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Via electronic filing at www.regulations.gov

Angela Somma
Chief, Endangered Species Division, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, 13th Floor
Silver Spring, MD, 20910

**Re: Draft EIS Comments for Western Oregon State Forests Habitat Conservation Plan
(Docket No. NOAA–NMFS–2021–0019)**

Dear National Marine Fisheries Service and U.S. Fish & Wildlife Service:

Please consider the following comments—submitted on behalf of the broad range of undersigned environmental, conservation, fishing and other recreation interests—on the National Marine Fisheries Service’s (NMFS) [draft Environmental Impact Statement \(EIS, or DEIS\)](#) analyzing the potential impacts of the proposed Western Oregon State Forests Habitat Conservation Plan (WOSF HCP, or HCP). The Oregon Department of Forestry (ODF) has submitted the draft WOSF HCP to NMFS and the U.S. Fish & Wildlife Services (Services) in support of its application for Endangered Species Act (ESA) incidental take permits (ITPs) authorizing otherwise prohibited negative impacts to species that arise incidental to covered activities under ODF’s control, primarily logging and related activities including roads.

While the comments below focus significantly on critiques, concerns, and/or what we see as needs to be addressed by the federal Services and Board of Forestry as they further advance both this EIS process and overall HCP effort, we appreciate the work advanced by the Services, Board, ODF, contractors, and related HCP technical team and steering committee members to date. While we feel work is needed in response to these comments, we want to be clear on what we support in considering the prospect of this HCP (not just what we oppose):

- Advancement of the measures in Alternative 3;
- A shorter permit term, with enhanced analysis of Alternative 4;
- Enhanced Habitat Conservation Areas (HCAs) and related terrestrial provisions given the history, current status, and future uncertainty of conditions for habitat and species; and
- Improved analysis and disclosure of results relevant to addressing concerns raised below, including more robust and inclusive consideration of climate change, social and economic impacts.

I. Background and Context

The term “Habitat Conservation Plan” can be misleading to many because it implies a proposed plan is about habitat conservation alone. This is untrue. To be clear, this multi-species HCP is being prepared in order to streamline and provide legal protection for applicant ODF’s timber harvest, other management activities, and programs on western Oregon state forestlands. It will authorize harm, harassment, injury and other negatives (i.e., ESA “take”) for fish and wildlife species and their habitat. The take permit ODF seeks would cover 17 species, most of which are ESA-listed or under review for future potential listing. ODF is concurrently updating its Western Oregon Forest Management Plan (FMP) to bring it into compliance with the proposed HCP and related ITPs, if approved. NMFS is leading the federal Services’ effort to determine whether the proposed HCP will meet the ESA’s conservation requirements despite the incidental take ODF’s activities would cause, and as part of that, analyzing and considering potential alternative pathways to an HCP and ITP on state forest lands.

ODF is charged with managing western Oregon state forests to achieve the “Greatest Permanent Value” to the State. That is ODF’s northstar legal direction for management and outcomes on the lands subject to this HCP and DEIS. These values may include timber production, but as recently confirmed by the Oregon Court of Appeals, this does not mean maximizing this value over others or pursuing timber to the detriment of other values such as conservation, recreation, climate resilience, or water quality.¹ And it does not mean maximizing timber or any value for counties or ODF, but rather for the people of Oregon as a whole.²

Yet for decades, based on an antiquated business model and other pressures, ODF has placed the pursuit of timber production on state forests (and related revenue to local counties and taxing districts) over other values. And, for decades, groups such as those on these comments

¹ In *County of Linn v. State of Oregon*, 319 Or App 288 (2022), the plaintiff counties argued the existence of a “statutory contract” between the counties and the State/ODF that translates the statutory Greatest Permanent Value management standard into a requirement of timber revenue maximization from state forests. The Oregon Court of Appeals disagreed and overturned an underlying County Circuit Court opinion. The Court of Appeals determined GPV is not part of any contract between the state and the counties who transferred land to ODF and “does not contain a promise to the counties,” whether one of timber revenue maximization or otherwise. *Id.* at 307.

While the Court did not “conclusively construe the phrase” GPV (*Id.* at 309), the Court rejected the county argument that GPV means “maximization of revenue at the expense of other kinds of value,” stating the notion that the term “value” in GPV means revenue maximization “is, at the very least, ambiguous” (*Id.* at 311) and also that the term has “myriad definitions, some of which could relate to revenue production and others that do not relate to revenue production.” *Id.* at 310. Importantly, the court noticed that the Oregon legislature referred to “value to the state” when creating the GPV language, not “value to the counties” (*Id.* at 312), and in so doing, chose the state not the counties as “the reference point for ‘value’” such that “it was the state, as a whole, and not the counties, that was intended to be the beneficiary of the management standard... .” *Id.* at 307.

² *Id.*

have been seeking conservation-based management on state forests whereby ODF does not simply meet its timber production goals but also meets agency and statewide goals for old-growth forest habitat, fish and wildlife health, and other habitat measures. Just as timber interests demand achievement of outcomes for timber production, we have been demanding achievement of objectives for conservation and related values. The difference: ODF has been satisfying the former but not the latter.

On state public lands, and in the context of the proper meaning of GPV, it should not be perceived as reasonable or acceptable for one “side” to demand continued satisfaction of its interests (timber) while unreasonable, unacceptable, or too demanding for another “side” to demand achievement of interests (conservation) when objectives and agency performance measures for the latter have long been unmet. Balance is needed; and it is not timber outcomes but rather conservation outcomes that have been receiving the short end of management outcomes on state forest lands over the years and under the status quo. This HCP effort is one part of bringing about needed balance.

Much of the rancor against this proposed HCP seems to assume advancing it, instead of the status quo on state forest lands, would hand environmentalists a big and unnecessary win to the detriment of timber and rural community public services. The draft EIS analysis does **not** bear this out. We understand that a significant motivation for the Board of Forestry and ODF in pursuing this HCP is not conservation but rather securing the operational viability of the State Forest Division, and namely the timber sale program on which its business model largely rests. But any HCP and ITPs permitted by the Services and adopted by the Board should also advance a better path for species, habitat, and related values on state forests relative to continued advancement of the status quo. The DEIS analysis makes us question whether this is the case.

The Board and Services should recognize that the past history and status quo of state forest management greatly favors timber production over other values. And, as the DEIS analysis indicates, the proposed HCP (Alternative 2) would favor timber outcomes and lower many conservation outcomes as compared to trying to roll forward with the status quo over the next 50-70 years. This WOSF HCP effort is an opportunity to inject balance, which has long been tilted against the persistence of species and their habitats on state forest lands, but the draft EIS analysis presents a concerning picture about the ability of Alternative 2 to do so.

We are not categorically opposed to an HCP and related federal approval of “take” permits for logging and other activities on state forest lands. In fact, for decades, many of the undersigned organizations have encouraged ODF to take the kind of landscape-level, comprehensive look at balancing state forest conservation, recreation, and logging that this HCP process allows. But any federally-approved HCP and ITPs should, on balance, advance meaningful conservation gains relative to the alternative of status quo management. Because the DEIS analysis leaves us concerned as to whether this will occur, we offer the following comments and information to be addressed as part of this federal EIS and permitting process as well as the Board’s HCP decision.

II. Concerns based on overarching Environmental Impact Statement issues

As an initial matter, the EIS must independently evaluate the effectiveness of all HCP components and outcomes. A NEPA document for a forest HCP that simply reiterates the rationale for the plan found in the HCP (in this case, drafted by ODF) but does not provide any additional, objective information is insufficient. An EIS that simply paraphrases or otherwise reiterates the discussion in the HCP does not meet the agencies' obligations under NEPA.

This draft EIS does not go far beyond ODF's provided rationale for its proposed actions. We wish to see more thorough analyses provided in the final EIS to comply with NEPA requirements, and we point to insufficiencies in the DEIS analysis throughout these comments.

A. Length of Permit Term

Consideration of alternatives is the heart of an EIS.³ The draft EIS considers a no action alternative and four action alternatives. ODF's draft HCP, analyzed in the DEIS as Alternative 2, proposes an ITP term of 70 years. The draft EIS also analyzed a shorter permit term of 50 years as Alternative 4. We urge the Services to reconsider conducting a more thorough analysis of this shorter permit term period given the realities of today's (and tomorrow's) compounding climate and biodiversity crises as well as rapidly emerging science relevant not just to impacts but management strategies that can thwart the trajectory of habitat and species loss.

Western Oregon state forests are currently subject to a range of variability that will likely increase in intensity in the near-term. While some of these changes, related to climate, wildlife populations, and human demographics, among others, are somewhat predictable, many are not. A range of confounding variables and assumptions make these changes hard to predict.

For example, it is fairly well accepted that the next decade or so of climate action on the part of industrial society will determine the Earth's climate scenario for the centuries to come. Past and updated reports and modeling from the Intergovernmental Panel on Climate Change (IPCC) predict a wide swing of future climate conditions based on actions that are happening (or failing to happen) this decade.⁴ Until the scientific community has a clearer sense of what "climate path" we are on, trying to predict habitat conditions for many of the climate-sensitive species proposed to be covered for 70 years by this HCP is likely a fool's errand.

On top of this uncertainty, populations for many of the species proposed to be covered by this HCP are in rapid decline. While we certainly advocate for proactive, protective planning to be

³ 40 C.F.R. § 1502.14.

⁴ See <https://www.ipcc.ch/ar6-syr/>

implemented as quickly as possible based on the knowledge now available to us, we cannot advocate for the potential management inflexibility that could result from an HCP with a seven-decade term. An additional point is that relatively little is known about one or more of the species proposed to be covered, including the coastal marten, eulachon, and the red tree vole (see Sec. III, subsection D below).

The federal Services and Board must seriously consider whether it is responsible to authorize 70-years of ESA take and related permit coverage for species about which there is so little knowledge and so much uncertainty, including as to whether conservation outcomes for them can realistically be achieved. And while the Services considered a 50-year permit term, the analysis failed to extend much further beyond reiterating its analysis for ODF's proposed action (Alternative 2) for 50 instead of 70 years to consider the full range of implications. Deeper analysis of cumulative effects for shorter permit terms, which might better account for the uncertainty around the habitat needs and population trends for these species and possibly others proposed for take permits here, should be included in the final EIS.

B. Mitigation Measures and Permanent Habitat Protections

The draft HCP fails to provide sufficient detail about the activities that will occur under the HCP or the consequences for listed and other imperiled species. NMFS's regulations state that HCPs must describe the proposed activity, including the anticipated dates, duration, and specific locations.⁵ The NMFS regulations also state that HCPs must describe the HCP and Incidental Take Permit's anticipated impacts, including the amount, extent, and type of "take," as well as the anticipated impact on habitats and the likelihood of habitat restoration.⁶ According to the Services' HCP Handbook, specific biological goals and objectives must be identified in the HCP for each of the covered species.⁷ "In the context of HCP's, biological goals are the broad, guiding principles for the operating conservation program of the HCP. . . Biological objectives are the different components needed to achieve the biological goal such as preserving sufficient habitat, managing the habitat to meet certain criteria, or ensuring the persistence of a specific minimum number of individuals."⁸ Finally, the biological goals must be measurable and verifiable, and relate to the HCP's monitoring indicators.⁹

⁵ 50 CFR 222.307(b)(4).

⁶ 50 CFR 222.307(b)(5)(i) & (ii).

⁷ "In the future, the Services and HCP applicants will clearly and consistently define the expected outcome, i.e., biological goals." (DOI. 2000. Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process. Federal Register, 65;106, June 1, 2000. U.S. Department of Interior, Washington, D.C.)

⁸ Id.

⁹ "The biological outcome of the operating conservation program for the covered species is the best measure of the success of an HCP." (DOI. 1999. Draft Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process. Federal Register, 64; 45, March 9, 1999. U.S. Department of Interior, Washington, D.C.)

In reviewing the draft HCP and draft EIS, we are unable to locate any discussion of when and where specific activities will occur that cause harm to species and their habitat, how much or what type of “take” would occur, and where restoration or mitigation would occur to offset it.¹⁰ Coverage of biological goals related to listed or other imperiled species fails to disclose either expected population or habitat response, or quantified take / loss of habitat. As such, the HCP is deficient in connecting biological goals to measurable and verifiable outcomes.

Please ensure this deficiency is explored and addressed in the final EIS. The absence of such information will make it exceedingly hard for NMFS to determine whether ODF has mitigated its harm to the maximum extent practicable or to determine whether jeopardy is being avoided. For example, see Section 2(A) point 4 below for further detail on this deficiency. On a related note, *Sierra Club v. Bruce Babbitt* held that replacement habitat must be provided for habitat destroyed pursuant to ITPs.¹¹ The federal HCP Handbook states that mitigation habitat should be permanently protected.¹² However, there is nothing to indicate any permanence around HCA dedication beyond the term of the proposed HCP. The EIS should evaluate whether the proposed HCP or alternatives would provide adequate assurance that sufficient protection for mitigation habitat is provided to meet this standard.

