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Comments
Northwest Forest Plan Amendments (NWFP)
Draft Environmental Impact Statement (DEIS)

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Please accept this comment on the draft EIS for the proposed Northwest Forest Plan amendment.

Long time coastal residents on the central Oregon coast - we enjoy working and recreating in our forests, as well as on our rivers and estuaries. Engelmeyer has also worked on conservation strategies for over 35 years drawing attention to the need to protect and restore our land and seascape and the once bountiful natural resources. The tribal nations of Siletz, CTCLSI have been residents of this landscape since time immemorial - The conversion and exploitation has taken a significant toll on this natural economy. Oysters, our old growth forests and salmon are just a few examples of the wealth of our landscape that has been squandered by previous generations.

The NW Tribal nations, our communities and the PNW industries depend on healthy and resilient rivers, forests, estuaries and oceans. It has only been a few years since the value of our estuaries being fully acknowledged as a critical life history pattern essential to salmon productivity and recovery. That information came from the dedicated research by Oregon, NOAA, USFS in multiple locations in Oregon's estuaries. Restoration work in our estuaries is finally being accepted as one piece of landscape conservation strategy.

Restoration work in the uplands and riparian zones have equally risen to another component of our restoration economy. In Oregon alone there are over 100k stream miles that are on the Clean Water Act's 303d list - impaired water quality for various parameters, examples include temperature, Dissolved Oxygen and/or PH. The work to bring back the health of our land will take a concerted effort at a landscape and the Northwest Plan and the Aquatic Conservation Strategy on federal lands are parts of that effort.

Engelmeyer has worked on restoration projects in the MidCoast basins for over 25 years- working with the USFS, USFWS, OPRD, and the local watersheds councils. Our efforts and partnerships has a focus from Cascade Head /Salmon River in the north and the Cummins/Rock Creek Wilderness in the south/Heceta Head and includes the following watersheds Siletz, Yaquina, Alsea, and Yachats with the USFS Siuslaw NF ownership in approximately one half of the midcoast landscape - the federals lands are in the upper portions of the basins in each area - almost 1 ML acres. Working with the community, ODFW Salmon Research and the Siuslaw NF I have participated in a basin wide protection and restoration effort in the Ten Mile Creek basin which is nestled between Cummins and Rock Creek Wilderness. The Ten Mile Creek Sanctuary is a part of the Oregon Bird Alliance's coastal conservation effort that includes the Cape Perpetua Marine Reserve and Seabird Protected Area. This footprint has been identified as a Globally Signficant Bird Area for the ESA listed Marbled Murrelet by Birdlife International in 2012.

Over thirty years ago, the Timber Wars ignited when conservationists and the public became aware that we were decimating the Old Growth forests of the Pacific Northwest through rampant logging. The ecological importance of these old forests was being treated as inconsequential, with clear-cutting occurring right up to stream edges,

across ridge tops, and through rare species habitat. These forests were so expansive that many animals adapted to only live in Mature and Old-Growth conditions. With great swaths of this Old Growth forest abruptly cut away all across western Oregon, western Washington, and north-western California, animals that were dependent on these forests for critical life stages were declining.

This widespread habitat loss drove the Timber War-Era of listing of the Northern Spotted Owl, multiple Salmon populations throughout Region 6. and the seabird Marbled Murrelet under the Endangered Species Act. Their endangerment was a signal that we were taking away too much Old-Growth forest. Federal Courts stepped in and ultimately determined that the U.S. Forest Service and Bureau of Land Management were failing to maintain adequate viability for the species associated with these late-successional forests. The Nation agreed. The Pacific Northwest Temperate Rainforest region is a biodiversity hotspot and publicly-owned forests are meant to be managed in a way that provides maximum benefit to the American people. Why weaken the ecological protection created by the plan and revert to actions that caused national outrage thirty years ago?

