present or threatened destruction, modification, or curtailment of habitat.[23]

[21] E.P.A., Region, I. X. Van Duzen and Yager Creek TMDL for Sediment. P. 23 (1999)
[22] National Marine Fisheries Service. 2016. Coastal Multispecies Recovery Plan. National Marine Fisheries Service, West Coast Region, Santa Rosa, California. p. vi.
[23] National Marine Fisheries Service. 2016. Coastal Multispecies Recovery Plan Vol. III, page 20.

North coast fish populations are getting closer to extinction every year. Decades of research by dozens of agencies and hundreds of biologists and millions of dollars have been spent to protect these fisheries. Rather than work towards recovery the Six Rivers National Forest is seemingly blinded by timber targets and threatens to continue the harm that has occurred in these watersheds for decades.

The entire Mad River continues to run brown and choked with salmon killing sediment after even minor rain events. Please provide the current TMDL sediment loads for both the Mad and Van Duzen Rivers. Please consider short-term temporal impacts as one season given that entire life cycle for salmon is three years or better yet redesign or withdraw the Rattail project.

ROADS AND LANDINGS

The negative affect from the construction of roads, even "temporary", and landings is well documented. This is also true for the reconstruction. We are greatly concerned that the project proposes possibly over **sixty new landings** in the Eel River LSR and Critical Habitat for the Northern spotted owl. Both the LSRA and the Van Duzen Watershed Analysis call for a reduction in roads. We urge the agency to avoid the long-lasting and often irreversible impacts of any temporary road and landing construction. Please see the compilation of scientific review entitled *The Watershed Impacts of Forest Treatments to Reduce Fuels and Modify Fire Behavior*.[24]

> Roads and landings essentially zero out soil productivity for some time and reduce it for long periods thereafter. This is the case even with "temporary" roads and landings. Due to the persistence of their impacts, "temporary" landings and roads do not have temporary impacts. The negative effects of road and landing construction are large, enduring, and immediate, while recovery is relatively minor and protracted, even with obliteration, all of which belie any application of the term "temporary". The USFS has conceded that the loss of soil productivity on temporary landings and roads is not reversible, because such areas never completely regain their productivity or function naturally even with remediation or abandonment.
>
> The degree of soil compaction on roads and landings retards vegetative recovery and vastly elevates surface erosion for decades after abandonment. (Citations omitted).

Rattail project planners should not assume that new roads would have little environmental effect because they are "temporary." In fact, scientific research has shown exactly the opposite. Research results, published in *Restoration Ecology,* show there is nothing temporary about temporary roads, and that ripping out a road is not the equivalent to never building a road to begin with. From Luce 1997[25]*:*

[24] Rhodes, Jonathan J. *The Watershed Impacts of Forest Treatments to Reduce Fuels and Modify Fire Behavior.* Prepared for Pacific Rivers Council 2007

[25] Luce, Charles H. *Effectiveness of Road Ripping in Restoring Infiltration Capacity of Forest Roads.* USDA Forest Service Intermountain Research Station. September 1997. Restoration Ecology, Vol. 5, No. 3. page 268.

> The saturated hydraulic conductivity of a ripped road following three rainfall events was significantly greater than that of the road surface before ripping... most saturated hydraulic conductivities after the third rainfall event on a ripped road were in the range of 22 to 35 mm/hr for the belt series and 7 to 25 mm/hr for the granitics. These conductivities are modest compared to the saturated hydraulic conductivity of a lightly disturbed forest soil of 60 to 80 mm/hr." *id*.
>
> Even this poor showing of restoring pre-road hydrologic effects worsened with repeated rainfall. "Hydraulic conductivity values for the ripped treatment on the granitic soil decreased about 50% with added rainfall (p(K1=K2) =0.0015). This corresponded to field observations of soil settlement and large clods of soil created by the fracture of the road surface dissolving under the rainfall... The saturated hydraulic conductivity of the ripped belt series soils also dropped from its initial value. Initially, and for much of the first event, the ripped plots on the belt series soil showed no runoff. During these periods, run-off from higher areas flowed to low areas and into macropores.... Erosion of fine sediment and small gravel eventually clogged these macropores... Anecdotal observations of roads ripped in earlier years revealed that after one winter, the surfaces were nearly as solid and dense as the original road surfaces." Id. Even though ripped roads increase water infiltration over un-ripped roads, it does not restore the forest to a pre-road condition.

Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that many of the most pervasive threats to biological diversity - habitat destruction and fragmentation, edge effects, impacts to hydrology and aquatic habitats, exotic species invasions, pollution, and poaching - are aggravated by roads and landings. Roads have been implicated as mortality sinks for animals ranging from snakes to ungulates; as displacement factors affecting animal distribution and movement patterns; as population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals.[26] [27]

Attached to these comments is a peer-reviewed article by Trombulak and Frissell (2000)[28] detailing some of the negative impacts of road construction and use on both terrestrial and aquatic ecosystems. The abstract for the article reads as follows:

> Roads are a widespread and increasing feature of most landscapes. We reviewed the scientific literature on the ecological effects of roads and found support for the general conclusion that they are associated with negative effects on biotic integrity in both terrestrial and aquatic ecosystems. Roads of all kinds have seven general effects: mortality from road construction, mortality from collision with vehicles, modification of

[26] Noss, Reed PhD. *The Ecological Effects of Roads*. From Preserve Appalachian Wilderness, Vol.2, No.3
[27] Spellerberg, Ian F. *The Ecological Effect of Roads.* CRC Press. Taylor and Francis Group. 2002.
[28] Trombulak, S.C. and C.A. Frissell. 2000. *Review of ecological effects of roads on terrestrial and aquatic communities.* Conservation Biology 14(1): 18-30.

> animal behavior, alteration of the physical environment, alternative of the chemical environment, spread of exotics, and increased use of areas by humans. Road construction kills sessile and slow-moving organisms, injures organisms adjacent to a road, and alters physical conditions beneath a road. Vehicle collisions affect the demography of many species, both vertebrates and invertebrates; mitigation measures to reduce roadkill have been only partly successful. Roads alter animal behavior by causing changes in home ranges, movement, reproductive success, escape response, and physiological state. Roads change soil density, temperature, soil water content, light levels, dust, surface waters, patterns of runoff, and sedimentation, as well as adding heavy metals (especially lead), salts, organic molecules, ozone, and nutrients to roadside environments. Roads promote the dispersal of exotic species by altering habitats, stressing native species, and providing movement corridors. Roads also promote increased hunting, fishing, passive harassment of animals, and landscape modifications. Not all species and ecosystems are equally affected by roads, but overall, the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian systems. More experimental research is needed to complement post-hoc correlative studies. Our review underscores the importance to conservation of avoiding construction of new roads in roadless or sparsely roaded areas and of removal or restoration of existing roads to benefit both terrestrial and aquatic biota.

The cumulative impacts of "temporary" road construction, stream crossings, landing construction and widespread tractor and cable yarding cannot be overstated. Details of the current condition, seral stage and location of any proposed landings and "temporary" and existing roads, stream crossings, and legacy sediment sites must be disclosed in the forthcoming NEPA document due to the significant impacts to hydrology, wildlife, fisheries, and soils. Please decrease the project footprint and avoid the negative impacts of landing and road construction.

SOIL

Soil is a non-renewable resource and is the foundation of all forest life. The Six Rivers National Forest should strive to meet the primary goal of maintaining long-term soil productivity, high water quality, and the restoration of water quality in degraded watersheds to meet State water quality standards for the North Coast Region. LRMP direction, which is detailed in Appendix L, requires the agency to manage soil and water resources to protect and enhance long-term productivity of the forest, water quality, associated beneficial uses, and aquatic ecosystems.

Soil compaction, erosion, and loss of coarse woody debris adversely affect long-term productivity. Removal of a major fraction of the available organic matter removal of mature and old-growth trees through logging, hauling and extensive road and landing construction would adversely affect soil productivity for decades or centuries. This is evident from recent timber sales on the Six Rivers National Forest and throughout the region. The proposed logging and road and landing construction would result in significant change and impairment in the productive capacity, hydrologic function, and environmental health of the soil.

Rill formation and channel extension are dominant erosion processes of hillslopes with exposed bare mineral soil, especially in areas where decreased soil organic matter, litter, and vegetation

cover has led to highly erodible bare soil. Log hauling with 18 wheelers, steel and rubber tire slippage and subsequent churning of forest soils makes sediment more available for transport. The mechanical disturbance of ground-based logging, skid trails, road use and landing construction and machine piling causes soil surface to loosen and become more erodible. Soil compaction and erosion, loss of coarse woody debris and erosion all adversely affect long-term productivity. Treatment such as sub-soiling or spreading logging slash on the ground to "enrich" soil would likely increase flammable ground fuels and fire risk in the future, and it does little good if the soil is irretrievably and irreversibly harmed.