Finally, in light of the clarification of current law in the decision of *County of Linn v. State of Oregon*, 319 Or App 288 (2022), it is questionable whether the Services prepared this DEIS and their overall ESA permitting assumptions around an accurate understanding of what is “practicable” on state forest lands. This court decision addresses the notion that these lands are dedicated to timber production in order to raise revenues for ODF and local governments (counties and taxing districts), a notion that has likely shaped assumptions in the draft HCP and DEIS, including which alternatives the federal Services deemed infeasible and thus excluded from analysis.¹³ Of relevance to this is the Service’s obligations to minimize ESA-related impacts and mitigate them “to the maximum extent practicable.” The recent Oregon Court of Appeals decision directly renounces the contention that ODF must place timber harvest above other values in order to maximize revenue to local counties and taxing districts, even if in tension with ESA species and related habitat conservation or other values.¹⁴ The next step in this EIS process should clarify that the federal analysis of and the draft HCP’s approach to minimization and mitigation is based on the current and correct legal understanding of ODF’s obligations related to state forest lands.

¹⁰ Draft HCP chapter 4 (pp. 4-5 to 4-27)

¹¹ *Sierra Club v. Babbitt*, 15 F.Supp.2d 1274 (S.D. Ala. 1998).

¹² USFWS et al. 2016. Endangered Species Habitat Conservation Planning Handbook (“HCP Handbook”). US Fish & Wildlife Service and the National Marine Fisheries Service. Washington, D.C., pp. 9-14.

¹³ see DEIS at p.2-14 (*excluding* the Alternatives H, J, and M from analysis—which would have respectively increased riparian protections (akin to Western Oregon BLM riparian strategy), landslide prone site protections, and *terrestrial* habitat protections— *because* they “would not meet the goals of the applicant *regarding* economic feasibility.”)

¹⁴ see *County of Linn*, FN 1 (above)

C. Changed Circumstances vs. Unforeseen Changes

The EIS should fully analyze the impacts of both foreseeable and unforeseeable changed circumstances on the assumptions, conclusions and mitigation measures contained in the HCP, and how these changed circumstances will affect species survival and recovery, population trends, habitat quality and quantity, water quality, and other environmental factors.

Foreseeable circumstances include fire, flood, lightning, disease and other stochastic events. The HCP must contain mitigation measures to address such foreseeable circumstances, and specific, detailed procedures to address any unforeseen circumstances, as required by the ESA and its implementing regulations. These critical provisions cannot simply be passed off as a federal government obligation under the “no surprises” policy.

“Changed circumstances” describe what changes can be anticipated over the permit term and thus bind the Permittees’ commitments to address those changed circumstances as opposed to “Unforeseen circumstances” which are “changes in circumstances affecting a species or geographic area covered by a conservation plan that could *not reasonably have been anticipated* by plan developers and the federal Services at the time of the conservation plan’s negotiation and development.”¹⁵ By definition, any circumstance not described as a changed circumstance in the HCP is considered an unforeseen circumstance. **ODF is not obligated to respond to an unforeseen circumstance.**

Thus, discerning what are knowable “changed circumstances” and what is “unforeseen” is a critical part of the HCP’s success in a climate-uncertain future. However, while the proposed HCP claims that “because of the variability of climate change and because it is so interconnected to fire, storm/wind events, and invasive species, thresholds discussed below for setting changed circumstances take into account any potential implications of climate change”¹⁶ this does not seem to have occurred.

1. Stream Temperature

Given that 10 of the covered species are fish, climate-induced changes to water quality and quantity are particularly troubling. The HCP recognizes that, “based on climate change model scenarios water temperature in streams and rivers can be expected to **increase on average by 2°F and 3.5°F** (0.73°C and 1.4°C) by 2040 and 2080, respectively.”¹⁷ Given that many of the streams covered by the HCP are **currently** 303(d)-listed for excessive summer water temperatures that reduce the quality of rearing habitat for chinook, coho and chum salmon, the prospect of the temperature increasing by an additional 3.5° is, with a high degree of probability, lethal or at best harmful (i.e., in the ESA “take” sense) to these fish.

¹⁵ Draft HCP at 7-2 (emphasis added).

¹⁶ Id. at 7-4.

¹⁷ Id. at 7-8.

Despite this knowable changed circumstance, the HCP minimally addresses water quality and quantity issues in its “Assurances”. For example, while the HCP includes “changed circumstances” for fire, storm and invasive species for HCAs, it has no changed circumstances defined for RCAs, stating that RCA buffers “will be maintained throughout the permit term.”¹⁸ Why does ODF expect that RCAs will somehow remain in a static state, while the rest of the forest is affected by fire, storm and invasives? Because no changed circumstances are described for RCAs, no response is required when an RCA burns, or blows down, and is unable to provide habitat or shade. Will this ensure adequate RCA coverage in the future?

Similarly, the HCP acknowledges that warmer water will enable the spread of **both** aquatic invasive plants and fish, but only includes the spread of invasive plants in the changed circumstances.¹⁹ This is an important omission, because as the spread of invasive fish is categorized an “unforeseen circumstance,” ODF doesn’t have any obligation to ensure adequate funding or support to address the issue. In the FEIS, please analyze the impact of the HCP’s omitting the spread of invasive aquatic fish from the list of changed circumstances.

2. Fire

As noted in both the HCP and DEIS, climate change is increasing the frequency, severity, and extent of disturbances, particularly drought, fire, and invasive species. There is a long history of stand replacing fires in the wet forests of Oregon, driven by drought and wind; “[f]orest fires have burned hundreds of thousands of acres in western Oregon over the past century.”²⁰ While most fires burn a very small amount of acreage, wind-driven fires are the cause of the vast majority of burned forests. Indeed, only seven fires caused 58% of the burned area analyzed in the DEIS.²¹ The fires that have the most impact are the same ones that do not change behavior because of land management practices.

Despite acknowledging the long history of large, weather driven fires in western Oregon and the likelihood that climate change will increase the frequency of such fires, the HCP inexplicably labeled the 2020 Labor Day fires “an anomaly,” did not include them in the chart showing “normal” amounts of fire, and picked the dates 1960-2019 as the dates upon which to base what would be “changed circumstances.”²² These dates omit the Tillamook burns and the Labor Day fires – dates seemingly picked specifically to avoid including large fires that are absolutely predictable on this landscape. The omission of large weather-driven fires from a foreseeable “changed circumstance” is a near fatal flaw of this HCP, and raises a key question as to whether the size HCAs adequately accounts for future losses due to disturbance.

¹⁸ Id. at 7-6.

¹⁹ Id. at 7-7.

²⁰ Id. at 7-7.

²¹ DEIS at Appendix 3.2, p6.

²² Draft HCP at 7-4.

Both the DEIS and HCP aver that the HCAs were designed to provide more habitat than needed for species survival, so that if some of the habitat was disturbed the species would still have enough habitat to meet its needs. This is true only to the extent that the future disturbances would be no greater than those over the last 60 years (omitting 2020). Rather than basing HCA size on that needed to meet **future** levels of disturbance, the HCP’s thresholds for changed circumstance “account for functionality of individual HCAs and HCAs at a landscape scale, and more than account for the average acreage of disturbance events on ODF-managed lands **over the past 60 years.**”²³

To be clear, the proposed HCP predicts that all fires over the next 70 years will average 2 acres, with a total average of 2,775 acres burned per year.²⁴This treats stand-replacing fire in western Oregon as an “unforeseen circumstance” that neither ODF nor the permitter are obligated to address *when* it occurs during the life of the HCP. This is neither legally sound nor adequate to ensure the continued persistence of threatened and endangered species in the state forests.

The DEIS is missing an in-depth review of whether the assurances and adaptive management included in the HCP would be effective at maintaining suitable habitat for both terrestrial and aquatic species throughout its term. The fact that the HCP seems to intentionally exclude past and known future events from its list of “changed circumstances” is particularly troubling and raises further doubt that this HCP will succeed at its aims.

3. Cascadia Subduction Zone earthquake

While some people believe the “big one” (earthquake / tsunami) is always right around the corner, it is certainly highly possible in the 70 year term of the proposed HCP. Oregon’s Office of Emergency Management states the following:²⁵

- *“Oregon has the potential for a 9.0+ magnitude earthquake caused by the Cascadia Subduction Zone and a resulting tsunami of up to 100 feet in height that will impact the coastal area. There is an estimated 2-4 minutes of shaking or rolling that will be felt along the coast line with the strength and intensity decreasing the further inland you are.”*
- *“The Cascadia Subduction Zone has not produced an earthquake since 1700 and is building up pressure where the Juan de Fuca Plate is subsiding underneath the North American plate. **Currently, scientists are predicting that there is about a 37 percent chance that a megathrust earthquake of 7.1+ magnitude in this fault zone will occur in the next 50 years. This event will be felt throughout the Pacific Northwest.**”*

²³ Draft HCP at 7-5.

²⁴ Id. at 7-4.

²⁵ Oregon Office of Emergency Management website, accessed 5-3-2022:
<https://www.oregon.gov/oem/hazardsprep/Pages/Cascadia-Subduction-Zone.aspx>

The DEIS does not appear to evaluate or discuss the impacts of an inevitable subduction earthquake in the Pacific Northwest which, we believe, is highly relevant to the future access, conditions, and economic uses of western Oregon state forests. Whether a landscape is dedicated to recreation infrastructure (i.e. trails or campgrounds) or logging infrastructure (i.e. logging roads and bridges) is highly relevant to the impacts of a major subduction earthquake.

As stated in the HCP, any circumstance not listed as a “changed circumstance” is considered an “unforeseen circumstance,” pursuant to which ODF is not obliged to respond. A subduction earthquake is not listed as an HCP “changed circumstance.” Yet, the State of Oregon has devoted large resources to prepare for and fully anticipates a major subduction earthquake. A subduction earthquake is, in fact, a foreseen circumstance that bears directly on the kinds of state investment in state forest lands as well as geologic, biological, and socioeconomic conditions that will exist in a post-subduction earthquake era. Because a subduction earthquake is foreseeable and may likely occur during the proposed HCP term and IMPLAN analysis modeling time horizon (2022-2090) for DEIS, it is hard to square that a subduction earthquake fits the HCP’s “unforeseen circumstance” definitional statement. The Services should evaluate all alternatives in the DEIS relative to a major subduction earthquake.

D. Cumulative Impacts and Surrounding Environment

The analyses for HCPs should evaluate the cumulative impacts of multiple plans and their interactions. The percentage of local *and* global populations that will be “taken” should be assessed. A thorough cumulative effects analysis should be conducted to address all federal and non-federal actions affecting each species covered by the ITP and HCP. The analysis should also address all past, present, and reasonably foreseeable actions across the species’ ranges.

The draft HCP failed to provide a cumulative impacts analysis for proposed covered species, as did the draft EIS.²⁶ The draft HCP stated that “ODF is not aware of any future state or local actions that may contribute to cumulative effects that are reasonably certain to occur.”²⁷ Whether or not it is possible for that statement to be true, the Services are aware of such actions and must fully evaluate them for the length of the chosen permit term.²⁸ Continued heavy logging and some road-building, for example, are “reasonably certain” to occur in the next 50-70 years in the range of covered fish species, on federal and private industrial timberlands. Ongoing increased peak flows and reduced summer flows are also certain to result

²⁶ See, e.g., Draft HCP 5-27, 5-64 – 5-65.

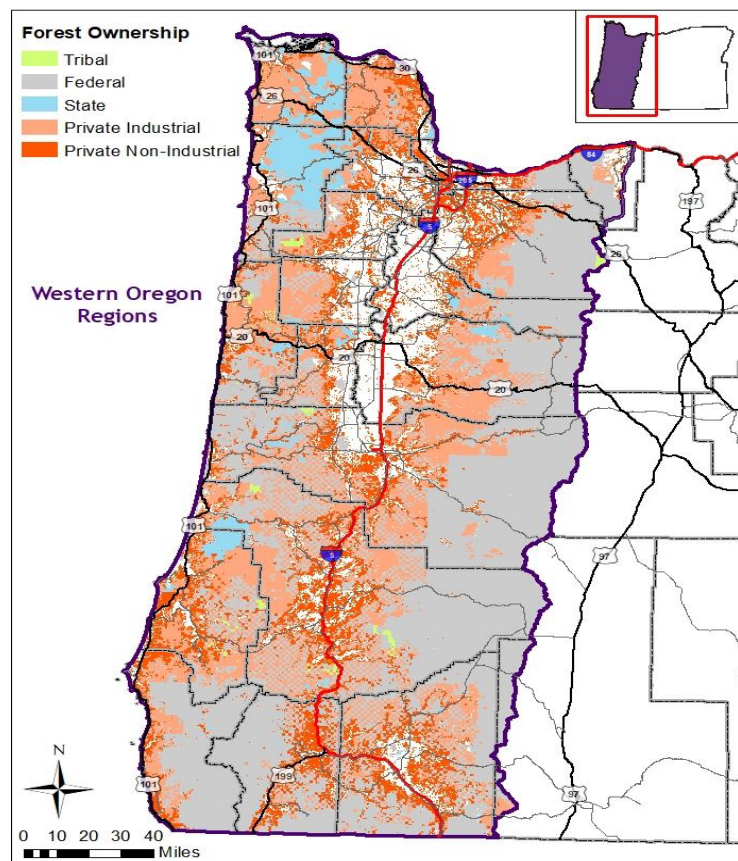
²⁷ *Id.* at 5-27.

²⁸ Inasmuch as the September 14, 2020, NEPA Rule would alter requirements for a cumulative impacts analysis, the Department of the Interior (DOI) is now operating under a Secretarial Order directing it to apply NEPA regulations as they existed prior to the 2020 Rule. (Secretarial Order No. 3399 (Apr. 16, 2021) §5(a)). While a non-DOI agency is the lead on this EIS, partner agency USFWS is a DOI agency and it is advisable to prepare a cumulative-impact review as per previous guidance.

rangewide for the covered fish species due to ongoing clearcut harvesting on a range of land ownerships across the region. These compounding impacts should be discussed in the final EIS.

