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Working to protect and restore Western Watersheds and Wildlife

Regional Forester
U.S. Forest Service, c
1220 SW 3rd Avenue
Portland, OR 97204

Submitted via web portal: https://cara.fs2c.usda.gov/Public/CommentInput?Project=64745

February 2, 2024

Re: Northwest Forest Plan Amendment Scoping

Dear Regional Forester,

Please accept these comments for the Northwest Forest Plan Amendment.

Western Watersheds Project is a non-profit organization with more than 15,000 members and supporters. Our mission is to protect and restore western watersheds and wildlife through education, public policy initiatives, and legal advocacy.

1. Background

According to the Notice of Intent (NOI) and emails from the US Forest Service, the Northwest Forest Plan covers 24.5 million acres of federally managed lands in western Oregon and Washington, and northwestern California. It was established in 1994 to address threats to threatened and endangered species while also contributing to social and economic sustainability in the region. After nearly 30 years, the Northwest Forest Plan needs to be updated to accommodate changed ecological and social conditions. The Forest service intends to prepare an Environmental Impact Statement on the proposal to amend the 17 land management plans of the Northwest Forest Plan (NWFP) that provides direction for the management of those national forests and grasslands.

2. The Scope of the Plan Amendment is Too Narrow

During the US Forest Service webinars on the NWFP, more questions were raised about the scope of the EIS. Which ecosystems are going to be included in the plan amendment in order to guide Forest revisions that cover a multitude of different habitats, some outside of the range of the spotted owl. Fire resiliency is listed as a focus area, yet wildlands fire covers a huge area, including dry warm ecosystems such as sagebrush-steppe, western juniper savanna, and invasive weed fields.

During January 2024 virtual meetings, Forest staff explained that only a few urgent issues will be covered in this current Plan amendment, such as fire and socioeconomics, apparently driven by the need to streamline the comment period and environmental analysis to within a year. There was a hope to keep this to a "narrow amendment." Other NWFP amendments could happen in the future, but we are concerned that this

could be in years or even decades, and many significant issues are being left out of this "narrow, focused amendment."

Individual Forests need a wider scope of analysis in order to better update revise their Forest plans. This NWFP amendment needs to be wider, and include recreation, grazing, sagebrush, ponderosa pine, and juniper ecosystems, a better analysis if riparian, aquatic ecosystems, and salmonid habitat and population recovery, as well as a complete inclusion of Covered Species.

We are concerned that narrowing the scope of this amendment will exclude analysis of fire resiliency in sagebrush and other arid ecosystems, and that targeted grazing could be used to reduce fuels but not impacts are not going to be analyzed. An ecosystem approach needs to include all ecosystems in the Plan area, not just a few chosen ecosystems. A holistic approach to conserving a wider biodiversity is needed, and not a narrow focus on just the Northern spotted owl, as important as that work is.

The original 1994 Northwest Forest Plan considered many other uses and management actions in the region, including salmonid habitat management and livestock grazing, but reduced these important areas down to mitigation measures in attachments to the Record of Decision. The current NWFP Amendment needs to reconsider these significant management areas and lift them back up to major consideration and analysis considering all the new information available since 1994.

3. Confusion Over Which Forests Are Included in the Plan

The US Forest Service on some web pages include Modoc and Lassen National Forests in the Northwest Forest Plan, such as at https://www.fs.usda.gov/project/?project=64745:

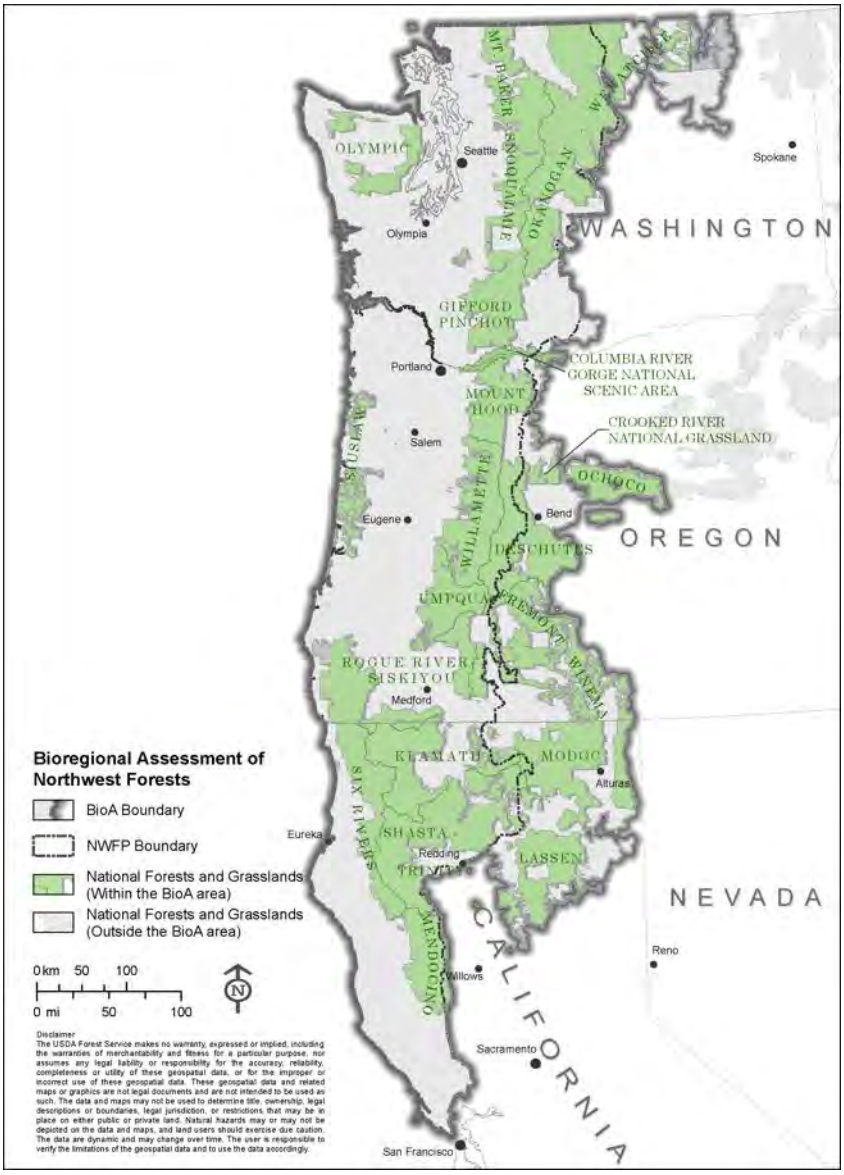
> **Northwest Forest Plan Amendment**
>
> The 21 members of the Northwest Forest Plan (NWFP) Federal Advisory Committee will provide NWFP modernization recommendations to the USFS.
>
> ***Location Summary***
>
> The area of the Northwest Forest Plan
>
> Forests: Klamath National Forest All Units, Lassen National Forest All Units, Mendocino National Forest All Units, Modoc National Forest All Units, Six Rivers National Forest All Units, Shasta Trinity National Forest All Units, Deschutes National Forest All Units, Fremont-Winema National Forest All Units, Gifford Pinchot National Forest All Units, Mt Baker-Snoqualmie National Forest All Units, Mt. Hood National Forest All Units, Olympic National Forest All Units, Rogue River-Siskiyou National Forest All Units, Siuslaw National Forest All Units, Umpqua National Forest All Units, Okanogan-Wenatchee National Forest All Units, Willamette National Forest All Units. (Emphasis ours)

Modoc and Lassen National Forests are also included in the Federal Register notice dated December 18, 2023 for the "Region 5 and Region 6; California, Oregon, and Washington; Forest Plan Amendment for Planning and Management of Northwest Forests Within the Range of the Northern Spotted Owl" at

https://www.federalregister.gov/documents/2023/12/18/2023-27742/region-5-and-region-6-california-oregon-and-washington-forest-plan-amendment-for-planning-and.

In its page on the Bioregional Assessment of Northwest Forests at https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fseprd677501, the Forest Service says:

> The Pacific Northwest and Pacific Southwest regions of the U.S. Department of Agriculture's Forest Service collaboratively developed and released a Bioregional Assessment which provides a snapshot in time of the current ecological, social and economic conditions on national forest system lands within the Northwest Forest Plan amendment area as well as two adjacent units.
>
> The Bioregional Assessment was created to provide land managers the spectrum of information reflecting changes in management practices, science, and resource needs that they will require to make the best possible decision when modernizing land management plans. The bioregional assessment is not a decision document and does not impact current forest management. Instead it will be used to shape ongoing engagement with Tribal, state, and county governments, community members, and Forest Service staff as they prepare for the next steps in the planning process together.