A major component of The Northwest Forest Plan was the establishment of an Old Growth Forest Reserve System. There are over one-thousand mature and old-growth dependent species (Spies et al, 2018, p. 374). Over the past thirty years, as logging has continued at higher rates off of federal lands, our National forests have become the stronghold for Old-growth dependent species and the services and benefits that these ecosystems provide. In addition to providing habitat for our region's unique biodiversity, old growth forests are vital to the overall functioning of the larger landscape, providing essential ecosystem services such as clean air and drinking water. Older forests generate fertile soils, store carbon, and reduce the effects of drought. Interior sections of Old-Growth forests will act as refugia during disturbance events expected to be larger and more powerful with climate change, including wildfires, wind storms, and droughts. The integrity of our Old Growth Reserve System is ultimately what is being challenged in the current condition.

With the 1994 Plan, the age threshold to be considered mature, or late-successional growth was 80 years because this is when stands in the region typically develop complex features associated with older forests that are vital to the species reliant on them. When a huge disturbance event decimates a large swath of forest, pioneering plant species first move into these newly created sunny spaces, resetting the successional process with early seral vegetation. Over time, early seral gives rise to other vegetation stages that eventually mature into structurally-complex Old Growth forests. We typically start seeing late-successional forest features when a forest stand reaches 80 years. Once a stand reaches 200 years, we define it as Old-Growth but it's not the end of that forest's development.

A study by 2 USFS researchers cited in Chapter 3 of the Science Synthesis found that Old Growth Douglas-fir stands in the Coast range average 330 years while those in the Cascade Range average over 420 years. Some stands are as old as 900 years. These old forests harbor some very long-living tree species that don't stop growing and changing in new complex ways until they are at least 400 years old (Spies and Franklin, 1991). Over the first 30 years of The Plan, younger forests have been able to recruit to the protected 80-year plus category. Now, with this update, the US Forest Service is looking to change this threshold and instead use stand origin as the new threshold, with stands not receiving protection until they are at least 120 years old. We should not be changing definitions and thresholds as that only distracts from the issue at hand. We've already lost great swaths of our Old Growth forests to logging, and will continue to on non-federal lands, deepening the threat to species dependent on them and further impacting the ecosystem services they provide us with. We need to secure the existence of forests over 80 years of age on Federal lands by not only maintaining the expanse of the current network but by further increasing the Reserve Network size so that we can ensure greater connectivity as the impacts of climate change intensify.

We need to keep the protections in place for forests that have reached the 80 year-old category. In Oregon, efforts in the Siuslaw National Forest (SNF) include partnerships at the landscape scale from Cascade Head in the north to south of Heceta Head. This National Forest has more anadromous streams than any other National

Forest, all of which contain ESA-listed Coho Salmon, Eulachon, as well as other aquatic species of concern, such as freshwater mussels and Lamprey.

The Siuslaw National Forest, under the empirically-determined Holdridge Life Zone system, is categorized as a cool temperate rainforest north of Newport and a cool wet forest south of Newport (Lugo et al., 1999). Among our 154 national forests, this forest, per acre, consistently ranks in the top 1 or 2 for its carbon volume. The carbon density of the Siuslaw National Forest is approximately 269 Mg/ha. In comparison, the mean total C density of all forested lands is approximately 146 Mg/ha (Gray et al., 2014). Between 1945 and 1995, we clearcut logged over 200,000 acres of this forest. Today, 33% of the SNF stands are aged between 80 and 119 years while another 33% are over 120 years. This means that if we reset the threshold for protected status to 120 years instead of 80 years, an additional 33% of this forest will be open to logging.

The US Forest Service has proposed 3 alternatives (Options B, C, D) to the original Plan (Option A). None of the proposed alternatives are viable as they all will result in increased logging of Old Growth in our National Forests again to various degrees. The protection of Old-Growth forests on national lands should be maintained and enhanced with the update by expanding the size of the Reserve system throughout region.

As an ecological compromise, the 1994 Plan allowed logging in 20% of the remaining Old Growth forests, a total of 1 million acres, by placing them into the Matrix. Between allowed logging and wildfire, combined with succession of younger forests into the older age category, our net loss of older forests in the Plan area since 1994 has been 6% for Mature forests and 7.6% for Old-Growth forests. Most of this loss has occurred due to wildfires, and tracked with our estimates of how much Old Growth we would lose to wildfire. We lost less Old Growth than expected because much of the area that was open to logging did not get logged. We should now expand the LSR Network to include these remaining older forests still open to logging in the Matrix.