Connected to an improved cumulative impacts evaluation, the final EIS needs to better analyze and disclose the relative context of western Oregon state forest lands and the relative contribution they make to ESA species and habitat (compared to the surrounding environment). Many people often point out that state forest lands comprise only 3% of Oregon’s overall forested landscape, but this obfuscates certain facts relevant to this proposed HCP and the DEIS.

In the North Coast in particular, state forests play an outsized role of importance for many species and habitats due to the fact that ODF is the largest public land manager in the region, other public lands are relatively marginal in contribution (compared to other regions where Forest Service and BLM lands are more dominant), and private industrial forest lands dominate the land outside of these ODF-managed public lands. The map below depicts this situation.



Western Oregon forested lands—by ownership (Source: This map appeared as Figure 1 on p.3 of Agenda Item #3 (Annual Forest Practices Monitoring Update) at the Nov. 3, 2021 Board of Forestry meeting).

Importantly, these private industrial lands do not and cannot be expected to provide the habitat condition and quantity needed to support the persistence of most species covered by this HCP. Rather, foreseeable negative impacts to ESA-relevant habitat will continue on these lands, which are cumulative when combined with projected state forest timber sales in the permit area and other foreseeable actions.

In addition, past development, logging activity, and large scale wildfire and wind events have created a habitat condition on a significant portion of both the private and state forest lands in this region that is relatively young and homogenous. This situation therefore places more focus and responsibility on relevant portions of the state forest landscape with respect to the question of ESA management and compliance. This is why dedicated conservation areas and related conservation strategies need to be robust in nature, continuity, and size as part of any western Oregon state forest HCP (given the relatively fragmented and young condition of these state forests as well as surrounding lands largely in private ownership). While the draft HCP presents useful information on events like the Tillamook Burns and Columbus Day Storm and current age class conditions, the DEIS fails to adequately describe these state forest lands and the surrounding environment in the context of what each respectively means for ESA-relevant habitat and species persistence regionally. The final EIS should correct this.

III. Proposed Alternatives and Evaluation of Impacts to Covered Species

Situated amidst a sea of industrial timberland clearcuts with restricted public access, western Oregon's state-managed public forests play an increasingly important role on the landscape for ESA-relevant conservation and broader values today, including recreation, climate resilience, and drinking water. ODF's proposed HCP (Alternative 2) includes a variety of conservation actions, some of which we emphatically support and others of which are cause for concern.

We are most supportive of actions related to riparian health, but given that Alternative 2 does not adequately address steep slopes, landslide risk, or road network concerns, the addition of Alternative 3's measures is needed. While we support the proposed creation of a functional, connected network of Habitat Conservation Areas (HCAs), we are concerned over the adequacy of their size in light of the plan's driving purpose to produce timber volume, the proposed fixed-nature of HCA boundaries, and habitat that may, due to fire or over-optimistic assumptions, fail to achieve projected conservation objectives for covered species. Climate change forces are working against the long term success of species and habitat. Science will continue to change and we must be ready to adapt, not just through a proposed HCP adaptive management process that needs further definition but a shorter permit term (e.g., Alt. 4).

A. Aquatic Species and Habitat

The DEIS and draft HCP (Alternative 2) are deficient in addressing ESA-listed salmonid species and related aquatic habitat needs. The reasons for the greatly reduced and imperiled status of these species today (their ESA listing factors for and threats) are tied to the covered activities and associated impacts that this HCP would permit: timber harvest, roads and related impacts, landslides, and other ongoing habitat deficits. These species have an extensive history relevant to state forest management, and this current draft HCP and EIS is the latest chapter. We hope it can be the chapter that turns towards a better future. But at present, we have concerns with Alternative 2's approach and what the draft EIS analysis reveals (or fails to evaluate).

ODF first attempted a state forest HCP for coho and other species in 1997 but never finalized its draft plan, in large part because of disagreements with NMFS concerning stream buffering and habitat impacts (sedimentation related to landslides and debris flows) to coho streams. NMFS ended up listing the Oregon Coast ESU of coho salmon under the ESA the following year, in 1998²⁹ (and reaffirmed the listing of this ESU in 2005, 2008, and 2011³⁰) due to declining abundance from the loss of freshwater habitat, which directly relates to logging and, in particular, clear-cutting trees on steep, unstable slopes and along debris flow paths as well as road construction and hydrologic impacts associated with the extensive logging road network in the Oregon Coast range.³¹ Soil erosion and stream sedimentation from logging, road construction, and repeated log-hauling with heavy logging trucks “seriously degrade[]” pools and side channels where coho spawn and spend their first phases of life.³²

Lack of proper management and protections on the state forests that are the subject of this HCP were a primary justification for listing Oregon coast coho with NMFS concluding in the 2010 reaffirmation of the need to list that: “we are unable to conclude that the state forest management plans will provide for OC coho salmon habitat that is capable of supporting populations that are viable during both good and poor marine conditions.”³³ This conclusion was repeated in the 2016 recovery plan for coho when NMFS again determined that the State's plans and rule changes were inadequate to conserve the ESU.³⁴

This tracks the threats and concerns for other aquatic species proposed for HCP coverage:

²⁹ 63 Fed. Reg. 45,587, Aug. 10, 1998.

³⁰ 70 Fed. Reg. 37,160, June 28, 2005; 73 Fed. Reg. 7830, Feb. 11, 2008; 75 Fed. Reg. 29,489-29,290, May 26, 2010.

³¹ 73 Fed. Reg. 7816, 7821, Feb. 11, 2008.

³² 60 Fed. Reg. 38,011, 38,024, July 25, 1995; see also 62 Fed. Reg. 24,588, 24,592-93, May 6, 1997: logging removes natural vegetation, destroys riparian areas, reduces large woody debris, and triggers soil disturbance, mass wasting events, surface erosion, and sedimentation.

³³ 75 Fed. Reg. at 29500, May 26, 2010.

³⁴ See COHO RECOVERY PLAN at S-6; 73 Fed. Reg. at 7821.

Steelhead: The 2011 Recovery Plan for Upper Willamette River Chinook and steelhead, for example, lists as primary threats:

- Timber harvest on unstable slopes and riparian areas as leading to the decoupling of watershed processes.
- Improperly located, constructed, or maintained roads have degraded stream flow and sediment supply processes.³⁵

Chum: Regarding Columbia River chum salmon, the ESU is in significant decline, with just a few thousand returning adults expected annually (versus perhaps around a million per year historically) and 14 of 17 of the historical spawning populations have been extirpated or functionally extirpated.³⁶ Chum associated with the Kilchis River system and the state forest-based tributaries that feed it are among the southern-most known populations of the species. Ongoing barriers to recovery for many of the populations include impacts caused in large part by logging, such as increased fine sediment, lack of channel complexity, and lack of large woody debris.³⁷ Restoration of tributary spawning habitat is essential to the recovery of chum salmon.

As the draft HCP notes: *“The most recent status review that addressed Columbia River chum salmon synthesized previous status conclusions and evaluated recent data and observations (NWFSC 2015). The status review determined that, as of 2015, some improvements and declines in individual populations have been observed, but the majority of DIPs in the ESU **remain at a high or very high risk category**, and most chum populations require substantial improvements to meet their recovery viability goals.”*³⁸

Spring Chinook: Oregon Coast spring-run Chinook salmon have been in significant decline, with current spawning runs at a very small fraction of their historic abundance. The recent petition to list the species under the ESA documented the threats to the species, including, “Logging and roads in Oregon’s Coast Range have degraded habitat by reducing stream shade, increasing fine sediment loads, reducing large woody debris instream, and altering watershed hydrology—depleting flows that support spring Chinook migration, holding, and spawning.”³⁹ In August 2021, NMFS determined not to list the Oregon Coast spring Chinook under the ESA because it failed to meet definitional

³⁵ Oregon Department of Fish and Wildlife and National Marine Fisheries Service (ODFW and NMFS). 2011. *Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead*.

³⁶ National Marine Fisheries Service (NMFS). 2013. *ESA Recovery Plan for Lower Columbia River Coho Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, and Lower Columbia River Steelhead. Northwest Region*.

³⁷ Draft HCP C5-12 – C5-13.

³⁸ *Id.* at C5-12 (emphasis added).

³⁹ Center for Biological Diversity, et al., “60-day Notice of Intent to Sue for Violations of the Endangered Species Act Relating to the Service’s Late Finding on a Petition to List the Oregon Coast ESU of Spring-Run Chinook Salmon (*Oncorhynchus tshawytscha*) as an Endangered Species” (Mar. 31, 2021).

criteria as an Evolutionarily Significant Unit under the law. NOAA’s review, however, turned on issues of whether these spring-run fish demonstrate enough reproductive isolation and genetic variation from fall Chinook salmon on the Oregon Coast.⁴⁰ This review was far from a determination of population health, and definitely does not say NOAA determined that the spring-run Chinook populations are doing well on the Oregon Coast. Again, many of the impacts discussed in this section and elsewhere in these comments are relevant to the future of these populations.

Turning towards the present moment and this potential HCP decision, ODF has made a concerted effort in developing its draft HCP to address issues that previously held NMFS back from agreement and issuance of related permits. But Alternative 2, still fails to buffer headwater reaches and slopes known to generate landslides and debris flows, which has been a major sticking point for NMFS. Alternative 3 is the only alternative that can be said to address known and foreseeable increases in the frequency and density of landslides and debris flows related to ODF’s clearcutting and road system. As such, Alternative 3 is the only alternative that meets the requirements of section 10 of the ESA.

In contrast, our concerns regarding adoption of Alternative 2 (and issuance of federal ESA take permits) span the issues areas below and its failure to provide sufficient protections from harm to the salmon and steelhead species or ESUs listed above. We remain concerned because Alternative 2 and its proposed conservation and mitigation measures fail to address issues directly relevant to the persistence of these species. The DEIS analysis supports these concerns and reveals more effort is needed, both as part of the NEPA analysis and in substance on the outcome of this HCP.

1. Steep Slopes and Landslide Risk

Alternative 2 is deficient in minimizing and mitigating negative impacts tied to management activities on steep slopes, and the draft EIS fails to adequately analyze this.

Extensive science demonstrates that logging and road building in steep, convergent (concave) terrain leads to landslides and debris flows by reducing root strength and in the case of roads, undercutting slopes. This is especially true in Oregon’s Coast Range. Accordingly, the DEIS acknowledges that logging and other forestry activities “increase the frequency of shallow-rapid landslide and associated effects,” approximately tripling “the landslide recurrence interval” compared to undisturbed forest.⁴¹ And, the DEIS recognizes conditions in the state forest analysis area for “are favorable to the initiation of shallow-rapid landslide, namely steep slopes and high precipitation rates.”⁴² But instead of positively addressing risks and concerns

⁴⁰ See 86 FR 45970 (Aug. 17, 2021) (NMFS’ 12-Month Findings on Petitions To List Spring-Run Oregon Coast Chinook Salmon and Spring-Run Southern Oregon and Northern California Coastal Chinook Salmon)

⁴¹ Draft EIS at 3.3-3 to 3.3-4

⁴² Id. at 3.3-3 (sic.)

related to steep slopes and landslides, the draft HCP / Alternative 2 would exacerbate them relative to the status quo / No Action alternative because of increased harvest rates.⁴³

In most respects, Alternative 2 is a continuation of what ODF has already been doing to avoid landslides and debris flows, but with increased harvest rates. Under current practices and Alternative 2, ODF buffers debris flow tracks and initiation sites that are considered to present a “high hazard.”⁴⁴ Neither the DEIS nor the HCP specify how ODF identifies high hazard sites beyond stating that they are identified by a geotech specialist, but according to an ODF document entitled “*Clarification Regarding Slope Stability and Landslides in the Context of Harvest*” (dated February 25, 2020), the department considers a site to have a high-hazard of generating a landslide if it has all of the following criteria: “topography indicates former failure,” “converging contours,” “stand indicates unstable history (age, type, shape of evergreen trunks),” and “slopes over 70%.”

Of these criteria, there is strong scientific support for slope steepness and convergent terrain as predictive of landslide occurrence, but little support for stand characteristics as having significant predictive power (e.g. any evidence that most landslides showed such sign prior to occurrence). Please see the expert report of Dr. Josh Roering (see Attachment 1; also provided during the NEPA scoping process for this HCP) for a discussion of the literature on landscape characteristics that predict landslide occurrence, which in no case identifies stand characteristics as a predictive variable. Further, an extensive recent study titled “Protocol for Channelized Debris Flow Susceptibility Mapping” (Burns et al. 2022) published by the Oregon Department of Geology and Mineral Industries (DOGAMI) solely uses slope, curvature and distance to stream to identify and map areas prone to initiation of landslides and subsequent channelized debris flows. (see Attachment 3). Mapping from this study was calibrated to a database of hundreds of landslides and found to be predictive.

As such, ODF’s use of stand characteristics to identify high-hazard landslide initiation sites has no basis in the scientific literature, and Alternative 2 is thus unlikely to protect areas likely to generate landslides and debris flows. The draft EIS analysis supports this concerning conclusion, stating “[t]imber harvest activities would increase frequency of shallow-rapid landslide and associated events by removing vegetation and compacting soils with use of heavy equipment.”⁴⁵

In contrast, Alternative 3, in buffering what ODF considers to be moderate-hazard landslide initiation sites, has a strong basis in the literature and comports with the state’s lead agency’s (DOGAMI) approach to identifying hazard, as reflected in Burns et al. (2022). Alternative 3 would increase buffer widths on small perennial non-fish-bearing streams and seasonal non-fish-bearing streams with potential to deliver wood to fish-bearing streams (potential debris

⁴³ Id. at ES-7.