BOTANY

Please see the following excerpts from the Van Duzen River Watershed Analysis:

> "The range of Tracy's sanicle is limited in Six Rivers to the Mad River." III-18
>
> "The watershed supports one known population of clusted lady's slipper (*Cypripedium fasciculatum*), a rare plant which is also a ROD listed species associated with late-seral stage forests. A report on the vegetation of the Van Duzen Basin also indicated the presence of another ROD S&M species, an orchid, mountain lady's slipper (*Cypripedium montanum*); however, the forest has no record of this population." "Isolate habitat characteristics most closely allied to the orchids and attempt to identify potential habitat on a watershed basis. Conduct an inventory of potential habitat."[29]
>
> "…mountain lady's slipper exists in very small populations and appears intolerant to even minimal human disturbance."[30]

The Six Rivers LRMP provides specific management direction for Sensitive and endemic botanical species. Their habitats must be managed in a manner that will prevent any species from becoming a candidate for threatened and endangered status. The forthcoming NEPA document must detail — Survey and Manage, Sensitive and endemic botanical species — locations, occurrences and how and their habitats are being considered in project planning. Please provide these details in the subsequent specialist reports.

INCREASING RISK OF WILDFIRE

Logging does not inherently reduce wildfire risk. In fact, when done aggressively it can increase wildfire risk. For instance, commercial thinning, where mature trees are removed, as proposed in the Rattail project with concentrated road and landing construction, tends to make wildland fires burn more intensely.[31]

[29] Van Duzen River Watershed Analysis, 1999. P. V-14.
[30] Ibid, P. III-15.
[31] Miguel Cruz et al., Using Modeled Surface and Crown Fire Behavior Characteristics to Evaluate Fuel Treatment Effectiveness: A Caution, For. Sci. 60(2):1000 – 1004; Cruz et al., Development of Model Systems to Predict Wildfire Behavior in Pine Plantations, Australian Forestry 2008, Vol. 71

Further, the efficacy of wildfire risk reduction treatments is incredibly short lived. The "life-expectancy" for a fuel reduction treatment is 10-25 years, after which the "fuel" will have regrown and the fire risk will return to baseline.[32] Meanwhile, the probability that a fire would occur in a thinned area during its lifespan is somewhere in the range of 1-3%.[33] In our experience the USFS rarely, if ever, follows through with fuel reduction treatments (such as prescribed fire, which is not considered in the Rattail project). This is true for every Northern California national forest in the Pacific Northwest and can be seen on the Mad River Ranger District. Taken together, these facts indicate that most fuel reduction treatments will have no effect on wildfire. At the same time, these treatments negatively impact water quality, wildlife habitat, and a myriad of other environmental resources. The long-term efficacy of any planned treatments must be considered.

All of this is occurring with the backdrop of climate change radically altering our forests in ways that are hard to fathom. Factors such as weather and climate govern fire behavior and intensity far more than forest density.[34] In fact, studies of large conifer forest fires have found an inverse relationship between tree density/woody debris and fire intensity.[35] Contrary to the agency's narrative of "fuels accumulation" in fire-adapted Western forests leading to more severe fires and needing the corrective action of logging, study after study has shown that the densest, most fire-suppressed forests primarily burn at low- and moderate-severity. This was the case even in frequent-fire and drier mixed-conifer forests.[36] Climate and weather, not tree density, are unequivocally the primary drivers of severe, stand-replacing fire behavior.

These often-ineffective treatments, as can be seen from the Kelsey and Beaverslide projects, are not without risk. Treating wildfires using bottom-up fuels reduction approaches when top-down extreme climate factors are increasingly overriding such efforts could push ecosystems beyond resilience thresholds at the further expense of biodiversity and the climate.[37]

Given the importance of this question, the NEPA analysis for this project should analyze whether the purported "fuels reduction" and extensive road and landing construction can be justified to reduce future fire intensity. The scientific consensus is that this is unlikely and, at most, is limited in application and may cause subsequent fires to burn more intensely. Instead of logging old growth and mature trees with extensive and concentrated road and landing construction, the Forest Service should be helping to focus on working with communities to prepare defensible space around homes and home hardening.[38] Treatments that are far more effective, cost effective, and less harmful to the environment.