Map of Northwest Forests Bioregional Assessment area, as an expanded assessment from the NWFP boundary (Source: https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fseprd677501)

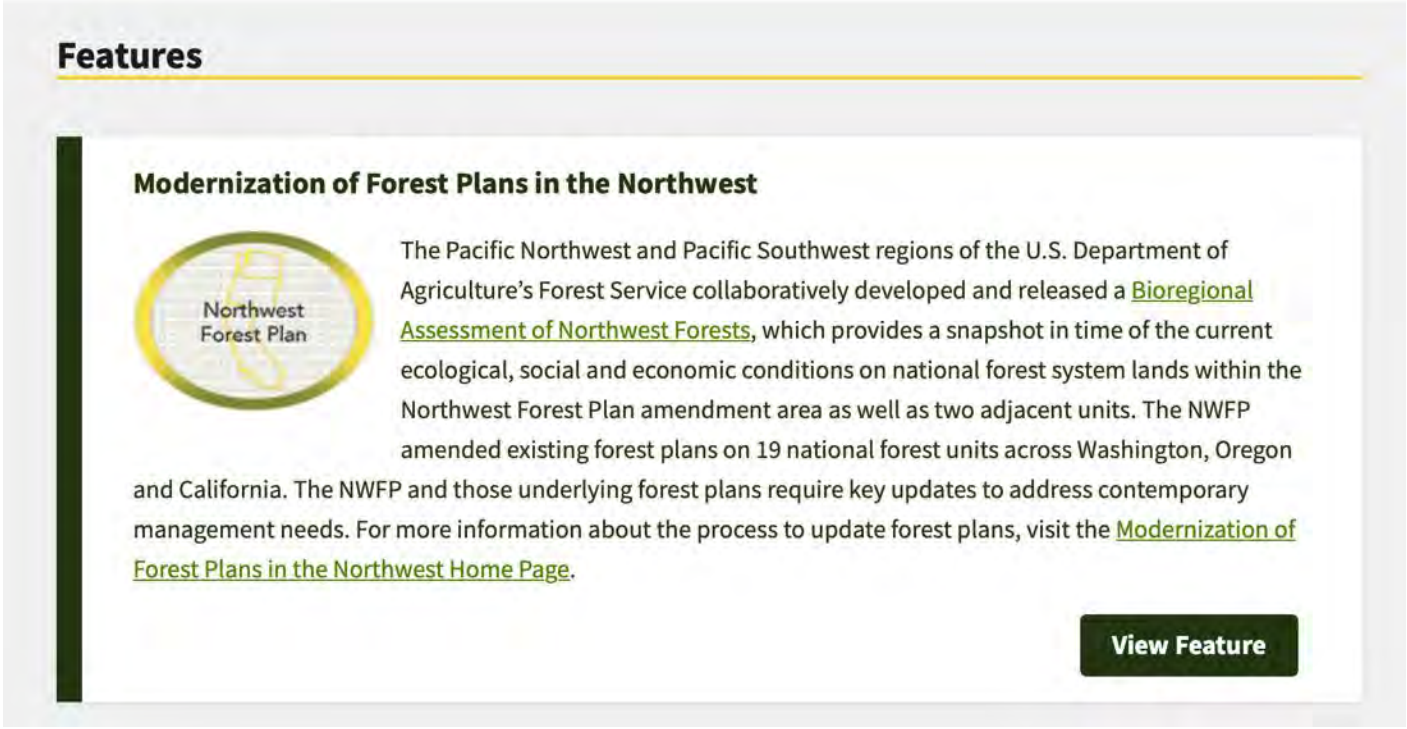
This Bioregional Assessment is included on the USFS web page on the Northwest Forest Plan Amendment at https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fsbdev2_026990.

Yet in the January 17, 2024, Microsoft Teams Winter Webinar, the forest service presented this more restricted map, also found at https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fsbdev2_026990, which seems to exclude Modoc and Lassen National Forests in California. Which is it?

Map of Northwest Forest Plan area (Source: https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fsbdev2_026990)

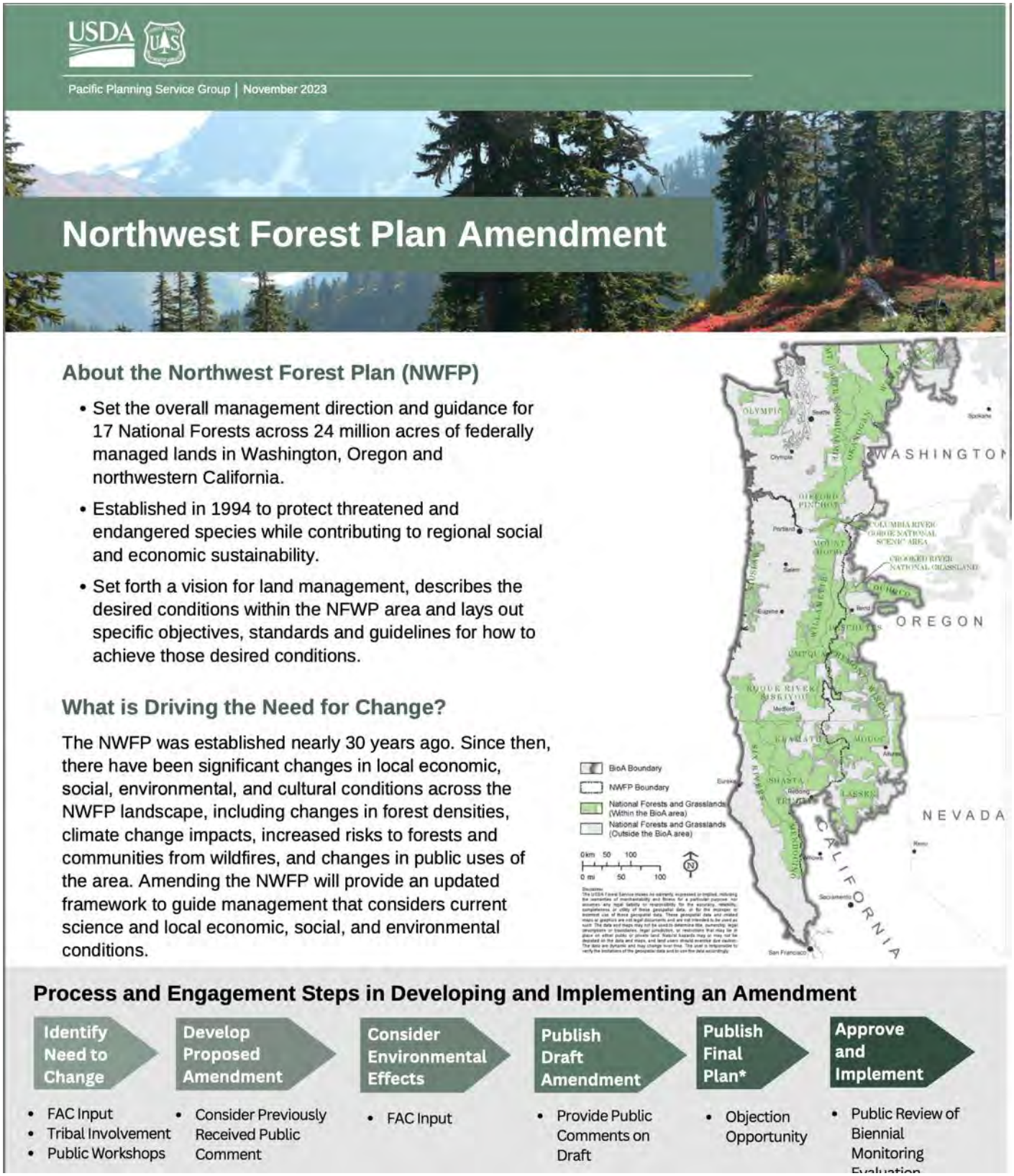
We are confused: does this NWFP amendment cover 17 Forest Plans or 15 Forest Plans?

The Modoc National Forest page at https://www.fs.usda.gov/main/modoc/landmanagement/planning includes the following text captured as a screenshot on January 17, 2024, below. This web page mentions 19 National Forests in the NWFP planning area.



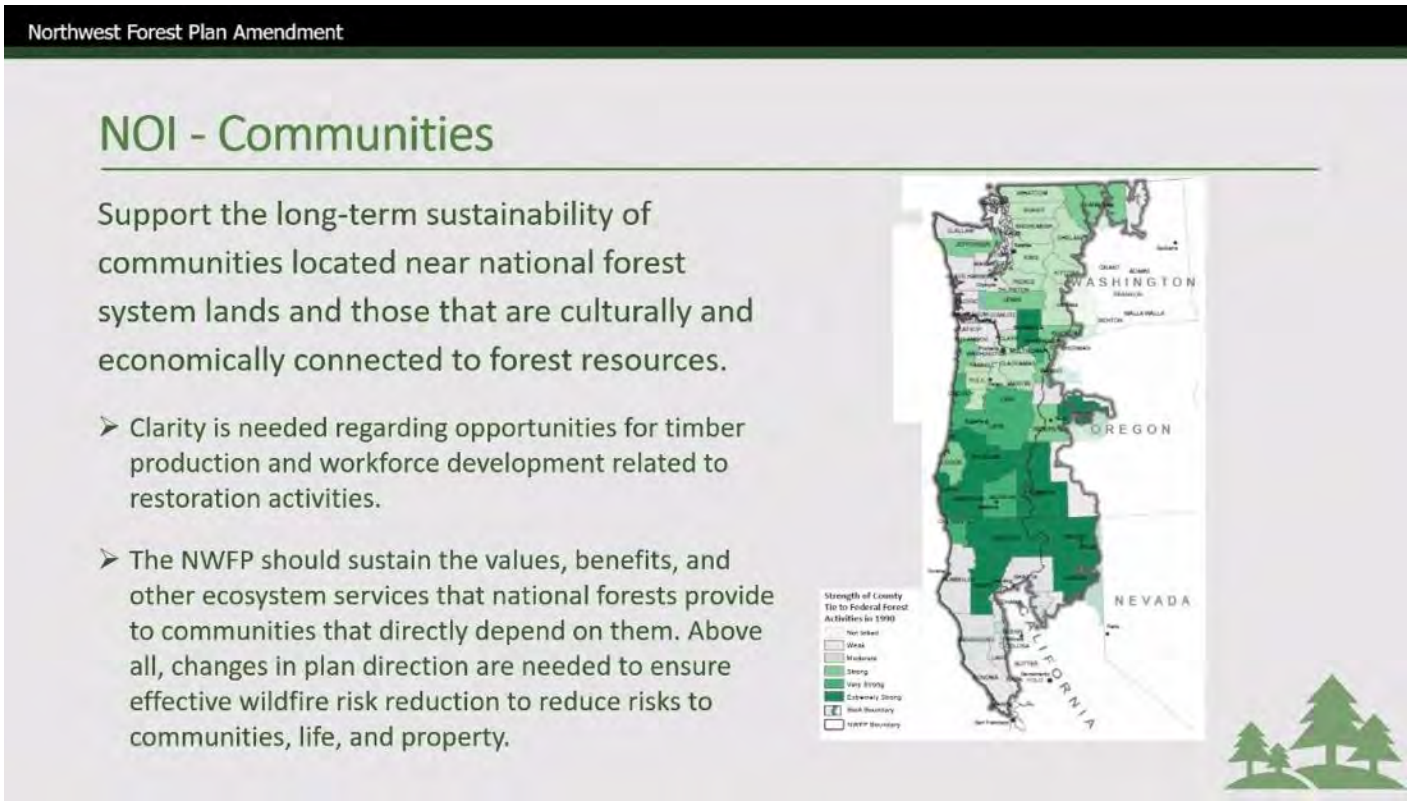
We understand that the current **Northwest Forest Plan Amendment EIS** may be more restricted in area and may not include Modoc, Lassen, and other eastern-edge Forests in Oregon and Washington, and that the **Northwest Forest Bioregional Assessment** may be different from this current EIS and somewhat broader. But the Forest Service should clarify this in its analysis in the draft EIS. This is not clear and the multiple different Forest Service web pages lead to confusion with the public.