⁴⁴ Id. at 2-8.

⁴⁵ Id. at 3.3-6.

flow tracks and high-energy streams), as well as retain trees on moderate-risk landslide initiation sites (50-70% slope, including areas of steep, convergent terrain).

This is critical not only to minimization of risk from negative landslide and debris flow impacts but also the positive encouragement of natural wood into streams if slides occur, which is needed to address instream conditions that the DEIS documents have been “greatly altered post-European settlement, through practices, such as removal of large wood to accommodate both boat passage and log transport” as well as scour and sedimentation due to landslides.⁴⁶

The DEIS calls out Alternative 3 for these positive contributions of increased potential for large wood recruitment and reductions in adverse effects due to its road-related approach.⁴⁷ While a tremendous amount of work and science has been conducted on stream complexity and woody debris inputs to the benefit of fish and habitat in the freshwater environment, organic woody material input and benefits to fish in the *saltwater* environment is largely overlooked. The DEIS apparently didn't consider this either. The USDA and US Dept. of the Interior joint publication “*From the Forest to the Sea*” outlines the benefit of fallen trees to the fresh and saltwater environments and how they benefit aquatic species. Upwelling plays a major role in survival rates during the saltwater phase of ocean going salmonids, much of which is attributed to the organic material slowly decaying off of the continental shelf, deposited from freshwater environments including state forest lands.⁴⁸ From the federal study:⁴⁹

- *“Wood in the deep sea not only serves as a source of energy in an energy-scarce environment but also contributes to environmental diversity and associated community complexity in the deep sea.”*
- *“Trees escaping into the nearshore system are usually infested with gribbles and shipworms or become invaded while near shore. Such trees gradually become waterlogged and sink slowly if they are not driven ashore by winds. Trees that are attacked by marine borers and sink over the Continental Shelf or in the deep sea represent a direct entry of terrestrially fixed carbon into the oceanic benthic system.”*
- *“The enrichment of the bottom, a result of the disintegration of the wood and the accumulation of fecal pellets, contributes to the development of a rich fauna.”*

The DEIS should incorporate this research into its analysis and disclose its review in the next phase of this NEPA process. It is relevant to the EIS's evaluation of the action alternatives, including the relative additional benefits Alternative 3 would provide to fish and their habitat.

Alternative 3's approach comports with the best available science and a prudent approach to minimizing risk of adverse impacts from steep slope activities and landslides not based on

⁴⁶ DEIS at 3.3-4

⁴⁷ DEIS at 3.3-8.

⁴⁸ Maser, Chris; Tarrant, Robert F.; Trappe, James M.; Franklin, Jerry F., tech. eds. 1988. *From the forest to the sea: a story of fallen trees*. Gen. Tech. Rep. PNW-GTR-229. 153 p., <https://www.fs.fed.us/pnw/pubs/229intro.pdf>.

⁴⁹ Id.

speculation but in the face of known examples, model results, and climate change impacts. Projected effects of climate change include increased frequency, intensity, and duration of severe storm events. These in turn will result in increased risk at all potential initiation sites, including sites currently classed as moderate risk.

As presented during scoping comments and in the expert report of Dr. Roering (Attachment 3), the Center for Biological Diversity modeled landslide risk across the Tillamook and Clatsop State Forests using the model SHALSTAB and a Lidar derived digital elevation model. This model evaluates the effectiveness of ODF's buffering for reducing the risk of generating landslides with the potential to deliver to coho-bearing streams as part of Annual Operation Plan (AOP) timber sales for the last several years. This analysis identified extensive unbuffered landslide terrain in multiple sales. This approach comports with the recent DOGAMI protocol (Burns et al., 2022).

Attached to these comments is mapping for ODF's 2023 AOPs, showing 11 planned timber sales with unbuffered landslide terrain above streams ODFW has identified as having coho spawning and rearing habitat. (see Attachment 4). This mapping shows that ODF timber sales present a substantial threat to coho that is largely unmitigated by prescriptions identical to Alternative 2.

In addition to our mapping showing unbuffered logging of steep, convergent landslide terrain capable of delivering sediment to coho bearing streams, we have identified a number of examples, where recent clearcutting and road construction on the State Forests have led to landslides and debris flows that harmed coho and their habitat. These examples are documented in supplemental expert reports submitted in litigation over coho and attached here and provide further evidence that ODF's activities, which will continue largely unchanged under Alternative 2 (or, as the DEIS points out, actually increase over the status quo / No Action alternative), are and will continue to have serious impacts on salmonids, other imperiled fish, and aquatic habitat.

In moving towards a final EIS and Record of Decision for this HCP, we believe NMFS and the Board of Forestry need to undertake the following based on current best available science and a known and ongoing pattern of negative impacts from state forest management activity:

- The draft EIS fails to evaluate and disclose where or how much steep slope / landslide-prone terrain will be buffered under Alternative 2. Especially given that the draft EIS predicts Alt. 2 will have greater risk of slides and negative effects than continuation of the status quo / No Action, NOAA needs to analyze this as it is critical to any evaluation of the likely harm to salmonids, the issuance of take permits, and the evaluation of the adequacy of mitigation.
- The EIS analysis should directly address the information and science identified above and attached here, as well as incorporate the DOGAMI (Burns et al.) approach into its analysis of steep slope and landslide risk scenarios under the five alternatives considered in this EIS.

- Adopt Alternative 3’s approach—which the current draft EIS analysis already supports as prudent (as compared to Alternative 2) and taking this path would likely only be strengthened based on incorporation and analysis of the science above.
- The HCP’s monitoring and adaptive management program, at this point is not fully defined, should include systematic monitoring of ODF’s identification, classification, and management actions connected with potential debris flow tracks, high-energy streams, and landslide initiation sites.

2. Road System Problems

Alternative 2 fails to address ODF’s over-extensive road network’s negative impacts (landslides and debris flows, harmful sediments, and other water and habitat quality problems), and the draft EIS fails to adequately analyze this.

Alternative 2 anticipates road system management activities that are essentially unchanged from current practices. The proposed HCP thus does little to address ODF’s damaging road network, which exceeds 4 miles/square mile and leads to road related landslides and debris flows, sediment pollution of streams from the many miles of hydrologically connected roads, and continued blocked passage for migrating salmon. In fact, the DEIS projects Alternative 2 would result in more than 240 miles of new road construction and continued use of over 2,600 miles of road for harvest (and over 2,800 miles in the permit area total).⁵⁰ This is considerably more miles than if the status quo / No Action alternative were projected forward over the analysis period, including those that would be within 120’ of water.⁵¹ The DEIS’s Chapter 3 / Environmental Consequences section clearly documents increased road-related impacts from Alternative 2’s approach to roads relative to the status quo, to the detriment of ESA-listed salmonids, other imperiled fish, and their habitats.

Alternative 3 would also result in the level of new road construction and continued use that Alternative 2 identifies. However, Alternative 3 requires ODF to “adopt a risk inventory and evaluation program” for roads and motorized trails in RCAs as well as set targets for vacating problematic roads at a rate equal to road construction.⁵² Alternative 3’s inventory and risk evaluation program includes prioritization of road drainage improvement and would be done collaboratively with NMFS and DEQ (and ideally ODFW). If aggressively implemented, this would provide a welcome and long-needed change in state forest road management given the road network’s extent, history, and ongoing impacts to aquatic habitat for ESA-relevant species. In light of increased frequency and severity of storm and flood events expected in the future due to climate change, Alternative 3’s approach is even more important.

⁵⁰ DEIS at 3.1-3; 3.4-2 (Table 3.4-1)

⁵¹ DEIS Table 3.4-1

⁵² DEIS at 3.3-6.

The DEIS claims that improved construction practices make roads “less likely to increase frequency of shallow-rapid landslide and associated effects.” The DEIS lacks data to support this claim, but even if it is true to some degree, road construction on the State Forests continues to cause landslides and debris flows. And, the DEIS analysis documents continued negative impacts from Alternative 2’s approach, above and beyond the status quo / No Action alternative.

The Center for Biological Diversity’s supplemental expert reports (Dr. Roering and Dr. Burnett) attached to these comments document several examples where roads contributed to landslides that delivered sediments to coho-bearing streams. (see Attachments 1 and 2). Hauling logs off steep ridges and out of the State Forests inherently involves constructing and maintaining roads cut across steep slopes, which undercuts slope stability and alters hydrologic conditions leading to landslides and debris flows. These effects contributed to the landslides in the NW Combo, Star White and other timber sales highlighted in our examples. ODF also continues to use stream parallel and other roads with extensive hydrologic connectivity to haul logs. These impacts need to be better analyzed in the EIS as well as minimized and mitigated by the HCP.

Under Alternative 2, ODF proposes to vacate or repair roads “not built to current design standards” in order to “disconnect the road system hydrologically from stream channels.”⁵³ Neither the HCP nor the DEIS, however, identify which or how many roads will be fixed or vacated under Alternative 2 (or Alternative 3 for that matter), meaning that NMFS (or state sister agencies like ODFW) will have little ability to assess impacts or needed mitigation to Oregon Coast coho salmon, other salmonids, or aquatic habitat. At least Alternative 3 sets up a process whereby these HCP commitments could be transparently discussed and implemented in an intentional way.

Despite Alternative 2 resulting in significantly more new roads as well as road network use and maintenance into the future, we have significant concerns over whether, under its current and foreseeable business model, ODF can actually maintain roads associated with this extensive network as proposed, as called for by various plans and laws, and as needed to meet its HCP commitments. And, beyond the issue of maintenance, we question whether ODF can meet its road impact reduction commitments in the form of vacating or hydrologically disconnecting problematic roads. The DEIS fails to analyze and consider the financial wherewithal ODF will have to meet these commitments. This is a knowable issue given ODF’s current business model (and related revenue distribution formula), predicted level of timber sale activity (revenue), and road system increases, maintenance, or reduction needs (costs). And, it is directly relevant to the federal Service’s obligation to analyze the adequacy of the commitments for funding the mitigation and monitoring measures in the HCP to support long term species conservation. In moving towards a final EIS and Record of Decision for this HCP, we believe NMFS and the Board of Forestry need to undertake the following based on current best available science and a known and ongoing pattern of negative impacts from the state forest road system:

⁵³ Id. at 2-9.

- Analyze ODF’s fiscal ability to maintain and address the impacts from its current road system as well as future proposed road system under the HCP action alternatives. This analysis is directly relevant to whether ODF can follow-through on HCP commitments, and in turn, whether road system impacts will be adequately minimized and mitigated to avoid jeopardizing aquatic health for ESA-listed salmonids and other species in the future.
- Address and analyze the expert report and related information presented in connection with these comments. Ensure the HCP’s analysis of minimization and mitigation incorporates impacts from continuation of impacts such as these.
- Identify numeric and/or locational targets for reducing road hydrologic connectivity or other problems (habitat-related and otherwise) as well as avoidance of construction of mid-slope roads. This is needed in order to provide a basis for assessing HCP effectiveness (and accountability / monitoring of HCP implementation over time).
- Adopt the approach to road system and impact management identified in Alternative 3. This is a process-based approach, but as part of that process, at least it will result in prioritization of problematic roads and a commitment to address their impacts concurrent with the new roads ODF is planning to construct. This is even more important in light of expected and foreseeable climate change-driven storm severity and flooding impacts, and in light of this, NOAA should insist that road drainage improvement work involve culverts sized larger than current standards require.

3. Seasonal Streams

The proposed HCP and draft EIS fail to properly or adequately consider the fish-bearing seasonal stream network on state forests.

Seasonal streams make important contributions to fish production. Juvenile coho are known to survive over the course of hot summers in residual pools (May and Lee, 2004).⁵⁴ Further, Wigington et al. (2006)⁵⁵ found that residual pools in low water conditions were capable of sustaining juvenile coho salmon, that coho spawning occurred in seasonal streams in winter conditions, and that overwinter survival for juvenile coho was higher in seasonal streams than in mainstems and was equivalent to survival in perennial streams.

Appropriately, the draft HCP proposes a 120’ riparian buffer for seasonal fish-bearing streams, the same as a perennial fish-bearing stream. However, the HCP also indicates that there are only 30 miles of seasonal fish-bearing streams in the permit area, out of a total of 5,675 miles of seasonal streams. We question this result and the underlying analysis. The low number of

⁵⁴ May, C.L. and D.C. Lee, 2004. The Relationships among In-Channel Sediment Storage, Pool Depth, and Summer Survival of Juvenile Salmonids in Oregon Coast Range Streams. *North American Journal of Fisheries Management* 24:761–774.

⁵⁵ Wigington, P.J., J.L. Ebersole, M.E. Colvin, S.G. Leibowitz, B. Miller, B. Hansen, H. Lavigne, D. White, J.P. Baker, M.R. Church, J.R. Brooks, M.A. Cairns, and J.E. Compton. 2006. Coho salmon dependence on intermittent streams. *Frontiers in Ecology and the Environment* 4(10):514-519.

identified miles may partly be a result of determining fish/nonfish status under summer conditions rather than winter conditions. Importantly, there is a serious flaw in designating fish status and riparian buffers for a seasonal stream at just one point in time (generally, just prior to a planned harvest): some seasonal streams could become fish-bearing if suitable habitat were allowed to develop. If the stream is logged without buffers, the potential for habitat development is lost.