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[32] JL Campbell et al., Can fuel-reduction treatments really increase forest carbon storage in the western US by reducing future fire emissions? Front Ecol Environ 2012; 10(2): 83–90.
[33] Ibid, 10(2): 83–90.
[34] Zald, Harold SJ, and Christopher J. Dunn. "Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape." Ecological Applications 28.4 (2018): 1068-1080.
[35] Meigs et al., Forest Fire Impacts on Carbon Uptake, Storage, and Emission, Ecosystems (2009) 12: 1246–1267.
[36] E.g., Miller et al., Trends and causes of severity, size, and number of fires in northwestern California, USA, Ecological Applications, 22(1), 2012, pp. 184–203; Odion et al. 2004; Odion and Hanson 2006, Fire Severity in Conifer Forests of the Sierra Nevada, California, Ecosystems (2006) 9: 1177–1189.
[37] DellaSala et al., Have western USA fire suppression and megafire active management approaches become a contemporary Sisyphus? Biological Conservation, Volume 268, April 2022.
[38] Schoennagel, T., et al. 2017. Adapt to more wildfire in western North American forests as climate changes. Proceedings of the National Academy of Sciences of the USA 114: 4582–4590.

STRATEGIC FIRE PLANNING

The Wildfire Crisis Strategy set priority landscapes. The Rattail project is not within the Trinity Forest Health and Fire-Resilient Rural Communities landscape. The Mad River Ranger District began collaboration with the Trinity County Collaborative many years ago and our organizations have been participating in project planning on the Mad River Ranger District for decades. Collectively, the general agreement/consensus and primary fire strategy, which has been developed in the past few years, has been to: thin plantations; promote shaded fuelbreaks along existing roads; reduce small diameter vegetation and; thin from below while retaining adequate shade and mature and old-growth trees. The Rattail project is seemingly contrary to our shared values and years of collaboration.

Reducing more surface fuel provides a better opportunity to retain more crown closure.[39]

The Mad River Ranger District should be focusing on fuels reduction and prescribed burning within priority landscapes. If not withdrawn, we ask that the project: be developed collaboratively; focus treatments on the existing transportation system; thin from below; retain forest canopy and suitable and high-quality habitat for old-growth dependent species; retain mature and old-growth conifer and hardwood trees; and abide by the buffer widths in the Aquatic Conservation Strategy. This strategy would be more in sync with shared values, Executive Orders, LRMP Standards and Guidelines, Cohesive Wildfire Strategy, Wildfire Crisis Strategy, as well as threatened and endangered species recovery plans, state and national climate action plans for fish, plants and wildlife and direction from the LSRA and watersheds analysis.

If four or less projects are implemented in the LSRs each year, all projects and activities must be monitored to assess their effectiveness in meeting desired results and meeting the purpose and need for which they were established.[40] Monitoring is an important component for the long-term success of fire and fuel management strategies."[41] A monitoring component must be completed, please include those details in any forthcoming analysis for projects within LSRs.

IMPORTANCE OF MATURE AND OLD-GROWTH FOR CLIMATE RESILIENCE

A recent review of the authoritative science on forest carbon states:

> High carbon forests in the western US contain high biodiversity, store water, and are more resilient to climate change. The U.S. Pacific Northwest and Alaska stand out as having mature and old forests with immense carbon stores and high biodiversity that meet the IPCC defined criteria need protection to accumulate significant additional carbon out of the atmosphere. A majority of these areas are on public lands with the potential for permanent protection at the highest international levels. These mature and old forests, whether or not they are vulnerable to disturbance, are critical for potential future carbon accumulation, and are an essential source of clean drinking water. There are additional regions of the U.S. that qualify for protection as well.

[39] Six Rivers National Forest, LSRA 1999. P. 6-20.
[40] Ibid, P. 7-1.
[41] Ibid, P. A-27.