To add to the confusion, the link from the Federal Register notice (https://www.federalregister.gov/documents/2023/12/18/2023-27742/region-5-and-region-6-california-oregon-and-washington-forest-plan-amendment-for-planning-and) goes to this page at https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1151261.pdf, showing the map which includes Modoc and Lassen National Forests as part of the Northwest Forest Plan Amendment:



Source: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fseprd1151261.pdf

During the January 2024 virtual meetings discussing the NOI for the Northwest Forest Plan, the Forest Service included slides such as on Socioeconomics, that included Modoc National Forest and other Forests, apparently inviting public comment on all of these Forests:



Will Modoc and Lassen National Forests be included in timber management planning in this current NWFP Amendment EIS? Please clarify. We think these Forests should be included in this EIS, based on fire ecology, watershed connection, habitat for covered species, new information on climate change and ecosystem resiliency, and close relationship to the coastal Forests and ecosystems.

Sagebrush and Juniper Ecosystems

Ecological integrity of all ecosystems in the Plan area should be maintained or increased, to balance multiple use and extractive uses. The Northeastern California plateaus bioregion science synthesis (Dumroese and Moser, eds. 2020) should be included in the Northwest Forest Plan amendment as part of analysis.

Sagebrush-steppe ecosystems should be included in this planning effort because conditions on the ground and science have changed in the last 30 years. Better guidance is needed for future Forest plan revisions. Cheatgrass (*Bromus tectorum*), medusahead (*Taeniatherum caput-medusae*), and ventenata (*Ventenata dubia*) invasions have increased or are relatively new.

During the virtual presentations in January 2024 the Forest Service described the need to differentiate and clarify the varying conservation goals for moist and dry forest ecosystems. We encourage the Forest Service to include a wider number of old growth ecosystems found in the Plan area, including Western juniper woodlands and savannas on the dry eastern edges—forests which are presently targeted for range

management treatment projects that chainsaw down native trees, some of which are hundreds of years old and which provide important wildlife habitat. The NWFP needs to discuss these forest types.

The EIS should better define matrix and adaptive management areas.

Species of Conservation Concern

We urge the Forest Service to undertake scientifically-rigorous process to determine species of conservation concern and to commit to a robust monitoring program to ensure long-term species viability. Species that should be considered for conservation concern include:

New listing status for species in the Plan area should be analyzed: the Humboldt marten (*Martes caurina humboldtensis)* was listed as federally threatened in 2020. The West Coast Distinct Population Segment of Pacific fisher (*Pekania pennanti*) in northern California and southern Oregon is a candidate since 2023 for Endangered Species Act listing, and should be considered as Plan area species of conservation concern.

The Plan amendment should give consideration to culturally important species. The Karok and Yurok consider species such as salamanders, pileated woodpecker, mule deer, beaver, mink, salmon, steelhead, and eel.

Porcupine (*Erethizon dorsatum*) have quills that are used in Tribal cultural materials, and porcupines help keep the forest clean as they climbed the trees and ate twigs and branches according to traditional ecological knowledge.

Roosevelt elk (*Cervus canadensis roosevelti*) are also culturally significant. Tribal knowledge along the Klamath River in California says they are valuable in cleaning the forest of excess debris, while keeping some trees in check with their browsing.

Beaver Restoration

The Forest Service should adopt beaver restoration as a goal of the plan. Beavers are a keystone species that create salmon and trout habitat as well as restoring thriving aquatic ecosystems. Beavers help to recharge groundwater, moderate fire behavior and create fire refugia, improve water quality, and recharge and reconnect floodplains. Across the Plan area beavers are missing from their historic range or are threatened by trapping. Amendments to the Northwest Forest Plan should explicitly provide for beaver restoration at scale.

Beavers (*Castor canadensis*) should be reintroduced to rivers— their cutting and gnawing was beneficial to the salmon in creating log-dammed ponds that were extremely important as juvenile salmon rearing habitats; endangered Coho juveniles especially use them. The logjams can store water to help stabilize stream flow and can help reduce peak flows during freshets. As early as 1828, fur trappers of the Hudson Bay Company had nearly exterminated beaver in the region. Where beavers were trapped out, their dams fell apart, drying out the small wetlands that had been created behind them. Restoring beavers can help restore these meadows and wetlands.

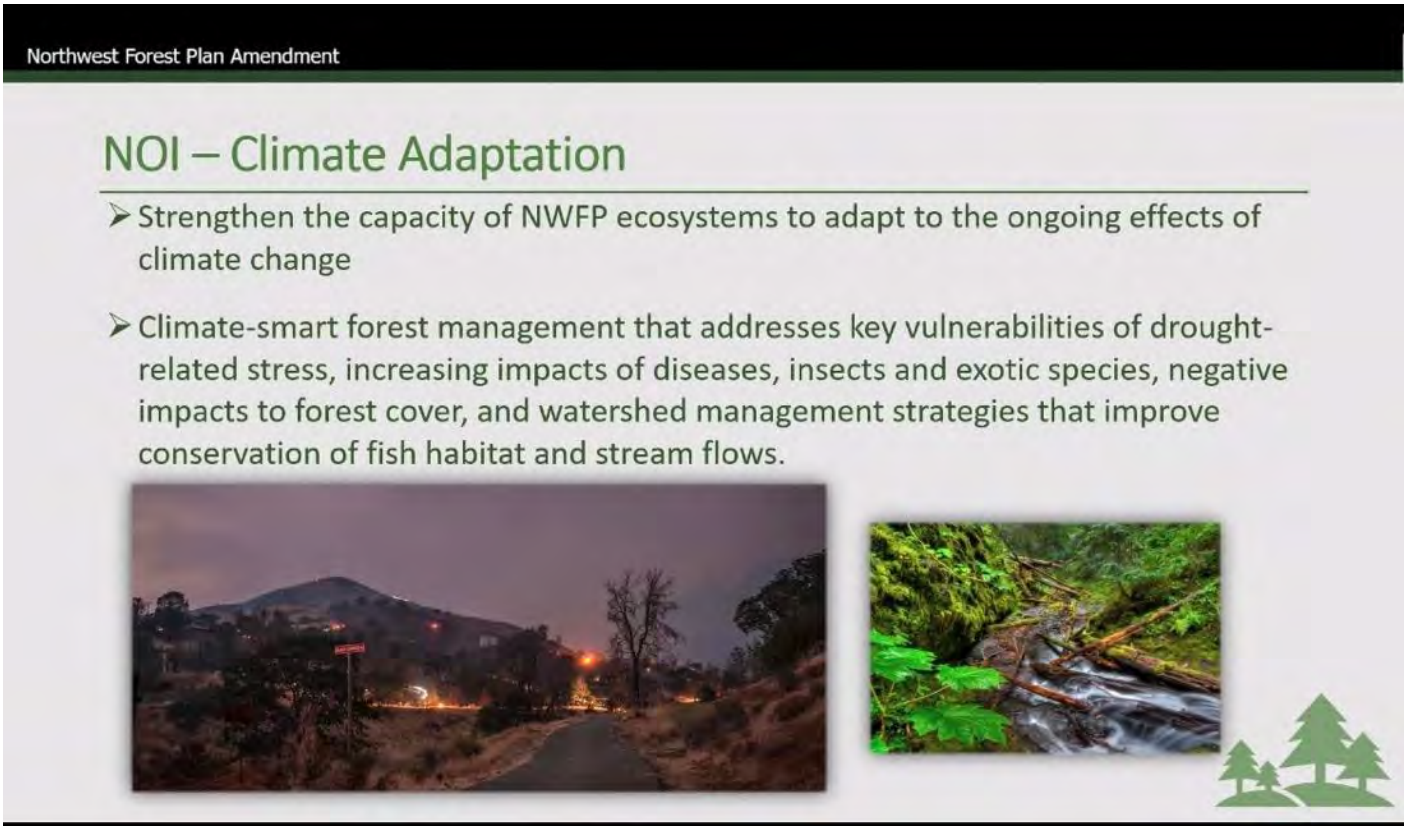
A goal to work with states on beaver management, including potential closures to commercial and recreational beaver trapping on national forest lands, should be included in the Plan amendment.

Aquatic Conservation Strategy and Salmonids

Aquatic ecosystems and riparian areas should be emphasized in this planning effort. Any amendment to the ACS must seek to strengthen and expand the protections currently afforded by the provision. Key watersheds that are crucial for increasing water quality and supporting at-risk fish species need to be evaluated and reassessed since their recommendation by science panels in the early 1990s, as conditions on the ground most likely have changed. The Plan amendment should strengthen existing protections by further restricting road building, logging, and grazing, and protect additional watersheds.