In moving towards a final EIS and Record of Decision for this HCP, we believe NMFS and the Board of Forestry need to undertake the following based on current best available science and the known importance of seasonal streams to ESA-relevant salmonids and other fish:

- Evaluate and analyze how ODF arrived at such a low number of seasonal fish-bearing streams out of such an extensive seasonal stream network within the permit area. If ODF's result is skewed based on time-of-year sampling, NOAA (and state sister agency ODFW) should disclose and address this in the EIS.
- Modify Alternative 3 to replace the proposed equipment restriction zones with no-touch riparian buffers on non-fish-bearing seasonal streams that connect directly to fish-bearing streams. This would provide a greater chance of wood recruitment and habitat development. Intermittent streams, whether fish-bearing or not, are important sources of energy inputs to downstream areas; leaf litter and macroinvertebrate biomass in headwaters contribute to downstream salmonid production (Wipfli and Gregovich, 2002; Wipfli 2005)⁵⁶, and adding riparian buffers would allow for these processes to be more fully expressed.
- The HCP's monitoring and adaptive management program, at this point not fully defined, should include a systematic and multidisciplinary / multi-agency process for updating of the fish bearing network on western Oregon state forest lands.

4. Fish Passage, Mitigation and other Restoration

Alternative 2 Fails to adequately mitigate known fish passage problems or clarify other mitigation-related restoration work on state forest lands, and the draft EIS fails to adequately analyze this.

One of the other ways ODF state forest roads are harming coho and other imperiled salmonids is blocked passage caused by hundreds of perched culverts or other passage barriers. The HCP fails to address this problem in a clear, meaningful or timely manner. It proposes to fix half (167) the problematic barriers over the next 70 years but fails to indicate when or where.

⁵⁶ Wipfli, M.S., and D.P. Gregovich. 2002. Export of invertebrates and detritus from fishless headwater streams in southeastern Alaska: implications for downstream salmonid production. *Freshwater Biol.* 47: 957–970.

Wipfli, M.S., 2005. Trophic Linkages Between Headwater Forests and Downstream Fish Habitats: Implications for Forest and Fish Management. *Landscape and Urban Planning* 72:205- 213.

Besides 50% being an underwhelming objective given ESA-listed fish needs, this HCP commitment raises several concerns. The size, scope, and nature of passage barriers, as well as the costs of such work, are not all created equal. Without specifics on which passage barriers or where, how can NOAA (or a state sister agency like ODFW) evaluate whether ESA-species priorities are being targeted, or whether ODF has adequate funding to cover the costs of this work? And how will NOAA or others measure progress without that information and/or a temporal element regarding passage barrier work ... in other words, couldn't ODF fix none or just a handful of culverts over the first 30 or 50 years of the plan yet still be in compliance with its HCP terms?

Further, ODF's proposed HCP represents that culverts will be fixed primarily in association with timber sales. For problematic culverts not in a timber sale area, ODF makes no commitment, only stating that it "may remove them outside of harvest units to maximize benefit to the covered species."⁵⁷ Here again, how will NMFS have the ability to ensure ESA-relevant fish priority culverts / passage barriers are addressed (even if outside of timber sales)?

Lastly, in the context of coho salmon, the draft HCP and draft EIS fail to provide details about the miles of stream that will be restored through actions other than fish passage, including when or where they will be restored as mitigation for harm to fish habitat elsewhere and how the activities will be measured or verified.

ODF is clearly relying on these restoration actions to mitigate habitat lost to covered actions like timber harvest.⁵⁸ But without the information noted in this subsection, can NMFS really conclude that mitigation under the HCP is sufficient? Can it adequately determine whether ODF has mitigated take to the maximum extent practicable or whether jeopardy is being avoided?

In moving towards a final EIS and Record of Decision for this HCP, we believe NMFS and the Board of Forestry need to undertake the following:

- Evaluate the above questions and disclose an answer, namely whether NOAA has or will require information on when, where, and how much / costs regarding passage barrier work or other restoration actions (e.g., large wood placement, side channel reconnection, removal of problematic road segments) under the proposed HCP so as to inform prioritization, accountability metrics, and practicality concerns (i.e., ODF's ability to perform, and the adequacy of mitigation).
- At the very least, set temporal goals and prioritization measures for passage barrier removal and other restoration work, whereby a known timeline would exist for this work—ideally one that addresses most of the problematic priority barriers or other priority restoration activities on the front end of the HCP term (on the order of the first 20 years of the HCP) so as to optimize fish species benefit over the life of the HCP term.

⁵⁷ DEIS at 2-9.

⁵⁸ See Draft HCP, Section 4.4 at p.4-3.

5. Flooding, Instream Flows and Temperature

Alternative 2 would exacerbate negative conditions already predicted by reasonably foreseeable climate change scenarios.

As to the impacts of Alternative 2 and other action alternatives on water resources, the DEIS states that, across the board, the foreseeable trends of climate change will:

“... alter air temperature, humidity, wind, cloud cover, and precipitation patterns, lowering low flows, increasing flood frequency, changing peak flow timing and duration, reducing extent of snow-dominated areas, increasing water temperature, and increasing incidence of drought. Intensified rainstorms and increased storm event frequency and related flooding will increase sedimentation, channel erosion, and debris flows impair water quality and exacerbate downstream flood hazards. These effects can also reduce low flows.”⁵⁹

This relative parade of horrors leaves aside the predicted increased impacts of wildfire. As if that wasn't enough, ODF's draft HCP (Alternative 2) is predicted to increase flood hazard-related negative impacts over and beyond these climate-driven impacts, including due to its increased road construction and usage over the status quo.⁶⁰ It would also “result in more adverse effects on low flows”, including lower summer flows, compared to continued advancement of the status quo / No Action alternative over the permit term.⁶¹ This connects to issues of increased water temperature and adverse effects on groundwater recharge.⁶²

Alternative 3, on the other hand, would “further reduce adverse effects and increase beneficial effects” for flood hazard,⁶³ groundwater⁶⁴ and water quality.⁶⁵ Aside from the more positive picture this presents related to ESA aquatic species and habitat, Alternative 3 also offers benefits in the Clean Water Act context and many streams in the permit area that are already listed as water quality limited. ODF needs to comply with laws beyond the ESA, and the Clean Water Act's antidegradation standard is a significant factor. These reasons point further to why Alternative 3 is a more responsible decision than Alternative 2.

6. Torrent Salamanders

Both the Columbia torrent salamander (*Rhyacotriton kezeri*) and the Cascade torrent salamander (*Rhyacotriton cascadae*) are proposed for listing under the federal ESA. Additionally, a number of other stream dwelling amphibians not covered by this HCP but found

⁵⁹ DEIS Section 3.4.4 at p.3.4-19

⁶⁰ DEIS at p.3.4-17 to 3.4-18.

⁶¹ DEIS at p.3.4-13

⁶² Id at p.3.4-17

⁶³ DEIS at p.3.4-18

⁶⁴ Id. at p.3.4-17

⁶⁵ Id. at p.3.4-14 to 3.4-15

within the plan area are listed on the Oregon Sensitive Species List. These include the Cope's giant salamander, southern torrent salamander and coastal tailed frog.

Stream dwelling amphibians are most commonly found higher up in the system above fish bearing streams in order to avoid predation. They occur not only in perennial streams but also intermittent streams and around seeps and springs. These features also play an important role in dispersal of torrent salamanders between streams and over ridges. It is therefore critical that the agencies not assume addressing the needs of listed fish will also address the needs of stream dwelling amphibians. The DEIS notes the following:

Torrent salamanders can be found living in or on the banks of intermittent (spatially or temporally) and small, perennial headwater streams (Olson and Weaver 2007; Olson pers. comm.). Larvae are not resistant to desiccation, and require permanent water sources (perennial reaches, or permanent seeps or springs) during their development or moist underground habitat. It is possible that the entire life cycle of torrent salamanders may be completed in nonperennial stream habitat where year-round hyporheic flows and moist bank habitat exist (Olson and Weaver 2007; Olson pers. comm.); living in these areas could reduce competition or provide additional resources and suitable habitat.⁶⁶

It is therefore surprising that the DEIS fails to address protection of intermittent streams (other than torrent debris channels) or connectivity between perennial streams for these species. We do not believe that either alternative 2 or alternative 3 as currently proposed are sufficient to meet the needs of torrent salamanders. As written, and despite assertions to the contrary, it appears to us that stream dwelling amphibians are basically being treated as an incidental beneficiary of protections designed to protect fish.

It is also important to note that 58% of Columbia torrent salamander habitat and 63% of Cascade torrent habitat (as defined in the HCP) is located outside of the HCAs.⁶⁷ Therefore, since the majority of habitat for these species is located outside that HCAs, USFWS should rely on the HCAs to provide adequate protection for these species or to mitigate for the potential loss of existing torrent salamander habitat.

We recommend the Services and the Board do the following:

- **Utilize the proposed protections in Alternative 3 for non-fish bearing perennial streams and seasonal high energy/ debris flow streams.** There is strong support in the scientific literature for a minimum of at least 50 foot buffers on perennial streams to the perennial initiation point (PIP) to protect stream dwelling amphibians. We would

⁶⁶ DEIS at Appendix 3.6-A at page 15.

⁶⁷ Draft HCP at page 5-32.

recommend expanding the buffer to 20 meters (65.6 feet (slope distance)) where 80% of detectable torrent salamanders are found.⁶⁸

- **Assume that intermittent streams within the range of each torrent salamander represent suitable habitat:** The HCP did not model torrent salamander habitat. Instead it relied on an assumption that non-fish-bearing perennial streams within the range of each salamander represents suitable habitat.⁶⁹ This is a reasonable and appropriate assumption. However, based on the scientific literature absent surveys or modeling, it also is appropriate to assume that intermittent streams also represent suitable habitat and also important dispersal habitat to allow for gene flow between populations.
- **Add protections for seasonal streams:** We recommend at least a 35 foot buffer on all seasonal streams in order to support stream dwelling amphibians and facilitate over-ridge migration.
- **Add an “enhancement” objective for torrent salamanders:** The HCP includes “conserve, maintain and enhance” objectives for listed fish but only “conserve and maintain” objectives for torrent salamander habitat.⁷⁰ If torrent salamanders are going to be covered, the HCP should include meaningful enhancement objectives for these species.
- **The benefits of “leave trees” on seasonal streams should be more clearly defined:** The HCP is remarkably vague in terms of the likelihood of this benefit accruing, stating:

On seasonal streams that do not otherwise have a treed buffer, grouping leave trees around the junction of seasonal streams and perennial streams during timber harvest will retain locations where torrent salamanders are most likely to occur, even following harvest. This would not occur on every junction of this nature, but would occur as part of the normal variation of upland leave tree practices and be more prevalent within HCAs.⁷¹

If leave trees are going to count toward an ITP for torrent salamanders, the benefits to torrent salamanders must be more precisely prescribed and quantified. Otherwise there is no assurance that this benefit will actually accrue.

- **Talus fields—do not over-value them in the EIS analysis:** While we appreciate the protection of talus fields, we believe that the HCP overstates the importance of this landscape feature for this species.⁷²
- **Improve the EIS’s Effects Analysis:** The effects analysis in chapter 5 should better assess the potential negative impacts of very weak protections for seasonal streams and lack of

⁶⁸ HCPat page 4-16.

⁶⁹ HCP at page 2-57.

⁷⁰ Draft HCP at page 4-7.

⁷¹ Draft HCP at page 4-15.

⁷² Draft HCP at page 5-33

consideration of strategies of support dispersal and gene flow between populations. Overall the effects analysis appears much less robust than what was done for most other species covered in the HCP. It appears almost cursory to the point of feeling incomplete.

B. Terrestrial Species and Habitat

Under the proposed action (Alternative 2), ODF would designate 275,000 acres of terrestrial Habitat Conservation Areas (HCAs) to support the persistence of northern spotted owl, marbled murrelet, red tree vole, Oregon slender salamander, and coastal marten. These HCAs offer crucial long-term protections for imperiled fish and wildlife species and dedicated essential habitat in the face of climate change. These dedicated areas and related strategies need to be robust in nature, continuity, and size given the relatively fragmented and young condition of these state forests. We wish to see indications that these HCAs will be protected beyond the length of the permit term. As recognized in the DEIS and draft HCP, half of the tree stands on state forests are between 50-79 years, with the remainder being primarily younger than this and a very small percentage in age classes where old-growth structure is prominent.⁷³ The habitat effectiveness of these stands relies on their ability to age and mature. But as pointed out above in Section II(B) of these comments, nothing exists to ensure the long-term protection of these areas despite the federal HCP Handbook's direction for permanent protection of mitigation habitat.

Alternative 3, on the other hand, goes further to advance improved steep slope logging protections and attention to excessive road network impacts. We support these additional conservation measures for the wide array of benefits to aquatic habitat and species but are left wondering why Alternative 3 does not also propose additional protective measures for terrestrial species? As discussed above, the HCAs were not designed using a forward-looking approach and thus not large enough to account for future disturbances. Why, then, did the Services fail to consider an alternative that increased the size of the HCAs, increased habitat continuity, and reduced edge effects among other things?

Further, we have concerns regarding management options proposed within HCAs, including the possibility of heavy thinning, regeneration harvest, and "modified clearcut." While there are likely portions of the HCAs that are in plantations and for which some judicious management might increase habitat viability for the covered species, we are concerned that the menu of management options within the HCAs lack the sideboards needed to ensure conservation outcomes actually drive management, and that this goes largely unaddressed in the DEIS.