> Mature and old forests store more carbon in trees and soil than young forests, and continue to accumulate it over decades to centuries making them the most effective forest-related climate mitigation strategy. Converting mature and older forests to younger forests results in a significant loss of total carbon stores, even when wood products are considered. Young plantation forests significantly decrease streamflow compared with that of mature and old forests, particularly in drier months. Forests account for almost 60% of the most important areas for surface drinking water in the western US, yet only about 19% are protected at the highest levels (References omitted).[42]

As proposed, logging with road and landing construction in **the Rattail project would remove dozens of ancient old-growth trees, over 40 to 50 inches in diameter, including conifer and oaks**. It would likely remove hundreds of mature trees over 30 inches in diameter. These carbon storing champions are valuable for filtering our air and water. They provide food, quality habitat and cover for wildlife. They are the most fire resilient and provide vital cooler microclimates as well as helping to regulate the Earth's temperature.

CLIMATE AND LANDSCAPE CONNECTIVITY

The National Fish, Wildlife and Plant Climate Adaption Strategy makes landscape connectivity the #1 strategy for species survival and adaption.

Many species depend on connectivity for refuge and dispersal. Climate-wise connectivity is essential to provide species with access to suitable habitats in the future. Connectivity that allows plants and animals to move to cooler places is particularly important in coastal areas with rugged terrain, where microclimates drive temperature gradients. Realizing climate-wise connectivity on the ground requires both identifying and securing habitat linkages that provide climate resilience.

Climate Change Refugia for Biodiversity in the Klamath-Siskiyou Ecoregion from Olsen et al. 2012[43] delineates the South Fork Mountain ridge system (map and full study provided) as a high priority microrefugia area and explains…

> This provisional network of priority climate change microrefugia outside the existing reserve system should be targeted for immediate protection and restoration.
>
> The priority areas identified here would not, by themselves, constitute a comprehensive conservation strategy as they are intended primarily to buffer a good portion of the Klamath Siskiyou Ecoregion biota from extinction and extirpation due to changing climate, and they would not necessarily address a wide range of other conservation goals and objectives.

[42] Law et al., The Status of Science on Forest Carbon Management to Mitigate Climate Change and Protect Water and Biodiversity, March 9, 2022.
[43] Olson, David, DellaSala, Dominick A., Noss, Reed F., Strittholt, James R., Kass, Jamie, Koopman, Marni E. and Allnutt, Thomas F. *Climate Change Refugia for Biodiversity in the Klamath-Siskiyou Ecoregion.* Natural Areas Journal, 32(1):65-74. 2012.

> Waiting decades for formal "gazettement" of large protected areas without securing microrefugia now may allow continued degradation of these critical refuges.

The "reserve" systems, adopted by the NWFP, were designated to maintain landscape connectivity yet continue to be threatened by US Forest Service timber sales, habitat removal, and degradation across the region.

When detailing the NWFP revision process, DellaSalla 2006[44] states, "NWFP architects aptly recognized that LSRs, Riparian Reserves, and Key Watersheds fit together in a cohesive manner to maintain long-term benefits to terrestrial and aquatic ecosystems. Reducing protections to reserves would create cumulative impacts across ecosystems. With new stressors like climate change and ongoing land-uses, reserve synergies and integrated strategies are even more important." "…Attempts to revise the plan have been bogged down by ongoing controversy over timber vs. biodiversity values that has led to a perpetual tug-of-war between decision makers... If this trend continues, federal land management may regress and recreate many of the problems the NWFP was implemented to correct, including… loss of ecological integrity that underpins the region's ecosystem services and their adaptive capacity to climate change."

Habitat loss, spatial and temporal distribution and fragmentation may be affecting the dispersal, viability, and diversity of wildlife species of concern in these watersheds. Within the watersheds there is a need to identify dispersal corridors because much habitat fragmentation has already occurred. Several dispersal options do exist in the watershed to go between wilderness areas, LSRs and other watersheds.

While we work to navigate with fire into the future, the agency cannot continue to ignore the biodiversity and climate emergency. As proposed the project would cut down ancient and large fire resistant, carbon storing trees and would create intense habitat fragmentation in an already impaired and densely roaded landscape. Keeping connectivity by greatly diminishing or withdrawing the Rattail project, would best meet the direction of the NWFP, LRMP, NSO Recovery Plan, Salmon, and Steelhead Recovery Plan, TMDL Plans, Endangered Species Act, Clean Water Act, Van Duzen River Watershed Analysis, Six Rivers LSRA and the California and National Fish, Wildlife and Plant Climate Adaption Strategies.