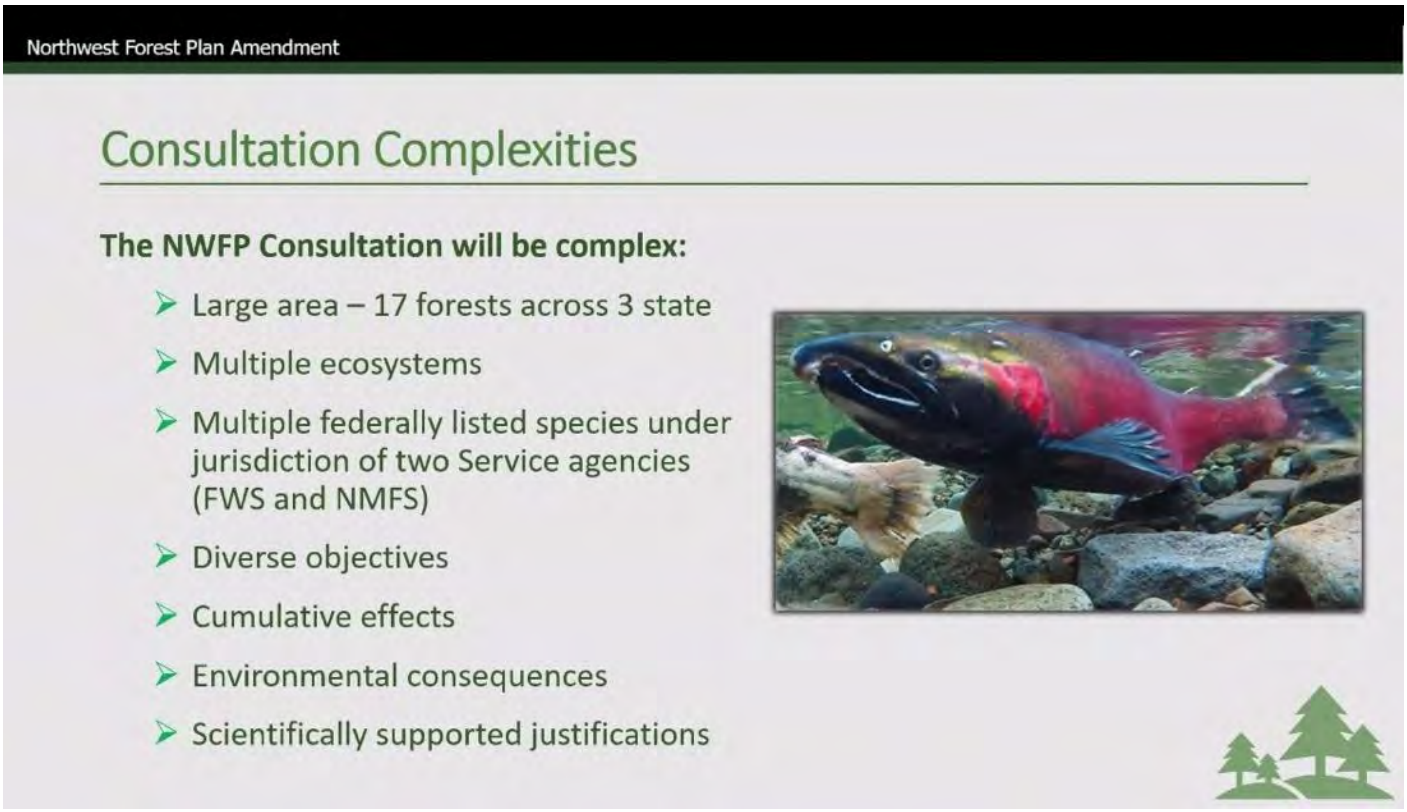
There are significant new threats to salmonid populations—such as drought and climate change, new information on stark declines of salmonid species, and ongoing concerns that the original Plan is not working to guide Forest management across the Pacific Northwest from its original intent of attempting to mitigate threats from Forest management activities such as logging, road impacts, and grazing management.

Improving conservation of fish habitat and stream flows are mentioned as part of climate adaptation in the Forest Service January 2024 presentations about the NOI as a focus of the plan amendment:



Again, in the January 2024 NOI Forest Service informational virtual meetings include a slide discussing how the US Forest Service will consult with the National Marine Fisheries Service on listed species, implying that threatened and endangered populations of salmonids will be a crucial task of the Plan amendment. Yet, the "narrowly focused" Plan amendment seems to avoid any analysis of many stressors in watersheds of these declining fish, including livestock grazing, riparian degradation, road-building, causes of erosion, sedimentation, and poor water quality. The Plan amendment needs to be holistic and analyze all

uses, stressors, threats, plant communities, and species' habitats now, and not wait years for another Plan amendment.



Chronic poor land management plagues California watersheds — logging, overgrazing, road construction, urbanization, all causing excessive siltation and landslides. Clearcutting and road-building on steep slopes has especially severe impacts, causing some tributaries to go dry.

Upland erosion and streambank destabilization due to these factors can dump large amounts of silt and clay into the streams. Clean gravel, free of fine sediment, is crucial for salmon survival. Too much silt in the current will settle into the gravel and "embed" the little stones, leaving no room nor oxygenated water flow for the salmon eggs and alevins, or worse creating a cement.

The 1994 Plan was supposed to protect and restore spawning and rearing habitat for anadromous fish. Yet since the 1990s, salmon populations have plummeted and crashed, and many blinked out across the Pacific Northwest due to climate change and droughts; deforestation, livestock grazing, road-building that all cause erosion and sedimentation; and poor water quality. The Standards and Guidelines of the original 1994 Plan Attachment A to the Record of Decision (ROD at C-31-38) list road management guidelines including minimizing hydrologic flow, restricting sidecasting, minimizing sediment delivery to streams from roads, and upgrading culverts. How much of this was achieved since 1994?

The 1994 Northwest Forest Plan ROD discussed completing watershed analyses, preparing road maintenance criteria, reconstructing poorly-designed roads, closing or stabilizing roads not meeting Aquatic Conservation Strategy objectives, and developing and implementing a Road Management Plan or a Transportation Management Plan to minimize and mitigate any sedimentation. Has the Forest Service accomplished all this since 1994? The current NWFP Amendment should analyze whether these promises

have been met. All Forest roads that could impact salmonid streams should be inventoried, mapped, and analyzed as to erosion and sedimentation levels to water bodies.

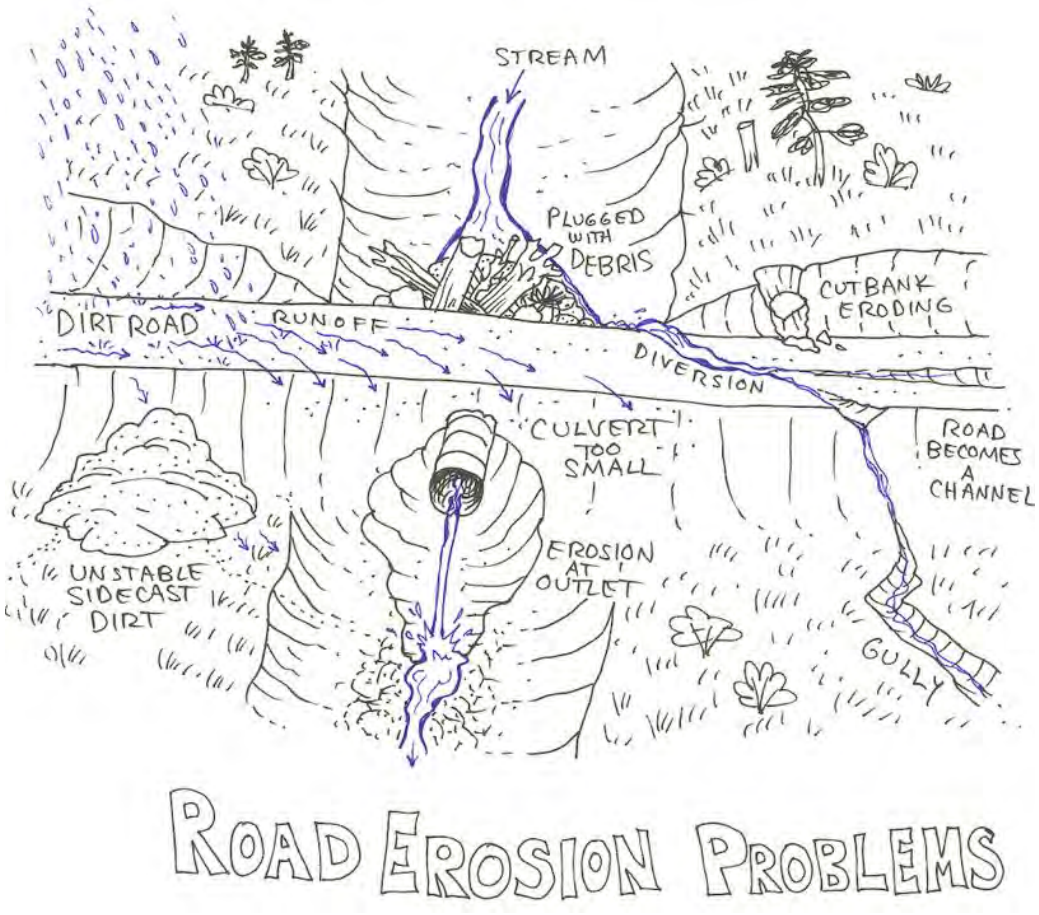


Illustration by L. Cunningham of salmon threats by road-building for logging operations in watersheds.

Important to the 1994 Plan is the maintenance and development of well-distributed late-successional (mature and old-growth) forest reserves (LSRs) to provide habitat for viable populations of northern spotted owls, marbled murrelets, and sustainable salmonid watersheds.

The proposed amendment seems to enable more aggressive commercial timber harvest that could lead to more erosion and water quality problems in streams and rivers that are needed by salmon, steelhead, and eels.

The 1994 Northwest Forest Plan ROD at 30 says that these mitigation measures are considered but removed and not adopted in the Plan:

> The potential mitigation measures that could benefit fish are to remove all lands in Tier 1 key watersheds from programmed timber harvest, to build no new roads in Tier 1 key watersheds, and to remove inventoried roadless areas from the programmed timber harvest. These potential mitigation measures were not adopted because standards and guidelines described in Attachment A will provide adequate habitat on federal lands for these species.

We contend that Standards and Guidelines are not working to mitigate fishery damage from logging and road-building, and other uses in watersheds such as grazing. Salmon populations have been crashing and losses are worse every year. The current Plan Amendment needs to analyze salmonids with all the new information and threats as a major part of this current environmental review, and not brush major management off into mitigation measures which are not effective.

We strongly recommend that all the LSRs be maintained and even increased, protect all remaining older forests currently in the matrix, and prioritize ecological restoration to previously logged areas especially in salmonid watersheds. The Forest Service should also increase riparian reserves and remove extractive uses from all riparian areas that can be restored—this includes timber extraction and livestock grazing.