⁷³ DEIS at p. 3.5-1; draft HCP at p.2-30 (Figure 2-7)

1. Management in and out of HCAs

It remains controversial whether “restoration” logging within reserve designations (HCAs) will accomplish the goal of speeding stand development into mature or complex forest conditions needed for habitat.⁷⁴ Recent federal court cases have acknowledged the scientific controversy surrounding this issue.⁷⁵ This scientific controversy and the range of trade-offs related to managing and thinning mature forest stands, including flow issues and late-successional stand development that likely vary between upland stands and riparian stands, should be evaluated and included in the final EIS.

Further, the DEIS is missing a conversation about variable-density thinning (VDT). VDT can improve connectivity by enhancing foraging opportunities for dispersing predators such as spotted owls (and other raptors), marten, fisher, etc. Young and mid-seral forest may not provide ideal nesting/denning conditions but they often do provide for important dispersal functions. If these young and mid-seral forests are species-diverse and structurally complex, they are more likely to have healthy populations of small mammals, birds, and other prey species relied upon by predator species of concern.

2. Northern Spotted Owl

The USFWS listed the Northern spotted owl (*Strix occidentalis*) as threatened under the federal ESA in 1990 and, in 2020, issued a determination that an uplisting to endangered was warranted but precluded by higher-priority actions.⁷⁶ The Northern spotted owl’s continued decline in the 30 years since its listing provides ample reason for ESA uplisting but also serves as an indication that business-as-usual operations accompanied by previous conservation measures have failed to provide for the persistence or recovery of the species. If we hope to ensure persistence and recovery of the spotted owl, we have to be willing to embrace much more protective habitat conservation measures than to date. This urging to deviate from business-as-usual is not intended to exclude barred-owl removal actions, but unlike those who

⁷⁴ While there is some evidence that thinning can positively affect aspects of late-successional development, significant and consistent evidence of this type is generally lacking. This is especially true regarding the mid- and long-term impacts of thinning on the abundance and size of snags and downed wood. See Powers, M., and S. Wessell. 2016. “Management impacts and developmental patterns in mature Douglas-fir forests of the Pacific Northwest: An Annotated Bibliography;”; Reed, P. 2016. Reviewing the US Forest Service and Bureau of Land Management’s “mature stand thinning” bibliography.

⁷⁵ For example, the Ninth Circuit panel in a case challenging the Crystal Clear restoration project on the Mount Hood National Forest found that scientific controversy regarding whether thinning in older stands benefitted or detracted from habitat health and fire risk required the agency to revise its EIS. *Or. Wild v. BLM*, 2015 WL 1190131, *7, *9 (D. Or. March 14, 2015). In another case, the court held that the BLM improperly relied on limited science regarding commercial thinning in older stands, purportedly for restoration purposes, and that the unacknowledged scientific controversy required new NEPA analysis. *Bark v. USFS*, 958 F.3d 865 (9th Cir. 2020).

⁷⁶ USFWS, NSO WBP Finding, 85 FR 81144 (2020).

seem to view that action as the exclusive means to addressing spotted owl persistence, we believe the science clearly demonstrates it cannot be divorced from robust habitat protection.

The most recent 5-year meta-analysis of NSO population data documents a 2-5% annual decline, correlated in the contiguous Oregon Coast Ranges population unit with barred owl competition and, to a lesser degree, habitat loss due to logging or other management activities.⁷⁷ The study authors concluded “northern spotted owl populations potentially face extirpation if the negative effects of barred owls are not ameliorated **while maintaining northern spotted owl habitat across their range.**”⁷⁸ As ODF Board Member Brenda McComb pointed out during a recent public meeting, efforts to eliminate competition cannot be the only factor considered in spotted owl recovery.⁷⁹ Once you eliminate competition and increase survival, owls still need ample high quality habitat to survive.

Regarding threats posed by state-level management, USFWS recently found that “[o]n non-Federal lands, State regulatory mechanisms have not prevented the continued decline of nesting/roosting and foraging habitat; the amount of northern spotted owl habitat on these lands has decreased considerably over the past two decades, including in geographic areas where Federal lands are lacking.”⁸⁰

While we appreciate that almost half the permit area would be incorporated into HCAs with the purpose of providing—now or in future decades—functioning owl habitat, we remain concerned that the over 50% of non-HCA acres on ODF’s forests will be treated as de facto “sacrifice zones.” The HCP proposes that some 40% of non-HCA stands will be managed in such a way as to provide owl dispersal habitat, *i.e.*, by leaving some stands with at least 40% canopy cover.⁸¹ However, recent studies “recommend that the target for canopy cover in stands managed for dispersing spotted owls should be at least 80%.”⁸² Because this stand structure may not sufficiently provide for dispersal, the conservation value of the non-HCA lands may be lower than assumed.

We make the following specific recommendations regarding northern spotted owls:

- **Protect all 31 known northern spotted owl activity centers:** We are concerned that under the proposed alternative (Alternative 2), three of the thirty-one known spotted

⁷⁷ Alan B. Franklin et al., Range-wide declines of northern spotted owl populations in the Pacific Northwest: A meta-analysis. *Biological Conservation*. Volume 259, July 2021.

⁷⁸ *Id.* (emphasis added).

⁷⁹ Joint Board of Forestry and Forest Trust Land Advisory Committee (FTLAC) public meeting, April 27, 2022.

⁸⁰ USFWS, NSO WBP Finding, 85 FR 81144 (2020) at 81145.

⁸¹ Draft HCP at 4-85.

⁸² See Stan G. Sovern, Eric D. Forsman, Katie M. Dugger, Margaret Taylor. 2015. *Roosting Habitat Use and Selection By Northern Spotted Owls During Natal Dispersal*. *The Journal of Wildlife Management* 79(2):254–262; 2015; DOI: 10.1002/jwmg.834.

owl activity centers would not be protected. We are particularly concerned about the two activity centers with known active spotted owl pairs located outside the HCAs which represent 10% of the known active pairs within the permit area.⁸³ Given the dire circumstances faced by the spotted owl, we would strongly recommend that all 31 spotted owl activity centers be protected. Adding three additional centers will have minimal effects on the overall plan given its geographic scale and scope. We do not see a compelling reason to sacrifice three spotted owl activity centers.

- **Ensure that the increases in nesting and roosting habitat under the action alternatives exceed increases projected under the no action alternative:** We are concerned that while overall nesting and roosting habitat would increase over the life of the permit term under alternatives 3 and 4, it would increase less than under the no action alternative.⁸⁴ The DEIS justifies this situation by noting that the HCP provides more certainty since protection of spotted owl habitat under the No Action Alternative would only occur if spotted owls persist in that habitat, while under the action alternatives, protection is assured regardless of whether spotted owls persist or not. While this represents an important benefit, we would none-the-less still urge USFWS to require the State of Oregon to increase habitat protections for spotted owls such that increases in nesting and roosting habitat under the action alternatives exceeds the increases under the No Action Alternative.
- **Consider reducing the amount of suitable habitat outside of HCAs that is targeted for logging:** The HCP includes >250,000 acres of spotted owl habitat outside of HCAs that are expected to be harvested. We are particularly concerned about 35,200 acres of nesting and roosting habitat included within this figure.⁸⁵ This comprises approximately 28% of the nesting/ roosting habitat within the permit area.⁸⁶ USFWS should seriously consider whether more nesting and roosting habitat needs to be protected under this plan in order to ensure a net positive impact on spotted owls.
- **Address the potential for currently unknown spotted owl activity centers in the plan area:** We are concerned that while the plan focuses on the 31 known spotted owl activity centers in the plan area, ODF's take avoidance strategy has resulted in a situation where systematic surveys have not been conducted for spotted owls across all state forest lands. Instead ODF has only surveyed locations proposed for timber sales. This means that there may well be an unknown number of spotted owl activity centers that are currently not identified outside of the proposed HCAs. The agencies should address the potential that there will be significant undocumented take on lands outside

⁸³ Draft HCP at 5-57.

⁸⁴ Under the preferred alternative there would be 11% less late seral and old growth habitat in 2073 and 10% less later seral and old growth habitat in 2093 than under the no action alternative (see Table 2, Appendix 3.5).

⁸⁵ Draft HCP at Page 5-50.

⁸⁶ Draft HCP at page 5-57.

the HCA that have not been previously surveyed and describe how this is being mitigated.

- **Barred Owls:** The HCP is vague in terms of ODF’s commitment regarding barred owls.⁸⁷ The HCP should provide more specific information regarding the state’s commitments and the timeline on which they will occur. Also it is not clear what obligation the state has to continue funding barred owl research and management after the first twenty years of the permit. The HCP simply says that the efficacy of the funding will be evaluated and discussed in conjunction with USFWS.⁸⁸ It is important the USFWS have the ability to extend this funding commitment throughout the life of the HCP.
- **“Commitment” acres versus “projection” acres need more clarity:** The HCP differentiates between spotted owl habitat that the state is “committed” to maintaining during the permit term versus spotted owl habitat that it projects will be maintained over the permit term. The HCP also states that the projected acres above and beyond the commitment acres “are not considered excess acres that could be subject to more flexible, intensive, or revenue-driven management. ODF’s intent is to attain as much habitat as possible in HCAs, and management activities will be planned accordingly.”⁸⁹ While we appreciate this aspiration, it is not clear to us to what degree the projected acreage goals are enforceable over the term of the HCP. To what degree is the state obligated to achieve these projections? To what degree can the state simply change its mind about the management strategy for projected acres above and beyond commitment acres?
- **Logging in the HCA’s should be limited to existing younger plantations and be limited to activities that enhance the habitat value:** We question the benefits of logging in older habitat within the HCA and would urge USFWS to carefully consider whether the science supports the need for logging in order habitat areas to benefit listed species. We would note that in the draft Elliott HCP, logging within reserve areas is restricted to plantations <65 years in age.
- **Compliance Monitoring:** Compliance monitoring should include both committed and projected habitat acres.

3. *Marbled Murrelet*

In 2021, the Oregon Fish and Wildlife Commission uplisted the marbled murrelet (*Brachyramphus marmoratus*) from threatened to endangered under the State of Oregon ESA.

⁸⁷ Draft HCP at page 3-22.

⁸⁸ HCP at page 4-90.

⁸⁹ HCP at page 4-19.

This decision reflected the fact that despite nearly three decades of protection under the state and federal ESAs, the marbled murrelet has moved closer to extinction. In its status report written to inform the uplisting decision, ODFW noted the following:

“Based on Northwest Forest Plan estimates, higher-suitability nesting habitat declined in Oregon from approximately 853,400 acres in 1993 to 774,800 acres in 2012, a net loss of 78,600 acres (-9.2% change). Losses were greatest on nonfederal lands during this period; 59,200 acres (21.1%) of higher-suitability habitat were lost on nonfederal lands compared to 19,400 acres (3.4%) on federal lands...

The threat posed by inadequate state and federal programs and regulations has decreased since state listing of the Marbled Murrelet in 1995 and federal listing in 1992. For example, implementation of the Northwest Forest Plan greatly reduced the rate of habitat loss due to timber harvest on federal lands. Nonetheless, existing state and federal programs and regulations have failed to prevent continued high rates of habitat loss on nonfederal lands in Oregon.”⁹⁰

Betts et al. (2020) described murrelets as “squeezed” between two habitats under threat: loss of older forest habitat and warming ocean conditions.⁹¹

One of the goals of this HCP is to support the persistence of the murrelet, and the plan proposes to do so primarily through the mechanism of designating HCAs on state forests within the bird’s range. While state-owned land is crucial habitat for murrelet persistence, state-directed management of those lands has historically not prioritized conservation of them. Also, ODF has indicated that the HCP itself will provide *all* the conservation action it is going to take on its lands, including measures required as part of the Oregon Fish & Wildlife Commission’s decision to uplist the species under the Oregon ESA.⁹² Thus, it is imperative that the conservation planning incorporated into the HCP itself suffice to protect and enhance the species over the course of the permit term.

Specific concerns and recommendations regarding marbled murrelet protection includes:

- **Occupied sites are not fully identified:** As with northern spotted owls, ODF has taken a “take avoidance” approach to protecting marbled murrelets in which it conducts surveys only in areas proposed for timber sales. Systematic surveys have not been conducted throughout much of the covered area. Therefore it is not possible to accurately assess

⁹⁰ Status Review of the Marbled Murrelet (*Brachyramphus marmoratus*) in Oregon and Evaluation of Criteria to Reclassify the Species from Threatened to Endangered under the Oregon Endangered Species Act (January 2018) https://www.dfw.state.or.us/agency/commission/minutes/18/02_Feb/Exhibit_D/2%20ODFW%20Marbled%20Murrelet%20Status%20Review%201.18.18.pdf.

⁹¹ Betts MG, Northrup JM, Guerrero JAB, et al. Squeezed by a habitat split: Warm ocean conditions and old-forest loss interact to reduce long-term occupancy of a threatened seabird. *Conservation Letters*. 2020;13:e12745. <https://doi.org/10.1111/conl.12745>.

⁹² Draft HCP at page 1-11.

how many occupied stands are located outside that HCAs. USFWS should address the potential that a significant number of occupied stands may be left unprotected and describe how this is being mitigated.