CLIMATE IMPACTS

The amount of carbon harvested necessary to change fire behavior is often far larger than that saved by changing fire behavior.[45] After conducting a literature review of studies on this subject, Law & Harmon (2011)[46] concluded that "[t]hinning forests to reduce potential carbon losses due to wildfire is in direct conflict with carbon sequestration goals, and, if implemented, would result

[44] Dominick A. DellaSala, Rowan Baker, Doug Heiken, Chris A. Frissell, James R. Karr, S. Kim Nelson, Barry R. Noon, David Olson, and James Strittholt. Building on Two Decades of Ecosystem Management and Biodiversity Conservation under the Northwest Forest Plan, USA. Forests 2015, 6, 3326-3352; doi:10.3390/f6093326.
[45] Mitchell S, Harmon ME, O'Connell KB. Forest fuel reduction reduces both fire severity and long-term carbon storage in three Pacific Northwest ecosystems. Ecological Application. 19, 643–655 (2009)
[46] Law, Beverly Elizabeth, and Mark E. Harmon. "Forest sector carbon management, measurement and verification, and discussion of policy related to climate change." *Carbon Management* 2.1 (2011): 73-84.

in a net emission of CO2 to the atmosphere because the amount of carbon removed to change fire behavior is often far larger than that saved by changing fire behavior, and more area has to be harvested than will ultimately burn over the period of effectiveness of the thinning treatment."

The Forest Service is required by law to fully consider the impacts of climate change caused by the project. Both the Council on Environmental Quality[47] and recent case law state that climate impacts fall within NEPA' s framework. The USFS cannot rely on "cookie-cutter and boilerplate" carbon impact analysis.[48] Merely discussing carbon impacts and concluding that they will be minor does not equate to the "hard look" mandated by NEPA. Instead, agencies should "quantify the reasonably foreseeable direct and indirect GHG emissions of their proposed actions and reasonable alternatives (as well as the no-action alternative) and provide additional context to describe the effects associated with those projected emissions in NEPA analysis."[49] Doing so will allow the USFS to determine "the extent to which this project's [carbon emissions] will add to the severe impacts of climate change.[50]

When analyzing the climate impacts of the project on climate change, there are certain pitfalls to be avoided. First, do not assume that merely because the project area represents a small percentage of the total National Forest system or even of this National Forest, that therefore the project will have a negligible impact on climate change. Courts have already ruled that such analysis violates the hard look requirement of NEPA.[51] "Without some articulated criteria for significance in terms of contribution to global warming that is grounded in the record and available scientific evidence," an agency's conclusion that the project's carbon impacts will be "minor" merely because they are a small portion of a larger whole is insufficient.[52] We urge to the Forest Service to develop a criteria for significance while considering the climate impacts of this project.

Another pitfall to avoid is one of timing. Some climate analyses have shrugged off immediate emissions associated with a project on the basis that future carbon sequestration would offset those emissions. These analyses ignore the fact that greenhouse gas emission reductions must happen incredibly fast according to the federal government's own analysis regarding the worst impacts of climate change. Carbon emissions from this project will be immediate while any eventual sequestering, an idea which is itself scientifically debated, will take many years. Simply put, the analysis cannot offset the immediate greenhouse gas emissions associated with this project with hypothetical and slow sequestration in the future.

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[47] In 2023, the Council on Environmental Quality issued guidance for federal agencies in the NEPA review process, instructing that "[c]limate change is a fundamental environmental issue, and its effects fall squarely within NEPA' s purview." Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change 88 FR 1196 (Jan 9, 2023)

[48] *Center for Biological Diversity v. US Forest Service*, Case No. CV 22-114-M-DWM (D. Mont. Aug. 17, 2023).

[49] Council on Environmental Quality, National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions and Climate Change 88 FR 1196 (Jan 9, 2023).

[50] *350 MONTANA v. Haaland*, 29 F.4th 1158 (9th Cir. 2022).

[51] *350 MONTANA v. Haaland*, 29 F.4th 1158 (9th Cir. 2022); Center for Biological Diversity v. US Forest Service, Lead Case No. CV 22-114-M-DWM (D. Mont. Aug. 17, 2023).