Grazing and Range Management

The Plan area includes many native grassland communities and other sensitive plant communities, such as coastal prairies, hill prairies, montane meadows, sedge wetlands, fens, serpentine communities, Oregon oak savannas, valley grassland and blue oak woodland in the south, and arid shrub-steppes on the eastern edges.

Livestock grazing guidance and updated science needs to be included in the NWFP Amendment because grazing can increase erosion and sedimentation to salmonid streams as discussed above. In relation to wildlands fire, grazing soil disturbance often increases invasive annual cheatgrass (*Bromus tectorum*) which can shift wildlands fire regimes from old-growth plant communities with low-ignition rate long-term fire return intervals (such as sagebrush communities), towards flashy fuels more prone to frequent fire return intervals on plant communities which would not normally see this type of fire return interval (invasive weedy plant communities).

Will targeted grazing be used for fire fuel management, without Plan analysis and standards?

The Standards and Guidelines of the original 1994 Northwest Forest Plan Attachment A to the Record of Decision (ROD at C-33-34) state for Riparian Reserves these guidelines should be met:

Grazing Management

GM-1. Adjust grazing practices to eliminate impacts that retard or prevent attainment of Aquatic Conservation Strategy objectives. If adjusting practices is not effective, eliminate grazing.

GM-2. Locate new livestock handling and/or management facilities outside Riparian Reserves. For existing livestock handling facilities inside the Riparian Reserve, ensure that Aquatic Conservation Strategy objectives are met. Where these objectives cannot be met, require relocation or removal of such facilities.

GM-3. Limit livestock trailing, bedding, watering, loading, and other handling efforts to those areas and times that will ensure Aquatic Conservation Strategy objectives are met.

We contend that Aquatic Conservation Strategy objectives have not been met. Our staff have documented numerous Aquatic Conservation Strategy practices not being effective, and therefore we request that grazing should be eliminated from these areas of the Plan. This needs detailed analysis.

Use levels of natural resources are mentioned in the ROD at E-9, and monitoring of livestock grazing is listed. What are the trends and what needs to be changed?

The ROD at C-6 discusses sites to be protected from grazing:

> This standard and guideline applies throughout all land allocations. This standard and guideline is designed to benefit mollusks and vascular plants. Known and newly discovered sites of these species will be protected from grazing by all practicable steps to ensure that the local populations of the species will not be impacted.

This needs updating, and surveys for rare plants and sensitive natural communities.

The 1994 Northwest Forest Plan ROD at C-17 discusses Range Management:

> Range-related management that does not adversely affect late successional habitat will be developed in coordination with wildlife and fisheries biologists. Adjust or eliminate grazing practices that retard or prevent attainment of reserve objectives. Evaluate effects of existing and proposed livestock management and handling facilities in reserves to determine if reserve objectives are met. Where objectives cannot be met, relocate livestock management and/or handling facilities. (C-17)

What are the results of these range-related management measures that were to be developed? The EIS needs to discuss the updates to these measures and whether livestock removals from reserves were carried out. The EIS also needs to mandate removal of livestock grazing from all reserves because of the impacts to vegetation, water quality, soils, and wildlife of livestock grazing and associated range developments.

Rare Plants

The huge area of National Forests across the Plan area includes many rare plant species and vegetation communities that need better management to conserve these populations and habitats. Timber logging, grazing, and other extractive uses threaten these rare plant species and unique plant communities. In the face of increases climate change impacts, changing fire management, grazing, and other uses not well managed by the current Plan, these areas need better analysis.

For example, the 1994 ROD at 33 denies designation of special botanical areas to protect and conserve rare plants:

> The possible mitigation measures that could benefit vascular plants include: designating botanical special interest areas and areas of critical environmental concern to protect habitat and key populations of rare and local populations (e.g., *Aster vialis, Bensoniella oregana, Cimicufuga elata, Corydalis aquae-gelidae, Frasera umpquaensis, Poa laxiflora*, and *Streptopus streptopoides*); developing, updating, and implementing conservation strategies for species, species groups, and habitats to reduce risk for many sensitive species; implementing well-designed monitoring studies for species with limited distribution and occurrence; conducting basic inventories and studies to determine sustainable yields of special forest products to avoid overharvest; and initiating a consistent interagency inventory and classification of riparian plant associations.

The Forest Service needs to take a look at designating Botanical Special Interest Areas and Areas of Critical Environmental Concern in this current Plan amendment.

Fire Resiliency and Cultural Fire

The Plan amendment prioritizes fire resiliency and community safety. Increased involvement of tribal governments over management decisions concerning their ancestral territory is also a priority.

I present my Cultural Fire observations in the Klamath River Watershed, notes and photographs from the cultural fire Tribal training event in October 2019, the Klamath Training Exchange (Klamath TREX) in the Six Rivers National Forest and Klamath National Forest region, around Orleans, Somes Bar, and Hoopa, California. I was part of a group of nature journalers who were invited by the Karok and Yurok Tribes to learn and observe the Traditional Ecological Knowledge around fire to restore and maintain the plant communities of the Klamath River watershed, salmon, wildlife, and cultural resources of the area. Our notes were reviewed by the Tribes and we were given permission to share our observations publicly in order to help educate the wider public. We underwent wildlands fire training, donned firefighter Personal Protective Equipment, and went in with notebooks and cameras to the fuel breaks.

Tribal experts explained to us their long oral histories and deep cultural connection to the use of fire on the land to manage resources. They have a collective memory of the "hard stop" of the use of cultural fire in 1911 when the Federal Government came in and banned all use of fire in forests in northern California, under penalties of newly imposed laws. This is the date when fuels began to build up in the region.

According to the Mid Klamath Watershed Council (MKWC), historically, the western Klamath Mountains experienced fires every 3 to 10 years. Fire suppression over the last 100 years and the prohibition of traditional Tribal burning has resulted in a huge fire deficit in the region. The use of prescribed fire may be the only viable long-term method for protecting human communities. Fire needs to be restored to the landscape for multiple other reasons as well: including for cultural resources, restoring wildlife habitat, and general ecological functionality.

MKWC, through the Orleans/Somes Bar Fire Safe Council (OSBFSC) is facilitating collaborative strategic restoration planning and hazardous fuels reduction throughout the community. Their five-year strategic plan calls for the use of prescribed broadcast burning as a cost-efficient tool for reducing hazardous fuels on pre-treated private lands, and for maintaining these treated areas over time. The hope is to extend out into surrounding National Forests.

Returning fire to public land is even more critical, since this comprises 95% of the property in this region. To that end MKWC is a key player in the collaborative Western Klamath Restoration Network (WKRP) which seeks to return fire to the wider landscape. WKRP is a community-based partnership working towards building trust and a shared vision to create fire-adapted communities, and to use traditional ecological knowledge and western science to restore fire regimes and re-create resilient biodiverse forests.

Chainsaws were not used during Klamath TREX 2019, as the prescribed fire in repeated applications would gradually thin the forest, according to the Tribes. The prescribed fire interval was set at every 4-8 years in overly-dense Douglas fir and tan oak forests. The Tribes told us this was a long-term project to restore the forest, and that living with the process of fire was the goal to return to.

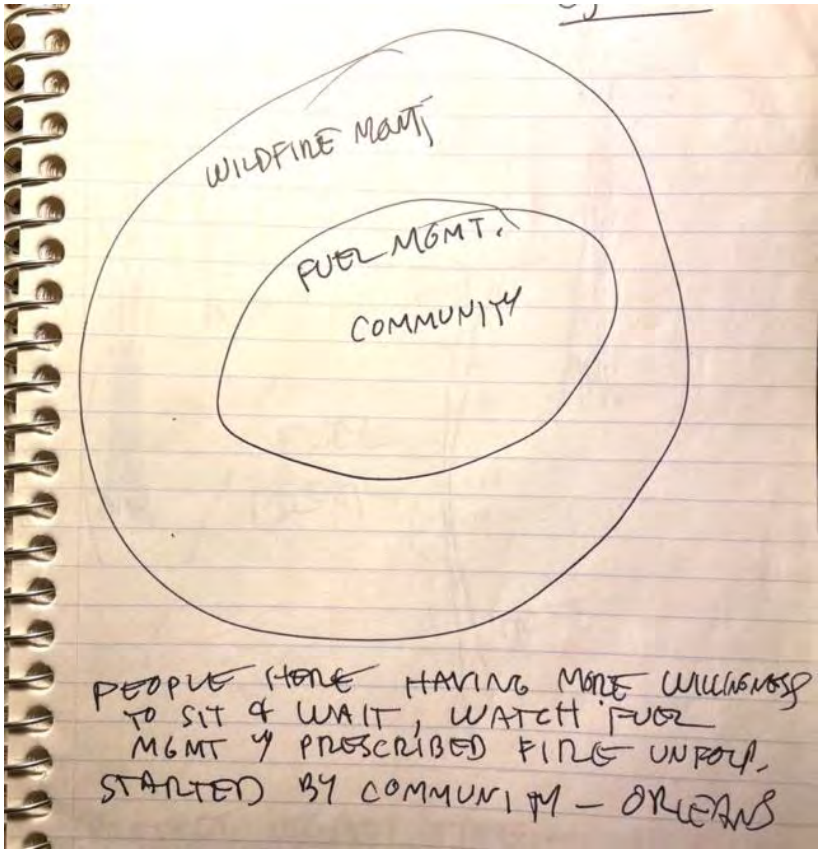
Will Harling was the Fire Boss on the Klamath TREX, and he explained that we were learning about thousands of years of fire knowledge that made it through the genocide. He noted that some native people would say: "Someday you guys will realize this whole experiment with fire suppression," referring to the megafires resulting from fuel build-up and lack of indigenous fire use.

Cultural fire management uses fire to thin overly-dense stands, not machines.

"Good Fire" is well-planned and controlled, slowly eating away the excess leaf litter and downed woody debris in this tan oak-Doug fir forest in the Klamath River watershed of California.