Wildfire Resilience

Historically, the Plan area is prone to a variety of natural disturbances, including wildfire, windthrow, and insect outbreaks; such events can fell a few trees to entire stands at a time. With climate change, all of these disturbances are predicted to increase, including large-scale, severe wildfire. The NWFP should totally embrace an increase wildfire resilience strategy but increasing logging in our Old-Growth forests is short-sighted and ultimately counter-productive. With wildfires, we cannot predict when or where they will show up. Mechanical treatments meant to increase wildfire resilience are temporary and rarely intersect with actual wildfires (Schoennagel et al, 2017). In addition, such treatments have negative impacts on the animals of Old-Growth forests, reducing habitat quality for some species while making it a complete population sink for others. Northern spotted owls and some of their prey species, including northern flying squirrels, red-backed voles, and woodrats, are negatively impacted by commercial thinning for fire reduction (Odion et al, 2014). In addition, thinning treatments open up the canopy, making the stand warmer, windier, and ultimately drier, which reduces fuel moisture, allowing for more intense fires (Banerjee, 2020).

There is a natural and much more effortless way that we can improve our wildfire resilience: by bringing back Oregon's state mammal, the beaver. Beavers increase the complexity and diversity of aquatic features within a watershed. With all of their canal-digging, dam-building, and pond-filling activities, beavers slow flowing water, filling up the water-table table belowground, saturating soils, and spreading water across the landscape around them, expanding riparian habitats, reconnecting rivers to their floodplains, and creating wetlands (Brazier et al., 2021). These moisture-laden, beaver-created aquatic habitats provide natural firebreaks across the landscape, cutting off the spread of wildfire and overall reducing burn patch sizes (Jordan and Fairfax, 2022). When a fire is actively burning, beavers ponds, wetlands, and expanded floodplains may provide refugia to animals escaping the flames and heat.

Riparian habitats surrounding beaver ponds have increased moisture of both soil and fuels, making them more

fire resistant (Weirich III, 2021). A study cited in chapter 2 of the Science Synthesis found that, as the climate has warmed, the length of the freeze-free period in the PNW has lengthened by approximately 2 weeks since 1950. This has allowed the growing season to lengthen, but that has been accompanied by increased evapotranspiration, resulting in increased soil water deficits from July through September (Abatzoglou et al., 2014). Thanks to beavers, a raised water table makes groundwater more abundant and accessible to vegetation; this increased hydration means that plants are less water-stressed during droughts and less likely to burn during fires (Fairfax and Whittle, 2020). Overall, beavers naturally make our ecosystems more fire-resilient.

Climate Change

To mitigate climate change, we need to deal with our global carbon imbalance. The Science Synthesis points to increasing carbon sequestration as a way to mitigate climate change. Currently, the Forest Service lands in Oregon and Washington are storing only 63% of the total carbon that they are capable of storing (Spies et al, 2018, p.62-63). We should be maximizing the massive carbon-storing capacity of our old and large trees by not logging them.

Moist temperate forests draw in and store vast amounts of carbon in their bodies and in the surrounding soil, holding higher levels of carbon than tropical and boreal forests. In the late 1980s, high logging rates caused our federal lands to function as a carbon source, emitting ??48gC m-2 each year to the atmosphere. With adoption of the NWFP, an 82% decrease in harvest from public lands switched these forests to a carbon sink, yearly absorbing 141 gC m-2 in the late 90s and 136 gC m-2 from 2003-2007 (Turner et al., 2011). Our PNW temperate forests hold between 224-587 tC ha-1 in above ground biomass, and a total biomass of between 568-794 tC ha-1 (Keith et al., 2009).

The Pacific Northwest is already experiencing climate change. The region has undergone a warming of roughly 2°F so far. In response to this warming, the vegetation in our area is shifting its distribution, as detailed in a 2015 study cited in the science synthesis. A study of 46 native PNW tree species found that they're creeping farther north and/or towards higher elevation, for 45 of the 46 native species studied (Monleon and Lintz, 2015). In addition, our region has also already been impacted by ocean acidification, another carbon issue, due to seasonal upwelling along our coast. In 2007, the Oregon Coast was ground-zero for ocean acidification, when the Whiskey Creek Shellfish Hatchery in Oregon lost $100,000 worth of oyster larvae due to the ocean water being too acidic. We don't know the exact changes that climate change will bring as the temperatures warm and acidity of the water continues to increase but we know that among species, there will be winners and losers.