- **All known occupied stands should be protected:** The HCP notes that of 363 known occupied stands, all but 4 are located within HCAs. We would recommend that all known occupied stands receive protection. We see no legitimate reason given the scope and scale of this HCP to leave any known stands unprotected.
- **All highly suitable habitat should be protected:** The HCP includes 388 acres of highly suitable murrelet habitat outside of HCAs, which are targeted for logging.⁹³ Given the State’s decision to recently uplist the species to endangered under its ESA, we strongly encourage USFWS to make protection of all highly suitable habitat a condition of the ITP.
- **“Commitment” acres versus “projection” acres need more clarity:** The HCP differentiates between marbled murrelet habitat that the state is “committed” to maintaining during the HCP permit term versus spotted owl habitat that it “projects” will be maintained over the permit term. The HCP also states the projected acres above and beyond the commitment acres “are not considered excess acres that could be subject to more flexible, intensive, or revenue-driven management. ODF’s intent is to attain as much habitat as possible in HCAs, and management activities will be planned accordingly.”⁹⁴ While we appreciate this aspiration, it is not clear to what degree the projected acreage goals are enforceable over the HCP term. To what degree is ODF obligated to achieve these projections? To what degree can it change its mind about the management strategy for projected acres above and beyond commitment acres?
- **Survey for marbled murrelets in suitable and highly suitable habitat outside of HCA’s and protect marbled murrelet stands if occupancy by marbled murrelets is confirmed:** While we recognize that one of the goals of the HCP is to provide certainty to the state regarding areas that must be protected versus areas that can be harvested, we believe that the recent uplisting of the murrelet from threatened to endangered under the State ESA speaks to the urgent need to protect all remaining occupied marbled murrelet stands. As the HCP notes, the most effective way to ensure that marbled murrelets persist is to conserve currently occupied habitat.⁹⁵ Given the relative scarcity of suitable and highly suitable marbled murrelet habitat on the lands covered by this HCP, we would urge the Services to consider a strategy that in addition to the HCAs also requires surveys of suitable and highly suitable habitat outside of the HCAs and protection of stands in which marbled murrelets are confirmed.

⁹³ Draft HCP at page 5-71.

⁹⁴ HCP at page 4-22.

⁹⁵ HCP at page 4-20.

- **Logging in HCA's should be limited to existing younger plantations and activities that enhance habitat value:** We question the benefits of logging in older habitat within the HCAs and urge USFWS to carefully consider whether the science supports the need for logging in order habitat areas to benefit listed species. We would note that in the draft Elliott HCP, logging within reserve areas is restricted to plantations <65 years in age.
- **Concerns about front loading of logging in suitable habitat outside of HCAs:** The HCP acknowledges that logging in suitable habitat outside the HCAs is frontloaded, stating, "While harvest of marbled murrelet habitat will occur over the entire 70-year permit term, approximately 50% of projected habitat modification (55,066 acres) will occur within the first 20 years of plan implementation, and approximately 90% (98,593 acres) will occur within the first 40 years."⁹⁶ This is of concern for two reasons. First, there is potential for habitat loss to outpace habitat gain for murrelets. Second, the State previously committed to an HCP for the Elliott State Forest but withdrew from it after taking all of the spotted owls allotted under the ITP. This HCP/ ITP must ensure that benefits accrue prior to losses such that a net gain is realized throughout the entire duration of the HCP term.
- **Compliance Monitoring:** Compliance monitoring should include both committed and projected habitat acres.

C. East Hakki Ridge

East Hakki Ridge is a parcel that is part of the Elliott State Forest. It is included in the Western Oregon Forest HCP because the state illegally sold the parcel to timber interests and subsequently had to reclaim the parcel. As a result, the parcel was not included in the plan currently under development for the Elliott State Research Forest (ESRF). However, it is anticipated that East Hakki Ridge will be reintegrated into the Elliott over the course of the next year.⁹⁷ The current allocation of uses shown in the Maps in Appendix F (Habitat Conservation Area Maps, Coos District⁹⁸) shows much of this sub watershed scheduled for logging. We would strongly recommend that the entire sub watershed be shown as an HCA. This parcel is contiguous with the ~34,000 acre ESRF Conservation Reserve Watershed Area and should be managed consistent with the CRW once it is integrated back into the Elliott. The WOSF HCP should be consistent with this future management strategy rather than showing the parcel as a mix of reserves and active harvest areas. Further, surveys have shown that this sub watershed is occupied by marbled murrelets and also contains portions of two spotted owl activity centers.

⁹⁶ Draft HCP at page 5-71.

⁹⁷ Personal communications with Geoff Hunnington, Oregon Division of State Lands, as well as public statements made by State of Oregon Staff at Elliott State Research Forest Meetings.

⁹⁸ East Hakki Ridge is the parcel located at the top left of the page closest to Reedsport.

D. Data Gaps and Uncertainty

The pre-eminent national scientific review of HCPs found that: when basic data on species, their conservation needs, resulting levels and impacts of “take,” and other considerations are unavailable, data gaps should be filled *prior* to developing HCPs; fewer data gaps should be allowed with plans covering larger areas, longer time frames, irreversible impacts, or multiple species; if HCPs proceed in the absence of needed data, then approaches which provide greater levels of certainty for the species should be used; and managers should adopt risk-averse strategies in the face of uncertainty.⁹⁹

The federal HCP Handbook says:

“A key factor in determining whether to cover a species is how much is known about the species. If there is not enough information available . . . to develop a conservation strategy for a particular species, choosing not to cover the species may be best. In this case, take of an ESA-listed species must be avoided or the permit cannot be issued as it will be difficult to understand the impacts of the taking, and it will be difficult to develop a conservation strategy that will mitigate those impacts. Another key factor is whether the species occurs in the permit area. If there is not enough information available to determine if one of the covered species occurs within the plan area or not, there is unlikely to be sufficient information for an adequate effects analysis, which are required contents of an HCP, National Environmental Policy Act (NEPA) document, and Section 7 analysis. An additional consideration is the option of including species that do not currently occur in the plan area, but are reasonably likely to move into and occur in the area during the life of the plan, *e.g.*, due to a range shift related to climate change effects or for other reasons.”¹⁰⁰

Because there is a lack of accurate or reliable population data or unavailability of habitat modeling for some of the species proposed for coverage by this HCP (discussed further below), efforts must be made to fill those data gaps before the HCP can be finalized.

And, given data gaps or inadequacy, more attention is needed in this HCP around approaches that increase certainty for species and reduce risk in the face of uncertainty based on data unavailability. We believe this argues for a 50-year (Alternative 4) rather than 70-year permit term. Further, this supports adoption of conservation measures in Alternative 3 related to reducing risk from management actions related to steep slopes and landslides, as well as prioritizing and better addressing road system concerns that are bound to only grow worse in the face of climate change and ODF’s inadequate funding levels for adequately maintaining the current system.

⁹⁹ Kareiva, Peter, et al. (1999) *Using Science in Habitat Conservation Plans*. National Center for Ecological Analysis & Synthesis, Santa Barbara, CA, and the American Institute of Biological Sciences, Washington, D.C.; HCP Handbook, pp. 10-27 – 10-28.

¹⁰⁰ HCP Handbook, p. 7-3.

As noted above in our Aquatic Species and Habitat comments (Section II(A)(1 and 2), the draft EIS provides substantial analysis indicating concern over steep slope and landslide risk under the status quo (No Action Alt.) and preferred alternative (Alt. 2), as well as road-system-related concerns. But the EIS should better analyze ODF's financial ability to maintain the current road densities on state forest lands, support the proposed increases under Alternative 2, and the consequences of trying to do so to hydrology, water quality, and related aquatic concerns.

1. Eulachon

According to commercial catch data, the eulachon catch "declined from 2.1 million pounds annually from 1938–1989 to 5,000 pounds in 1999."¹⁰¹ This is a massive decline and a real emergency.

The draft HCP provided conclusory and not particularly compelling statements regarding whether eulachon might be present in the plan area. ODF has determined that based on the location of critical habitat, eulachon are "unlikely" to reside within the HCP's geographical boundaries.¹⁰² In addition, the draft HCP noted that there is a Washington Department of Fish and Wildlife monitoring site for eulachon across the Columbia River from ODF lands but did not mention what data had been collected there or why that would help ODF determine whether eulachon are present in the permit area.

The draft EIS, on the other hand, states that "[e]ulachon spend a significant portion of their life history in the plan area" and would thus be impacted by ODF's management activities and conservation measures.¹⁰³ Further, ODF remains responsible for downstream impacts its practices might have on the species and should assess the cumulative impacts its actions may have on eulachon.

As the draft HCP states:

"The current abundance of eulachon is low and declining in all surveyed populations throughout the DPS (NMFS 2011). Eulachon populations spawning in the Klamath River, lower Columbia River Basin, and Fraser River have declined substantially, and the southern DPS will likely become endangered in the foreseeable future if ongoing threats are not addressed (NMFS 2011). Past and ongoing federal, state, and local protective efforts (many of them habitat-based) have contributed to the conservation of the southern DPS, but these efforts alone do not sufficiently reduce the extinction risks faced by the southern DPS (NMFS 2011)."¹⁰⁴

¹⁰¹ Draft HCP at C10-5.

¹⁰² Draft HCP at C10-2.

¹⁰³ Draft EIS at 3.6-13.

¹⁰⁴ Draft HCP, p. C10-5.

Given the lack of certainty as to its distribution or occurrence in the permit area and significant population declines, further monitoring and data collection should be conducted to inform both the analysis in the EIS and ODF's management scheme.

2. Coastal Marten

The Coastal/Humboldt marten (*Martes caurina humboldtensis*) is a stealthy, mid-sized forest carnivore related to minks and otters that lives in coastal old-growth forest and dense coastal shrub. The species has experienced an overall range decline of 95 percent and there are only four known populations of Humboldt martens, one in central coastal Oregon, one in southern coastal Oregon, one in California near the Oregon border, and one in northern California. Each of the surviving populations is estimated to consist of fewer than 100 individuals per population. The coastal marten is threatened by multiple factors which include trapping, vehicle mortality, habitat loss and fragmentation, population isolation, predation, wildfire, poisoning, and global climate change. The marten recently received protection under the federal ESA, but is currently unprotected by Oregon law.

The body of science around coastal marten and their habitat needs is evolving as ongoing research adds to the knowledge base. A recent study painted a dark picture, finding that the probability of coastal marten extirpation within 30 years increased dramatically when two or more human-induced marten mortalities in declining population sizes were assumed.¹⁰⁵ Another study supported this finding, suggesting that “[i]f two or three Humboldt marten die per year . . . the probability of that subpopulation’s extinction within 30 years is 32 to 99 percent, respectively.”¹⁰⁶

In the draft HCP, a habitat model was not developed because the data are too limited and/or habitat conditions studied for coastal marten were not analogous to covered state forests, assuming “that all of the permit area from the northern boundary of Lane County south to the California border and west of Interstate 5 could provide suitable habitat for coastal marten.”¹⁰⁷

Per the DEIS, “ODF has not conducted harvest activity in areas within the coastal marten’s range since the species’ listing in October 2020, so ODF has not conducted field surveys or

¹⁰⁵ Linnell, et al., Density and population viability of coastal marten: a rare and geographically isolated small carnivore (2018) at 13 (“Based on the small number of individuals in these subpopulations, our projections suggest that even a small amount of human-caused mortalities will strongly increase the likelihood of extirpation over the next 30 years. Further, our analysis is likely an optimistic scenario for marten population viability because we assumed that marten populations would exhibit very high survival and fecundity at low population densities, which may not be the case. Despite these favorable assumptions, marten population viability was low given modest mortality estimates averaging 2–3 individuals annually, even when assuming higher than observed carrying capacities and assuming later onset of density dependence[.]”).

¹⁰⁶ Moriarty, Searching for Martens in Central Oregon (2019) at 2.

¹⁰⁷ Draft HCP 2-56 – 2-57.

developed a specific management protocol for coastal marten.”¹⁰⁸ However, the historical range of the marten includes the Coast Range north to the Columbia River, and expansion of the species to its historical home range likely requires establishment in the state forests of the Coast Range.¹⁰⁹

Despite the uncertainty surrounding the coastal marten’s presence and habitat needs and recent studies showing significant population impacts with only one or two deaths, the Services did not evaluate an alternative that would exclude the species from ITP coverage in detail because that alternative would “not fully respond to the applicant’s request for ITP coverage for the covered species included in the HCP.”¹¹⁰

Please include the best available science and evaluate the proposed alternatives within that framework. We request that a survey protocol be established to ensure adequate information about the coastal marten’s location informs the HCP/ITP.

3. Red Tree Vole

The tree vole is both closely associated with old forests and highly sensitive to forest fragmentation from clearcutting, placing it at immediate risk of extinction. Following a legal challenge from some of the commenters, U.S. Fish and Wildlife Service is now reconsidering whether red tree voles on Oregon’s North Coast need protection under the Endangered Species Act. The Service has until January 31, 2024, to make a decision.

Despite the fact that the tree vole was found to be at risk of extinction and that lack of protection on state lands was a primary basis for the warranted finding,¹¹¹ ODF took no action to protect or even survey for tree voles from 2011 to the present when it is now applying for a permit to take the species. The WOSF HCP acknowledges that “current knowledge of this species presence is limited within the permit area.”¹¹² This lack of knowledge is concerning because of the species’ limited ability to disperse to new areas, particularly when the forest is fragmented by clearcutting. Without more information and knowing some proportion of tree vole habitat will likely be lost to fire, how can the Services have confidence concluding the logging allowed under the WOSF HCP will not jeopardize the tree vole or that the HCAs will be sufficient to ensure the tree voles’ survival? We assert that, at minimum, pre-disturbance surveys are needed to increase the knowledge base about the red tree vole and allow the Services to fully evaluate habitat set-asides.