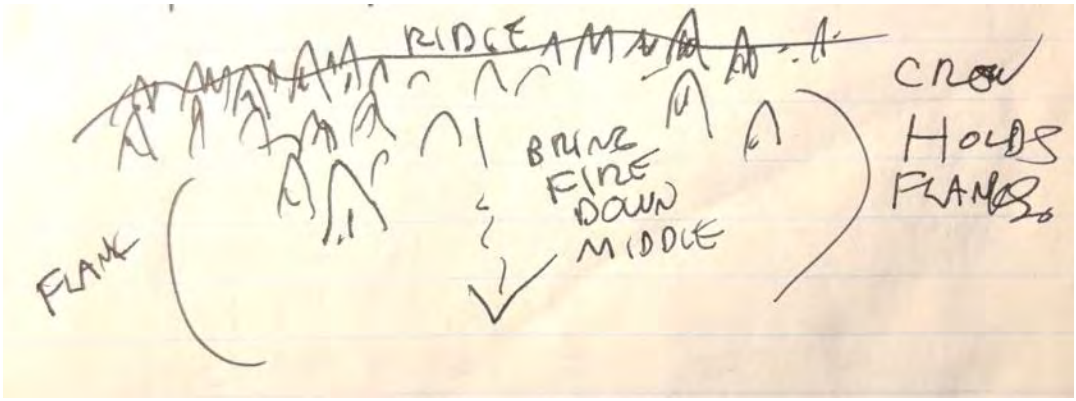
200 years ago the Klamath River watershed in the Six Rivers and Klamath National Forests had forests that were much more open. There were big madrones, large ponderosas, and more sugar pine. There were no thicket trees as there are now. Sugar pines and Douglas firs were often massive, with 7-ft DBH. Tribal knowledge describes "white oaks and black oaks" as more open and fire dependent. Tan oaks like shade and move in when forests become dense, even on south-facing slopes. There was a lot more grass.

Harling told us that wildfire will continue to reduce fuels. The sooner we can ring towns and communities with no fire suppression and get vegetation back into the fire cycle every 10 years, the better. This is not a "one and done" burn, but a second, third, and fourth burn to gradually get that dead fuel gone. Some fuel debris will be left after the first burn treatment, but you keep going back in cycles to bring the fuel down.



Field notes during Klamath TREX 2019, illustrating the rings of fire management around towns in the forest. Cultural fire management starts as fuel management around communities and works outwards.

The Western Klamath Partnership used the burn as the first treatment, then returned every 4-5 years later to repeat the burn. They did not use cutting, stacking, mechanical treatments, or chainsaws. Fire lines were on the ridgetops, and burns were brough down the forested slope. Crews held the flanks.



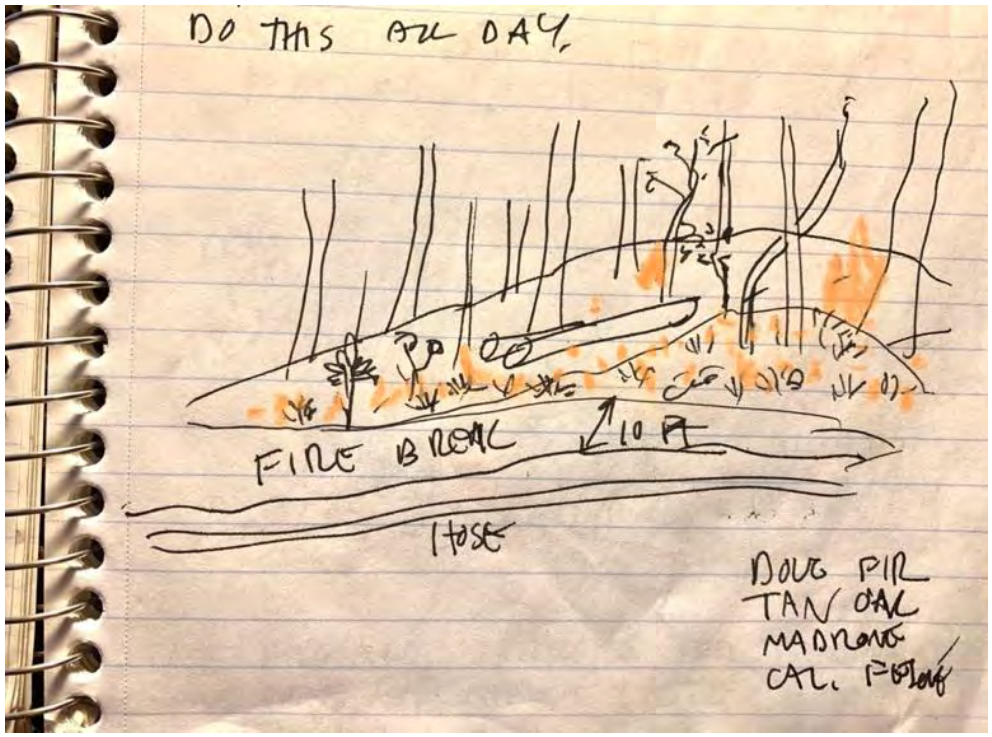
Field notes from Klamath TREX 2019 showing how fire crews control a prescribed fire from a ridgeline down a forested slope.

For a mixed conifer-hardwood forest, they go in every 3-5 years after the initial prescribed fire event, then at 7 years after and 15 years after. Use jackpot burns to get fuel pockets, then you can do broadcast burns. Protect old legacy trees by racking away the duff.

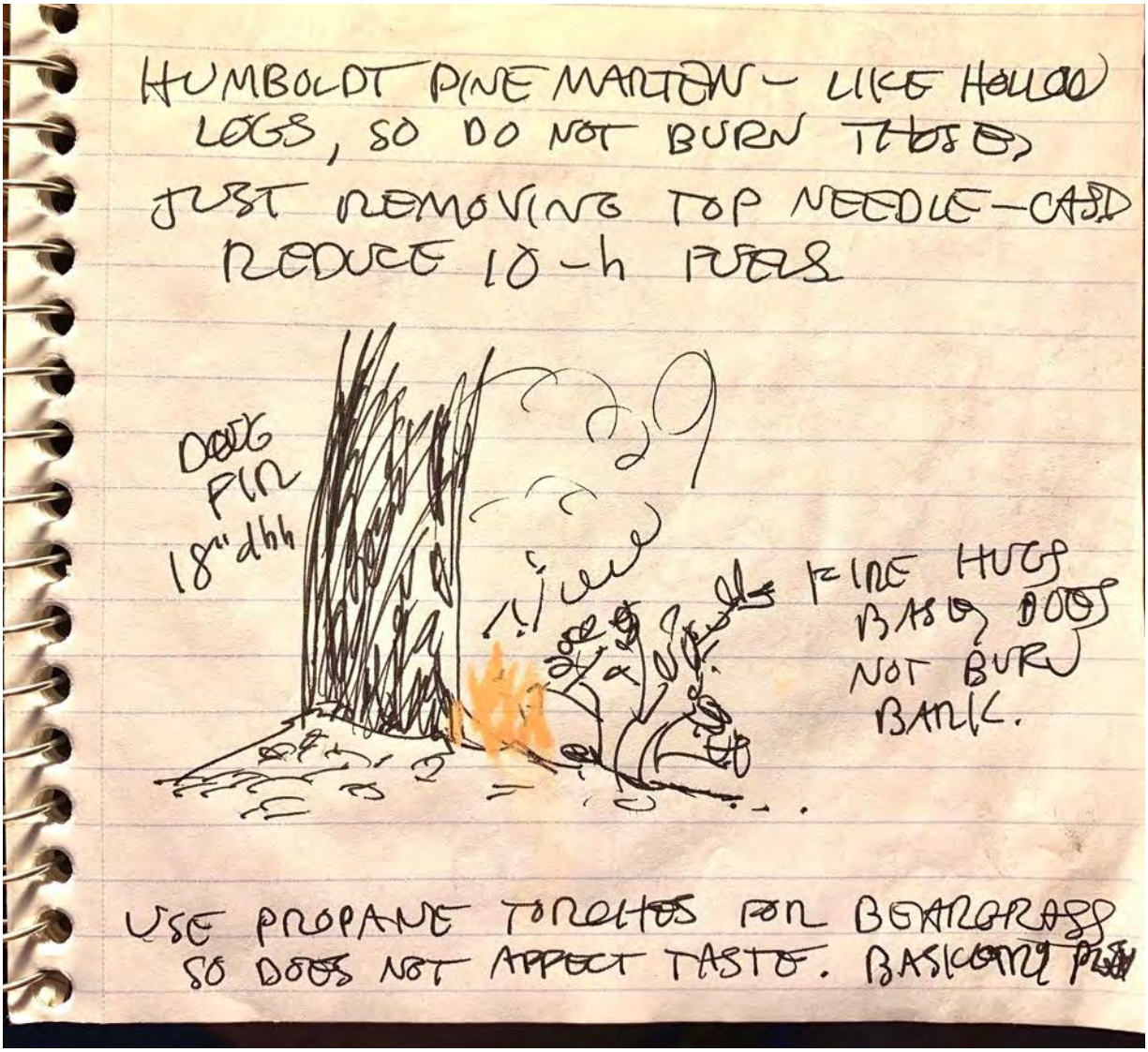
Fire crew bosses on the 2019 Klamath TREX on a private land parcel near Orleans, CA. Will Harling on the right.

Cultural fire is like treating stage 4 cancer patients, Harling said. Bring fire back after 100 years, and you might kill some hair along the way. It is not always pretty. You are trying to use cool surface fires to consume duff, leaf litter, and twigs. Get rid of "doghair thickets" of young conifer trees. This can release the seedbank and create wildflower blooms and help increase ground-nesting bees. Native bunchgrasses will burn off dry vegetative material, then resprout and attract elk.

But Tribes notice that they are not allowed to do cultural burns in spotted owl habitats. This needs to be analyzed and addressed.



Field notes of the prescribed burn on the fire break in Doug fir-tan oak, madrone, California fescue. Klamath TREX.



Cultural fire notes and field sketches, Klamath TREX near Orleans, CA. Note that cultural fire events are very careful to take into consideration rare and imperiled species such as pine marten in these forests: hollow logs used by martens are not burned.