Mature and old Growth forests are the most resilient ecosystems to the impacts of climate change. Globally, forests are known to have a cooling effect, but a study cited in the Science Synthesis looked at how the vegetation structure of a forest influences this, by comparing Old-Growth forests, with tall canopies, high biomass, and complex vertical structures, to mature, structurally simple plantations in Oregon. They found that Old-growth forests provide a greater cooling effect, decreasing maximum spring monthly temperatures by 2.5C over mature plantations (Frey, 2016). The cool microclimates that Old-Growth forests provide may function as refugia for organisms displaced from less resilient habitat patches and areas. In addition, the large root systems of Old-Growth forests make them much more resilient to soil water deficits during drought than smaller trees because they have deeper rooting. In 2001 and 2002, extreme drought years in Oregon, old ponderosa pine trees had only a small decline (11-24%) in their water transport efficiency to leaves while young pines experienced severe declines of 80% (Law et al., 2015). This is important because the frequency and duration of droughts are projected to increase in the NWFP area and water is expected to become more of a limiting factor for plants.

Beavers can help us to build our climate resilience. Climate change impacts stream flows. With warming, more precipitation falls as rain and less as snow, plus there is earlier melting of any snow that does fall. This is

important because snowpacks historically helped PNW rivers to sustain cool, late summer flows. Spring Chinook salmon and summer steelhead return to freshwater for several months before they spawn. They usually rest in large pools with cool water during this time but these cool pools are not abundant and are likely to become even less available with climate change (Spies et al, 2018, p. 597).

With less snow in a warming climate, beavers can step in to help to sustain these flows. Beavers stored groundwater can supplement rivers by providing cool, subsurface water stores during low flows that typically occur at the end of the dry season in late summer (Burgher at all, 2023). Beavers reconnect river channels to their floodplains. When there's a severe storm, rather than powerful in-stream flows causing heavy erosion on channel banks and downstream damage, water can spread across the floodplains. These waters can then be stored as surface water or in underground reservoirs. The floodplains retain sediment and organic matter, becoming a carbon storage site (Jordan and Fairfax, 2022).

When one discusses economic issues in the PNW one of the highest issues of concern would be are we going to commit to improving water quality for salmon recovery, our community and tribal needs?

Recovery of our watersheds will be an intergenerational strategy that has been in play since the first salmon stock was ESA listed in the late 1980s. Over half of the water supply for Washington, Oregon, and California originates from federal lands. In our landscape over 100K stream miles are impaired and are on the Clean Water Act's 303 (d) list. In Oregon, for our rivers and streams that support our domestic water supply, approximately 12,000 miles are in good condition while 5,000 miles are in impaired condition, with 1,952 miles containing toxic inorganic chemicals. For Fish and Aquatic Life, only 23,000 miles are in good condition while 107,000 are classified as impaired. 60% of these rivers, 85,253 miles, are listed due to damaging temperatures (Environmental Protection Agency, 2022).

Beavers not only help to keep water cool but they also help to clean it. When floodwaters enter a beaver floodplain, along with sediments, common aquatic pollutants are more likely to sink from the water column and either be transformed into inert compounds or taken up by aquatic vegetation (Jordan and Fairfax, 2022).

Habitat Conservation and Connectivity

With this update, the US Forest Service would like to diversify the habitat conservation focus beyond Old Growth forests, by actively creating early seral vegetation. But early seral vegetation is not at a deficit across the landscape like our Old Growth forest.

In Chapter 3 of the Science Synthesis (Spies et al, 2018, p.169), the US Forest Service said this about creating early-seral vegetation habitats: "A larger problem is how to determine how much of this vegetation should be created and how to schedule and distribute it in landscapes where wildfires could appear in any year and create thousands of acres of this vegetation type in a few days." There is no problem to solve here. We do not need to create early seral habitats because we know that this region is prone to natural disturbances. Wildfire will ensure that this habitat is continuously created, as stated four pages later: "wildfires will continue to create this vegetation type." (Spies et al, 2018, p. 173). So there's no need to actively create it. The limited habitat in the Northwest Forest Plan area is the one that we have already removed much of: Old-Growth forest.