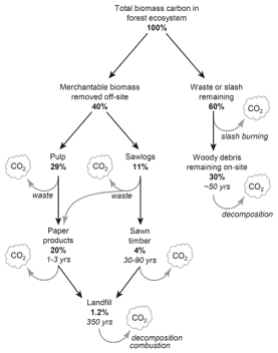
[52] *350 MONTANA v. Haaland*, 29 F.4th 1158, 1126 (9th Cir. 2022).

CLIMATE DIRECTION

On June 23, 2022, Department of Agriculture Secretary Tom Vilsack released the Secretary's Memorandum on Climate Resilience and Carbon Stewardship of America's National Forests and Grasslands (Secretary's Memorandum 1077-004). Emphasizing Executive Order 14072, the Secretary's memo directs the Forest Service to undertake specific and time-bound actions so that data-informed policies, strategies, and actions are in place to provide for increased carbon stewardship and climate resilience on our national forests and grasslands. It promotes the continued health and resilience of our Nation's forests (including old-growth and mature forests) by retaining and enhancing carbon storage, conserving biodiversity, mitigating wildfire risks, enhancing climate resilience, and enabling subsistence and cultural uses.

TRUTH ABOUT WOOD PRODUCTS

Harvesting trees for wood products results in net emissions and is not an energy-neutral process.[53] Much of the carbon-storing biomass from trees is contained within the tops and branches, which are often burned or left to deteriorate. Then, a significant portion of the tree is lost during milling. Then the carbon emissions of hauling lumber to outlets and then manufacturing is another addition in the total emissions. The lifespan of wood products is short-lived and they often end up in a landfill. The myth —concerning wood products storing carbon in the long-term— that is perpetuated by the agency and timber industry needs to stop and consider the reality of the carbon lost and emissions cast into the atmosphere to make wood products.



"Transfer of biomass carbon during harvesting and processing of wood products. Numbers in bold represent the proportion of the total biomass carbon in the forest that remains in each component. Numbers in italics are the average lifetime of the carbon pool (see data sources in Appendix E: Table E1)."[54]

Transferring carbon (C) from forest biomass to wood product carbon pools is inefficient and leads to an overall loss of C storage. C is lost when forests are harvested compared to old growth forests, even when storage in wood products and landfill are included.[55] Additionally, C stocks are younger and have less longevity in logged forests compared to old growth forests.[56]

[53] https://carbon2018.globalchange.gov/chapter/9/
[54] Ibid.
[55] Keith, H., D. Lindenmayer, B. Mackey, D. Blair, L. Carter, L. McBurney, S. Okada, and T. Konishi-Nagano. 2014.Managing temperate forests for carbon storage: impacts of logging versus forest protection on carbon stocks. Ecosphere 5(6):75. http://dx.doi.org/10.1890/ES14-00051.1
[56] Ibid.

BEST MANAGEMENT PRACTICES

Resource protection measures (RPMs) and Best Management Practices (BMPs) are developed to reduce, not prevent, environmental effects and ensure project activities are implemented to comply with standards and guidelines. The analysis must disclose and analyze impacts of the proposed logging, yarding, road construction and reconstruction, road use and maintenance, landing construction, tractor piling, and stream crossings on the environment. The agency cannot rely on RPMs and BMPs to eliminate impacts.

To our knowledge the Six Rivers National Forest has not completed an Annual Monitoring Report, as required under the National Forest Management Act. These annual reports contain effectiveness and implementation monitoring of BMPs. Neighboring national forest reports will show that BMPs are not 100% effective or 100% completed.

The USFS should be aware that the National Marine Fisheries Service (NMFS) criticizes the use of BMPs and mitigation as poor surrogates for addressing cumulative watershed effects because BMPs are addressed to individual actions and fail to do limit the totality of individual actions within a watershed. Cumulative effects of forest practices may include changes in sediment, temperature, and hydrological regimes, resulting in direct, indirect, or eventual loss of key habitat components (e.g., clean gravel interstices, large woody debris, low temperature holding pools, and protected off-channel rearing areas) necessary for spawning and rearing of anadromous salmonids. These changes often are not expressed "immediately" at the project site, but instead may occur subsequent to triggering events (fire, floods, storms) or are manifested off-site (downstream) of where the effects are initiated.