Cultural fire notes and field sketches, Klamath TREX near Orleans, CA

Cultural fire slowly burning the understory and ground surface of the forest, from a fire line at the right. The fire eliminates insect pests in oak groves, gradually thins the forest of tree thickets, and reduces fuel.

Klamath TREX 2019 cultural burn to thin the forest on private land parcel in Six Rivers National Forest region. Bringing fire back to the land is a gradual process that requires many repetitions. Fire belongs here.

Margo Robbins, Yurok tribal member and executive director of the Cultural Fire Management Council, shows us the renewed basketry plants under a forest that was burned in a cool surface prescribed fire the previous spring. Hazelnut shrubs (*Corylus cornuta*) sprout long shoots, perfect for basketry. Maidenhair ferns (*Adiantum jordanii*), giant chain fern (*Woodwardia fimbriata*), and beargrass (*Xerophyllum tenax*) also sprout after the cultural burn—plants also used in basketry.

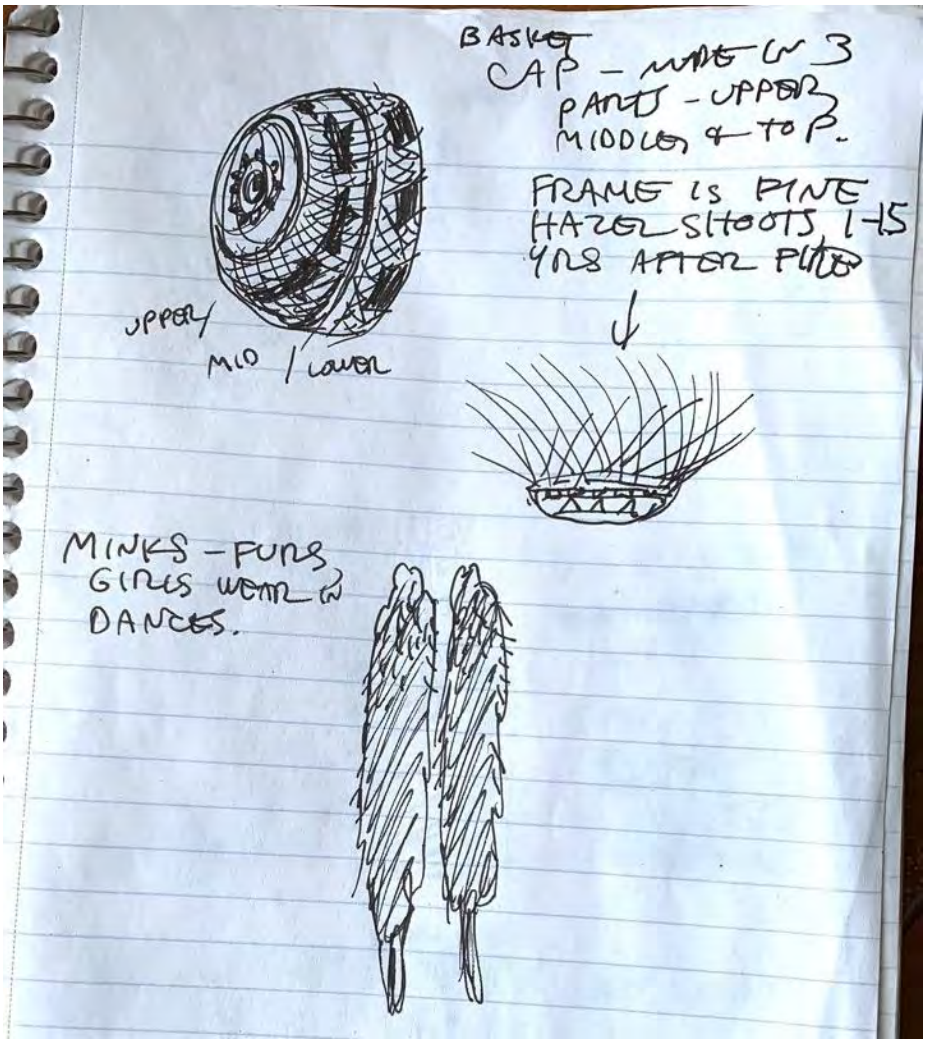
Margo Robbins shows us hazelnut twigs that grow straight after a fire.

Margo Robbins explained to us that the California Basketweavers association has been pushing longest for bringing fire back onto the land. Hazel forms the basket frame, and new shoots are needed—they are harvested in spring after a burn, in a two-week window as the shoots grow up straight. White colors are from beargrass (*Xerophyllum tenax*), which needs to be burned in the high country. Black colors in the

baskets are from maidenhair fern. Red colors are from *Woodwardia* ferns dyed with alder. Wolf moss and Oregon grape root dye porcupine quills yellow.

Without fire the brush grows up thick and sucks up more water. The wet places and creels dry up, and the ferns disappear. There is a connection between fire and water.

Burns bring back deer, and pileated woodpeckers—the feathers are used in men's regalia for the World Renewal Ceremony and Brush Dance. Burning under the oaks makes the acorns less buggy.



Notes from Margo Robbins at 2019 Klamath TREX.

Notes from Margo Robbins at 2019 Klamath TREX. Different burn ages provide sprouting plant materials for cultural uses.

Many ridges were fuel-free and the ridgelines had trails in a trade network. Ridgelines were natural fire breaks from lightning ignitions. A Wildland Urban Interface (WUI) was kept around villages—wood was collected for fire fuel and building materials in the village WUI. A backcountry area was managed as well, such as for hunting.

Frank researched histories of the area based on land surveys, titles, interviews with elders, and vegetation surveys, and determined that the average fire interval in the area was 8 years for cultural burns before 1890, when the indigenous burning system came to an end.

Deer had more fat for 2-3 years after a burn, and the meat was better. Fire renews the nutrients of the soil, aiding mycorrhizal soil relationships with fungi and the roots of huckleberries. But if the fire was too hot it could kill the soil fungi. Tan oak acorns were good for 4 years after a fire, then the weevils and moths began to come back. There were indicators of when to start the burns, such as the end of manzanita flowering. Burns in meadows helped grow long iris leaves, which had fibers important for making string for fishing nets. Beargrass had the best quality a year after a fire. It does fine in mixed severity fires, and a June burn is good for it.

Research ecologist Frank Lake, with the Yurok and Karok Tribes, shows us his collection of cultural items, at the 2019 Klamath TREX. Fire is needed to produce many of the roots, shoots, and dye plants used to make baskets and other items. Frank learned to make these cultural items from materials collected in the forest after cultural fires.

Lake explained to us that the Karok and Yurok are fire-dependent cultures. But we are in a fire suppression era.

He talked about the cultural fire regime that used to be here: some areas you wanted a longer fire interval, and some areas were protected from fire, for example areas with hollow trees that were used to store ceremonial regalia. Other areas were burned more frequently, so that there was a diversity of burns on the landscape, creating a diversity of resources.

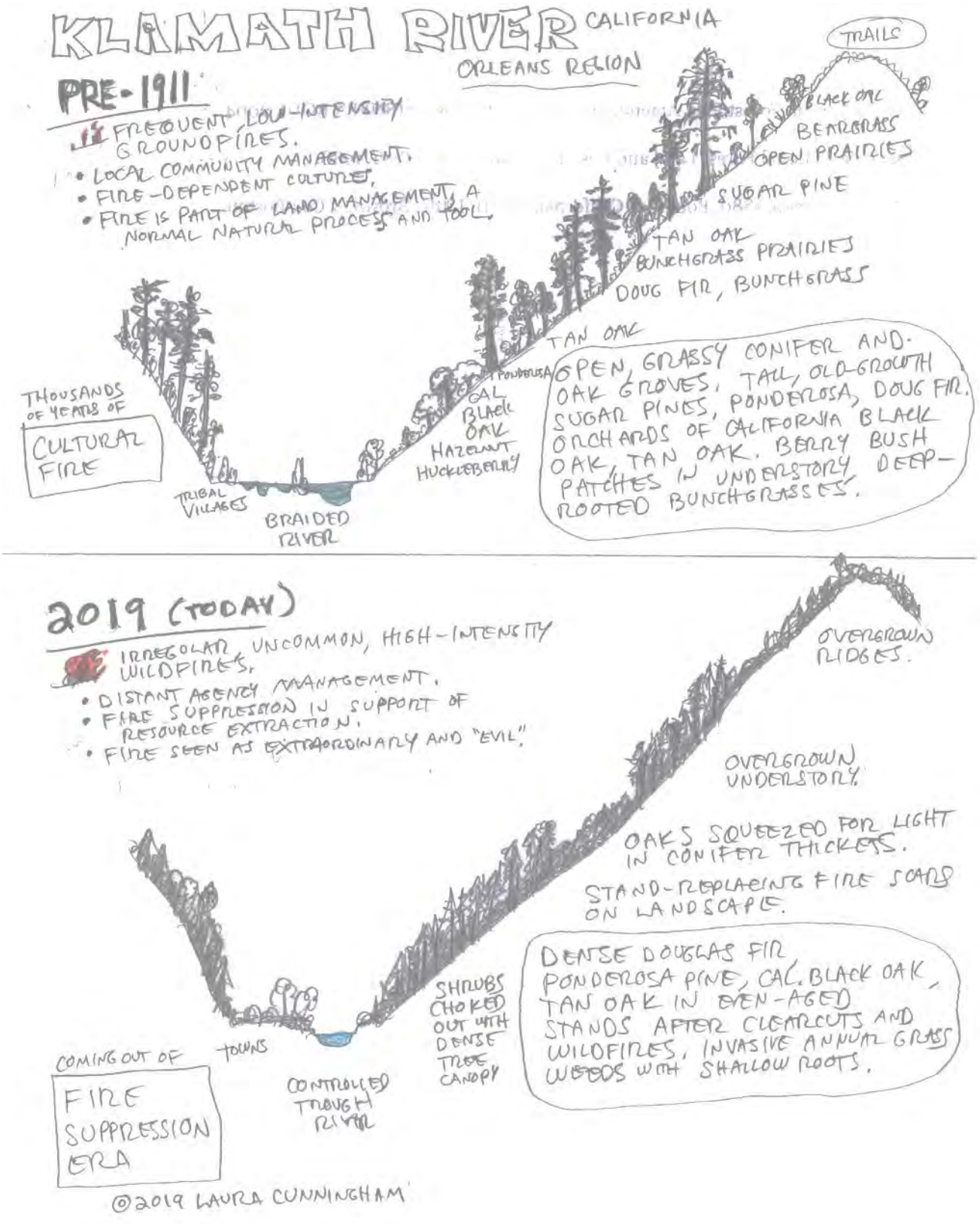


Illustration of how cultural fire shapes the landscape and water along the Klamath River. For thousands of years the tribal knowledge kept forests open with large trees, medicinal plants, healthy shrub stands and oak groves, and prairies. After 1911, tribal cultural fire management was banned. Forests grew overly thick, oak

groves became “buggy” and many medicinal and basket plants failed to thrive or grow at all. Catastrophic wildfires had been the end result of fuel build-up across the land. With increased transpiration from thickets of forests saplings, the hydrology of the canyons changed: springs dried up and rivers ran lower. According to the Tribes, restoring the traditional fire management can help the forests, the prairies, the rivers, and the salmon.