The Old-Growth forests of the Pacific Northwest region are a biodiversity hotspot, harboring a treasure trove of animal life like nowhere else on Earth. Among vertebrates, we've got the marbled murrelet, a seabird so unexpected in its habits that it was the very last bird out of all 10,000 species for their nesting habits to be uncovered by the science community. We also have a huge array of amphibians, both on land and in the water, including giant salamanders and tailed frogs. Tailed frogs are unique for being the only frogs to have a copulatory organ for mating.

Mammals are another especially charismatic PNW group with many species dependent on Old Growth forests, including northern flying squirrels, red tree voles, the spotted skunk, and several species of bats. There is also a whole array of small to medium-sized mustelid carnivores, including martens, minks, fishers, and wolverines. Pacific fishers have become very rare in The Plan area and are federally listed as a 'Species of Concern.' Pacific Martens have also declined across the area while the Humboldt marten, a genetically unique sub-population of Pacific marten, is federally-listed as threatened under the Endangered Species Act. This population is endemic to mature forests on the coast of Oregon and NW California. Both Pacific Fishers and Pacific Martens are obligate cavity-nesters. The females require cavities in large trees and snags for birthing and raising up kits, features that can take hundreds of years to develop. Red Tree vole are federally listed as a 'Species of Concern' and, like flying squirrels, they require the unbroken tree canopies that old forests provide. Red Tree Voles are one of the fully arboreal species of PNW Old Growth forests that will not venture outside of these forests, even when it leads to their population decline. Taken as a whole, all of these species receive protection from the Reserve Network that the Northwest Forest Plan established.

The Science Synthesis devoted an entire chapter to Marbled Murrelets because they were one of the focal animals of the NWFP. Marbled Murrelets were listed as threatened in 1992. These seabirds are highly dependent on Old-Growth features for nesting, such as large, moss-covered branches. The spongy moss is such a perfect substrate for their single egg/chick, that they don't even build a nest. However, these birds currently have a 70% nesting failure rate. Since the inception of the NWFP, over the past 30 years, there has been a net loss of Marbled Murrelet nesting habitat across its entire range. Over the first 10 years, we lost 249,000 acres, or 12% of Marbled Murrelet high suitability nesting habitat, but this loss is not equally distributed on federal and nonfederal lands. Nonfederal lands lost 27% of nesting habitat while federal lands lost only 2.2% (Spies et al, 2018, p. 315). With much less nesting habitat available on nonfederal lands, our National forests have become a stronghold for Marbled Murrelets.

Marbled Murrelets have high nesting site fidelity with long-term standing occupancy so once a stand is occupied, it is considered occupied in perpetuity. Breeding site selection is socially influenced and nesting habitat may support co-occurrence of breeding pairs, so these factors likely contribute to the long-term use of quality nesting habitat. Creating and maintaining large contiguous blocks of mature forest are important to the recovery of this species. Logging near Marbled Murrelet habitat introduces edge effects that decrease the microhabitat features of their preferred tall trees, such as drying out the moss-cover. In addition, openings in canopy cover invite corvids into the forest, the marbled murrelet's major nest predator. For these reasons, the Pacific Seabird Group recommends no-cut buffers of 100 m minimum around nesting habitat (Pacific Seabird Group, 2024).

Salmonids were another focus of the original NWFP because they rely on the resources that our National Forests provide. Salmon spend their most delicate life stages in rivers so we should be protecting and enhancing these habitats. Though much of federal lands sit in the headlands regions of watersheds, above the range that many salmon reach, these forests provide important resources to the lower river that benefits salmon: shading helps to keep the water cool, organic materials entering the water flows into food webs downstream, and they provide instream-wood, currently at a deficit in rivers across the Pacific Northwest.

Snags, dead wood on the forest floor and in-stream wood are all essential habitat components of this landscape but are at a deficit across the PNW due to logging. Even after death, a tree will continue to provide habitat for species for centuries. First a standing snag may get drilled into by woodpeckers and insects, providing nesting and roosting sites, until eventually falling over. It may then spend hundreds of years decaying on the forest floor, providing nursery sites to newly growing trees along with denning sites for small to medium-sized mammals and other forest creatures. If a tree falls instead into the water, then it provides for the salmon. The wood holds back the larger sediments that salmon require for spawning while also providing complexity to the stream channel and slowing the flow down for juveniles (Rose et al., 2001).