Please note that the prevention of potentially adverse impacts at the project site is indeed necessary, but not sufficient to avoid cumulative effects. As Reid (1993)[57] states:

> The BMP approach is based on the premise that if on-site effects of a project are held to an acceptable level, then the project is acceptable, regardless of activities going on around it. Interactions between projects are beyond the scope of BMP analysis, and operational controls are applied only to individual projects.
>
> However useful site specific BMPs are in minimizing effects of individual actions, they still do not address the cumulative effects of multiple actions occurring in the watershed which, though individually "minimized" through application of site-specific BMPs, may still be significant, in their totality, and have undesirable consequences for beneficial uses such as salmon populations and salmon habitat.

The argument that applying a BMP while conducting a specific forest practice minimizes site-specific effects and thus also minimizes cumulative effects is logically flawed. Every BMP is an action and has an effect ... thus generally, the more the BMPs are applied the greater the cumulative effect. Only by minimizing the number of actions, i.e., the number of individual

[57] Reid, Leslie M. 1993. Research and cumulative watershed effects. Gen. Tech. Rep. PSW-GTR- 141. Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture; 118 p.

applications of BMPs, would cumulative effects by minimized. This is precisely why a cumulative effects assessment is needed—to establish the watershed-specific limits and excesses of BMP applications.

OFF HIGHWAY VEHICLE ABUSE AND ILLEGAL GROWS

Improved access through the construction and reconstruction of roads may increase unmanaged OHV use and trespass marijuana grows, which results in unauthorized roads and trails, increased soil compaction and erosion, increased sedimentation, water quality degradation, the spread of noxious weeds, increased fire risk, damage to cultural resources, habitat destruction and fragmentation, increased disturbance to sensitive wildlife, toxic pesticides, and conflict among users. Please describe how the "existing" routes not on the transportation system were created, their current condition, and location. The forthcoming NEPA analysis should examine the risks of increased motorized access and trespass marijuana grows.

INVASIVE PLANTS

The spread of both native and exotic pests and pathogens in many forest systems are linked to the travel corridors provided by extensive road networks. Please note that roads are one of the main vectors for noxious weed spread and introduction.

The EA should describe any currently existing infestations, the types of weeds, and their locations. It must also address the risk of spreading invasive plants, better avoid the high risk of spreading invasive plants through extensive logging, road and landing construction and road use.

TRIBAL CONSULTATION

Decision makers must have **regular, meaningful, and robust consultation** with affected Tribes. Please see this January 26, 2021, Memorandum concerning Tribal Consultation and Strengthening Nation-to-Nation Relationships.

Executive Order 13175 of November 6, 2000 (Consultation and Coordination With Indian Tribal Governments), charges all executive departments and agencies with engaging in regular, meaningful, and robust consultation with Tribal officials in the development of Federal policies that have Tribal implications. Tribal consultation under this order strengthens the Nation-to-Nation relationship between the United States and Tribal Nations. The Presidential Memorandum of November 5, 2009 (Tribal Consultation), requires each agency to prepare and periodically update a detailed plan of action to implement the policies and directives of Executive Order 13175.

CONCLUSION AND RECOMMENDATIONS

As proposed, Rattail would cut down ancient and mature trees, where less than 15% exists, in an already impaired densely roaded landscape in the Eel River LSR and Critical Habitat. This is contrary to law, policy and regulation that guides management on our national forests. It would leave the area in a much worse condition.

As we navigate our future with fire together, we ask the Mad River Ranger District to withdraw the project and work collaboratively on crafting a long-term fire and wildlife recovery strategy with its willing and dedicated partners.

If the project is to move forward, we urge the District to analyze an alternative that would:

- Focus treatments on the existing transportation system;
- Retain ancient and fire-resistant mature conifer and oak trees;
- Thin from below while keeping adequate canopy cover and suitable habitat;
- Abide by the buffer widths in the Aquatic Conservation Strategy and;
- Require plant and wildlife surveys.

This alternative would be more in sync with shared values, Executive Orders, LRMP Standards and Guidelines, Cohesive Wildfire Strategy, Wildfire Crisis Strategy, as well as threatened and endangered species recovery plans, state and national climate action plans for fish, plants and wildlife and direction from the LSRA and Mad and Van Duzen River watersheds analyses. Thank you for your consideration.

Sincerely,

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Referenced material can be viewed at this link:
https://www.dropbox.com/scl/fo/6d5r73vyto6t02vwmzjwe/h?rlkey=uypul4dt7wbfxengn4xs7n144&dl=0