Lake told us of deep traditional knowledge how the spring chinook and summer steelhead would not move up the river if the summer was dry and there were no summer rains. Smoke from cultural fires would help cool the water, and the fish would move.

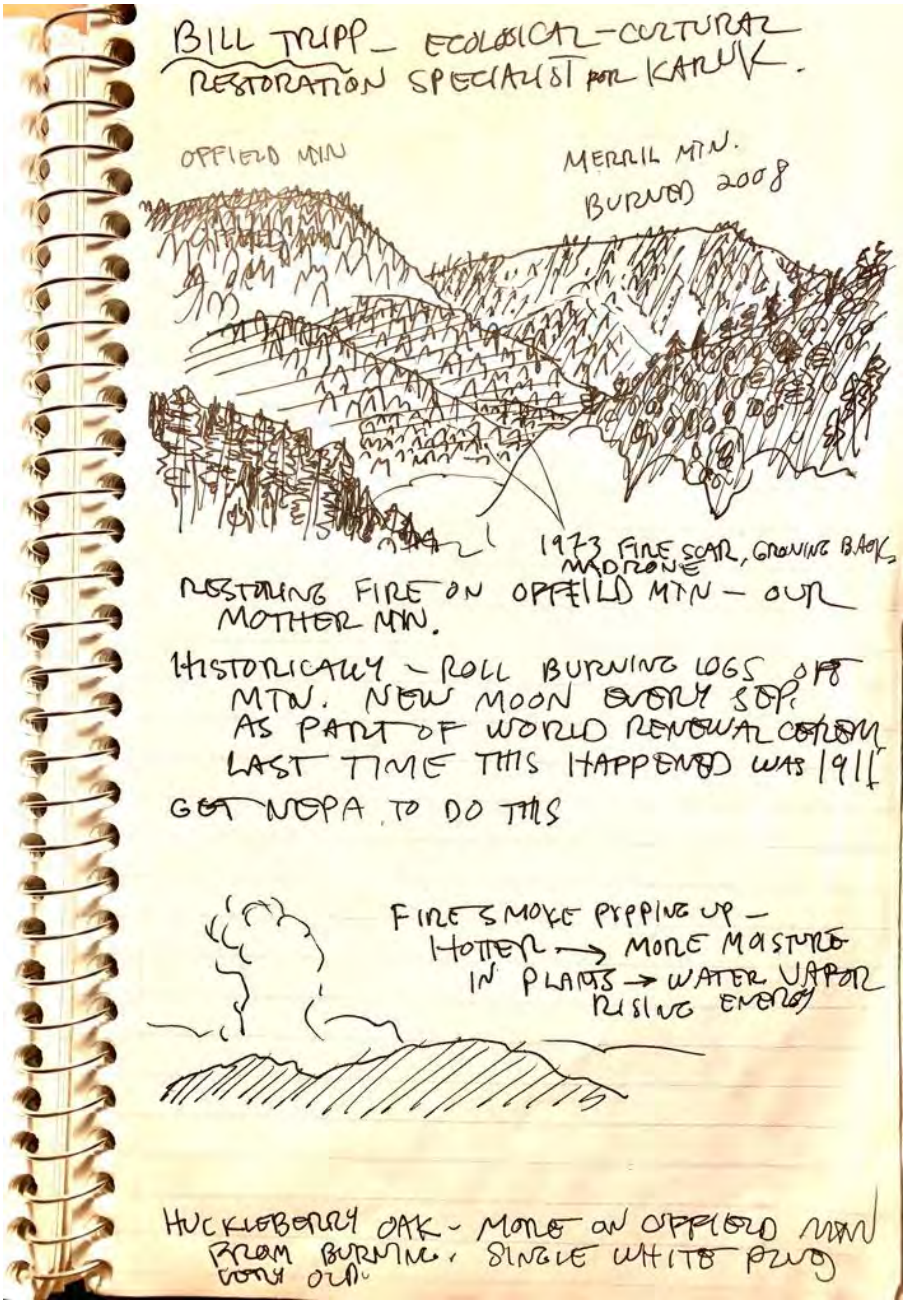
Smoke from a cultural prescribed fire catches the sunset light over Offield Mountain, a culturally very significant landform along the Klamath River. Frank Lake studied the remarkable effects such smoke has as it settles into the canyons and measurably cools the river temperature–helping salmon. Klamath TREX October 2019.

Frank Lake over a long-term research study reported in 2018 by the US Forest Service Pacific Southwest Research Station found that Smoke generated by wildfires can cool river and stream water temperatures by reducing solar radiation and cooling air temperatures, according to a new study in California’s Klamath River Basin.

The paper titled, *Wildfire Smoke Cools Summer River and Stream Water Temperatures*, in the journal “Water Resources Research” (David et al. 2018) suggests that smoke-induced cooling has the potential to benefit aquatic species that require cool water to survive because high summer water temperatures are a major factor contributing to population declines, and wildfires are more likely to occur during the warmest and driest time of year. Native tribes and other entities measuring river water temperatures in the Klamath Basin had previously noticed drops in river temperatures during periods of heavy smoke, but this is the first study to demonstrate this phenomenon with rigorous statistical analysis of long-term datasets.

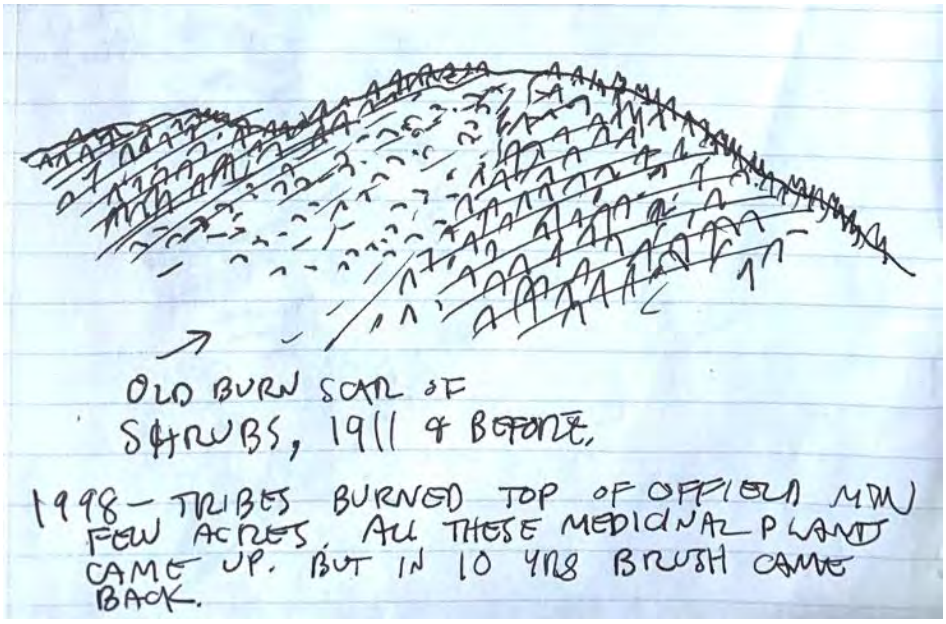
Bill Tripp, deputy director of the Karuk Tribe Department of Natural Resources, says this research provides a great example of how traditional ecological knowledge is used to focus a refined view under the western scientific framework and better understand the specific functions these processes provide.

In other words, tribal cultural fire management in cooperation with local communities and agencies could be the better, more ecological and climate-friendly answer to make healthy soils, reduce wildfire fuels, sequester Carbon, and restore salmonid streams and watersheds, instead of logging, chainsaw-thinning, and commercial livestock grazing. We should look towards working with tribal partners to restore fire-adapted native plant communities, and salmon and trout habitat, in order to bring back #GoodFire.



Notes from Bill Tripp, Klamath TREX 2019.

Bill Tripp pointed out to us the different aged burn scars in the Klamath River valley view, including on Offield Mountain from pre-European times.



Doug firs now are in same-aged stands, but historically these forests were more open and there was more fire. There were more patches of meadows and really large oaks and conifers, Tripp said. People picked green fir tips to make tea and medicine. Huckleberry stands used to be thinned with fire so that they would produce more berries.

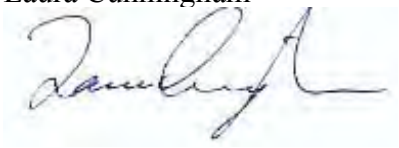
Ungrazed reference site: open hill prairie at the end of the summer dry season, Shasta-Trinity National Forest, California. This area was burned in a wildfire, but the native bunchgrasses are thriving: Idaho fescue

(*Festuca idahoensis*), blue wildrye (*Elymus glaucus*), and California brome (*Bromus carinatus*). California black oaks (*Quercus Kelloggii*), ponderosa (*Pinus ponderosa*), and *Ceanothus* spp. are also present. October 2019.

Thank you for considering these comments. Please keep Western Watersheds Project informed of all further substantive stages in this and related NEPA processes and documents by contacting me at lcunningham@westernwatersheds.org.

Thank you,

Laura Cunningham



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