Historically, the rivers of the PNW region were littered with dead wood from the surrounding forests. Euro-

americans, in improving rivers for navigation and other uses, greatly simplified river channels and their surrounding ecosystems. Between 1891 and 1917, over 9,800 snags were removed from a 12 mile stretch of the Tillamook River (Gonor et al., 1988.). Likewise, between 1870 and 1915, we removed over 30,000 snags out of the Willamette River in Oregon, reducing floodplains and their accompanying riparian forests, which could extend for over a mile on either side of the river (Sedell et al, 1984). Further recruitment of dead wood on a mass scale from the forests surrounding rivers also deeply slowed because with logging, we remove a lot of trees from the landscape that would eventually end up as dead wood.

Beavers can help to fill in the gap in dead wood for PNW rivers that increase stream complexity in ways that benefit salmonids and other aquatic organisms. For example, Beaver-created aquatic habitat provides juvenile coho salmon with critical winter rearing habitat, a key limiting factor for this threatened fish (Niemi et al., 2020). Beavers increase the amount of both large and small woody material in streams (Brazier et al., 2021). Beavers cache woody branches underwater as winter food and to create their ponds, which function like a moat around their lodge, beavers drag wood into stream channels to dam them. When these dams fail, such as during a high winter flow, this wood will then flow further down-stream, providing in-channel wood below the dam (MacCracken et al., 2005).

In-stream wood provides food and habitat for a variety of life, including aquatic insects, which then become food for salmon. "Salmon act as an ecological process important vector, important in the transport of energy and nutrients between the ocean, estuaries, and freshwater environments. The flow of nutrients back upstream via spawning salmon and the ability of watersheds to retain them, plays a signficant role in determining the overall productivity of each salmon run. As a seasonal resource, salmon directly affect the biology of many aquatic and terrestrial consumers, and indireclty affect the entire foodweb." Pacific salmon and wildlife - Ecological Contexts, Relationships, and Implications for Management in Oregon and Washington (Johnson and O'Neil 2000).

Natural disturbances maintain a mosaic of habitats within and across this forested landscape, maintaining the high biodiversity unique to our temperate rainforest region. Beavers were historically a natural disturbance force in these forests and their activities create wildlife heterogeneity. Reintroducing beavers across the landscape can help to diversify our habitats and increase the abundance of our wildlife. Besides salmonids, other animals that increase in population size in beaver habitats include several aquatic invertebrates, amphibians, wading birds, ducks, and bats. For example, some sensitive slow-developing PNW amphibians use beaver-created habitat for breeding, such as the northern red-legged frog (Romansic et al., 2021).

Beavers create wetlands, which are globally a declining habitat type. A seasonally wet floodplain has more productive vegetation and greater animal and plant richness and diversity than a disconnected, dry terrace (Jordan et al., 2022). Beaver Managed Floodplains (BMFs) benefit many of our sensitive species in Oregon. The Oregon Conservation Strategy, our State Wildlife Action Plan (SWAP), has identified 294 Species of Greatest Conservation Need (SGCN), with 35 of these species exhibiting direct evidence of benefiting from beavers and another 111 of these species probably benefiting from beavers. 43 SGCN are Federally listed as Threatened or Endangered, and 10 of these are known to benefit from beavers while 19 more are likely to benefit from beavers. In addition, 189 SGCN are also on the Oregon State Threatened Species list, with 34 of these species known to benefit from beavers. Amongst these federally and state-listed threatened and endangered species, beavers are called out in the Recovery Plans for Oregon chub, various salmon species (Coho, Steelhead, Chinook), cutthroat trout, harlequin ducks, purple martins, SW willow flycatchers, western painted turtles, and Oregon spotted frogs (Dunning et al., 2024).

RESOURCES

We have cited the information provided at these 2 USFS offerings on the NWFP update: a December 5th

Webinar over Zoom and a February 11th Siuslaw National Forest NWFP Amendment public meeting in Corvallis, Oregon.

Most information is from Volumes 1 and 2 of the Science Synthesis:

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