¹⁰⁸ Draft EIS 2-2.

¹⁰⁹ Kantor, Sylvia; Moriarty, Katie. 2019. Searching for Martens in Coastal Oregon. Science Findings 215. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 5 p.

¹¹⁰ Draft EIS 2-13.

¹¹¹ 76 FR 63720; 76 FR 63735.

¹¹² Draft HCP 6-38.

IV. HCP/EIS and the Climate Crisis

On April 22, 2022, President Biden issued an executive order (EO) declaring a policy to conserve mature & old-growth forests on federal land and to manage forests to retain and enhance carbon storage. The EO states:

Sec. 1. Policy.

Strengthening America’s forests, which are home to cherished expanses of mature and old-growth forests on Federal lands, is critical to the health, prosperity, and resilience of our communities Forests provide clean air and water, sustain the plant and animal life fundamental to combating the global climate and biodiversity crises, and hold special importance to Tribal Nations. ... Conserving old-growth and mature forests on Federal lands ... is critical to protecting these and other ecosystem services provided by those forests. ... We can and must take action to conserve, restore, reforest, and manage our magnificent forests ... It is the policy of my Administration, ... to ... conserve America’s mature and old-growth forests on Federal lands ...

...

Sec. 2. Restoring and Conserving the Nation’s Forests, Including Mature and Old-Growth Forests.

My Administration will manage forests on Federal lands, which include many mature and old-growth forests, to promote their continued health and resilience; retain and enhance carbon storage; conserve biodiversity ...¹¹³

The EO also calls for an inventory of mature & old-growth on federal land, an analysis of threats to mature & old-growth forests, and development of policies to address those threats. Federal agencies making decisions about forest management do not need to wait for these steps to take action to protect valuable forest habitat.

While the EO applies to federal land management, it appropriately thrust forest protections into the forefront of the global climate crisis conversation. The guiding principle of conserving and protecting critical mature and old growth forest habitat to better our chances of avoiding the worst impacts of the climate crisis should be consulted in the course of NMFS’ analysis of ODF’s proposal--arguably even more so given the relatively small proportion of critical mature and old growth forest that remains on state-managed lands.

The HCP proposes site-specific evaluation by ODF staff prior to logging in order to locate and protect old growth stands (>175 years) from the surrounding clearcuts.¹¹⁴ However, ODF already knows where most if not all remaining old growth patches exist on its lands. Remaining

¹¹³ Biden, J. 2022. Executive Order on Strengthening the Nation’s Forests, Communities, and Local Economies. APRIL 22, 2022. PRESIDENTIAL ACTIONS <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/04/22/executive-order-on-strengthening-the-nations-forests-communities-and-local-economies/> (emphasis added).

¹¹⁴ *Id.*; DEIS 2-10 (Conservation Action 8).

mature and old growth patches can and should be disclosed in the HCP, mapped now, and analyzed in relation to proposed HCAs in the final EIS so NMFS can determine whether the HCP's proposed habitat protections are adequate and follow the intent of the EO.

A. HCP's Impact on Carbon Emissions, Sequestration and Storage

The Ninth Circuit established a rule in *Hapner v. Tidwell* that NEPA analyses must consider a project's "impact on global warming in proportion to its significance."¹¹⁵ As it is increasingly clear that the temperate rainforests of Oregon play a globally important role in regulating the carbon cycle, the DEIS should devote more attention and analysis to this issue.

Despite the importance of the HCP's intersection with climate change, fewer than three pages of the DEIS discuss the HCP's impacts on carbon emissions, sequestration, and storage. The key to taking a hard look at environmental impacts is the mutual sharing of high-quality information between the public and the action agency.¹¹⁶ The DEIS's extremely brief, generalized "analysis" does not take the necessary hard look at this urgent environmental issue and misses some critical points. **We ask that the final EIS include more discussion and analysis about the HCP's long-term impacts of carbon emissions, sequestration, and storage.**

In its brief analysis, the DEIS acknowledges that both the amount of carbon emitted and the amount sequestered and stored in trees, vegetation, and soil will vary in each alternative depending on the amount of timber harvest, vegetation removal, and soil disturbance, with "timber harvest being the primary driver" of that difference.¹¹⁷ Despite acknowledging that different alternatives lead to differences in emissions and sequestration, the DEIS failed to analyze the impact of these differences over time, instead broadly concluding that "under all alternatives for all analyzed years, the plan area would sequester much more carbon than quantified covered activities would emit."¹¹⁸ The DEIS continues, "Therefore the proposed actions and alternatives would not contribute to climate change and this impact would not be adverse."¹¹⁹ This is an internal inconsistency – as the different alternatives result in different levels of sequestration and storage then the actions that sequester and store less carbon over time will, of course, contribute to more GHG in the atmosphere, thus aiding climate change.¹²⁰

The Oregon Global Warming Commission states in its 2018 Forest Carbon Accounting Project Report: "Based on credible evidence today, forest harvest does not appear to result in net

¹¹⁵ 621 F.3d 1239, 1245 (9th Cir. 2010).

¹¹⁶ *League of Wilderness Defenders/Blue Mtns. Biodiversity Project v. Connaughton*, 752 F.3d 755, 761 (9th Cir. 2014).

¹¹⁷ DEIS at 3.14-2.

¹¹⁸ *Id.*

¹¹⁹ *Id.*

¹²⁰ See Table 1 at DEIS Appendix 3.14, p. 3.

carbon conservation when compared to carbon retention in unharvested forests . . . Current analysis suggests that treatments which include medium to heavy thinning result in reduced carbon stores that do not recover in any meaningful time periods.”¹²¹ This is supported by recent research showing that growing existing forests intact to their ecological potential—termed *proforestation*—is the most effective, immediate, and low-cost approach that could be mobilized across suitable forests of all types.

For example, a study of 48 undisturbed primary or mature secondary forest plots worldwide found, on average, that the largest 1% of trees [considering all stems ≥ 1 cm in diameter at breast height (DBH)] accounted for half of above ground living biomass.¹²² Each year a single tree that is 100 cm in diameter adds the equivalent biomass of an entire 10–20 cm diameter tree, further underscoring the role of large trees. Intact forests also may sequester half or more of their carbon as organic soil carbon or in standing and fallen trees that eventually decay and add to soil carbon. Some older forests continue to sequester additional soil organic carbon and older forests bind soil organic matter more tightly than younger ones.¹²³

The Pacific Northwest’s high-productivity, low-vulnerability forests have the potential to sequester up to 5,450 Tg CO₂ equivalent (1,485 Tg C) by 2099, which is up to 20% of the global mitigation potential previously identified for all temperate and boreal forests, or up to ~6 yr of current regional fossil fuel emissions.¹²⁴ Additionally, these forests currently have high above- and belowground carbon density, high tree species richness, and a high proportion of critical habitat for endangered vertebrate species, indicating a strong potential to support biodiversity into the future and promote ecosystem resilience to climate change. Preserving high-carbon-priority forests avoids future CO₂ emissions from harvesting and mitigates existing emissions through carbon sequestration. None of this information was sufficiently analyzed in the DEIS.

The NEPA analysis must avoid minimizing the contributions of ODF’s forest management to carbon emissions and global warming by saying the effects of the various alternatives would be negligible on a global scale. This is not an appropriate framework. Global climate change and ocean acidification are the result of the cumulative effects on the global carbon cycle which is spatially distributed. There is no single culprit, nor is there a silver bullet solution. All emissions are part of the problem, and all land management decisions must be part of the solution. Since the global carbon cycle is spatially distributed, carbon storage and carbon emissions will always be spread out around the globe and the carbon flux at any given place and time may appear small, but *cumulatively* they help determine the temperature of our climate and the pH of our oceans. Given the current carbon overload in the atmosphere and oceans, the carbon consequences of every project must be carefully considered (rather than dismissed).

¹²¹ [Oregon Global Warming Commission's Forest Carbon Accounting Project Report](#)

¹²² Polly C. Buotte, Beverly E. Law, William J. Ripple, Logan T. Berner. Carbon sequestration and biodiversity co-benefits of preserving forests in the western USA. *Ecological Applications*, 2019; DOI: [10.1002/eap.2039](https://doi.org/10.1002/eap.2039)

¹²³ *Id.*

¹²⁴ *Id.*

Even if the HCP is fairly carbon neutral, Oregon's temperate coastal rainforests have the capacity to be one of the world's best carbon stores.¹²⁵ Adopting a plan that results in this natural carbon sink becoming a carbon neutral ecosystem robs us of an essential tool for mitigating the worst extent of climate change. Think of this as an opportunity cost; not only do logged trees emit much of their stored carbon, they no longer can sequester and store carbon.¹²⁶ The forest's natural ability to remove carbon from the atmosphere has to be considered in terms of the *global* GHG balance, not just the impact of the GHG emissions of the planned activities. The Final EIS should include a more comprehensive description of the impacts of each alternative on the regional and global carbon flux.

B. Impact of Climate Change on Species Covered by HCP

The DEIS contains very detailed descriptions of how the changing climate will adversely affect habitat for all the species covered in the HCP.¹²⁷ Climate change and biodiversity should be examined together as parts of the same complex problem when developing climate mitigation and adaptation plans.¹²⁸ The IPCC AR 6 report confirms the findings of a growing body of research that maintaining ecological integrity for biodiversity is essential to address climate change effectively.¹²⁹

The DEIS Appendix 3.2 lays out a chilling view into our climate-uncertain future, clearly and concisely noting that both large-scale disturbances and localized changes will have major impacts on the ecology and hydrology of western Oregon. In sum, Appendix concludes:

“climate change is forecast to reduce the resilience of forests to all forms of stress, particularly those associated with heat and drought, leading to reduced growth and increased vulnerability to stress-related disturbances such as pathogens and insect attack. Drought stress also increases vulnerability to severe fire because temperature, humidity, and fuel moisture loadings under drought conditions are conducive to ignition and rapid spread of fire. Climate change forecasts also predict more frequent

¹²⁵ Land use strategies to mitigate climate change in carbon dense temperate forests. Beverly E. Law, Tara W. Hudiburg, Logan T. Berner, Jeffrey J. Kent, Polly C. Buotte and Mark E. Harmon, PNAS, March 19, 2018. 201720064; published ahead of print March 19, 2018. <https://doi.org/10.1073/pnas.1720064115>

¹²⁶ While long-lived wood products store some of the carbon from the tree from whence they came, most timber does not end up in long-lived wood products.

¹²⁷ See DEIS Appendix 3.2, Disturbance and Climate Change.

¹²⁸ Law et al. 2021; Law et al. 2018; Buotte et al. 2020.

¹²⁹ IPCC. 2022. Summary for Policymakers [H.-O. Pörtner, D.C. Roberts, E.S. Poloczanska, K. Mintenbeck, M. Tignor, A. Alegría, M. Craig, S. Langsdorf, S. Lössche, V. Möller, A. Okem (eds.)]. In: *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Lössche, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press.

occurrences of extratropical cyclones and thus increased risks of blowdown, flooding, and associated disturbances such as shallow-rapid landsliding and modification of stream channels.”¹³⁰

The DEIS also notes that a measurable increase in disturbances of all kinds that meet or exceed previous conditions can be expected by halfway through the analysis period. Substantial further increases in both disturbance frequency and severity can be expected by the end of the analysis period.¹³¹ In short, climatic and habitat conditions are getting bad and they could become exponentially worse during the life of the HCP. However, the DEIS seems to have done little to weave the wealth of information included in Appendix 3.2 into its analysis.

1. Assurances and Adaptive Management

The DEIS is missing an in-depth review of whether the assurances and adaptive management included in the HCP would be effective at maintaining suitable habitat for both terrestrial and aquatic species throughout its term. In a time of vast uncertainty, being tied into a 50-70 year plan seems like a risky decision for the species, especially in light of the federal “No Surprises Regulation.” This regulation provides assurances to Section 10 permit holders that “no additional mitigation in the form of money, water, or land, or restrictions of land or water will be required should unforeseen circumstances arise once the permit is in place” unless the plan is amended.¹³² As this is the case, the Services must evaluate whether this HCP is sufficient to ensure species survival in a very unpredictable time.

Instead of an in-depth review of whether the HCP is robust enough to protect species in a changing climate, the DEIS concludes very generally that:

“ODF would also implement adaptive management strategies in response to changes in certain baseline conditions, including stream temperature changes and the spread of aquatic invasive plants. . . These responses include restoration actions, species management actions, and implementing additional protective measures in streams. These monitoring, adaptive management, and response commitments *are anticipated to benefit covered salmonids in the permit area by protecting habitat. . .*”¹³³

The use of passive voice in this conclusion is particularly worrisome. Who is anticipating these measures will be beneficial? And by “beneficial” does this mean the species will persist over time, or just that they would do better with an HCP than without it? While we appreciate the

¹³⁰ DEIS at 3.2-2.

¹³¹ Id.

¹³² Draft HCP at 7-1.

¹³³ DEIS at 3.6-12.

protections in the HCP, they are not sufficient if the species “benefit” by going extinct in 40 years instead of 20.

2. Climate and Aquatic Species and Habitat

Given that ten of the covered species are fish, climate-induced changes to water quality and quantity are particularly troubling. In particular, the DEIS predicts that reduced streamflows and increased stream temperatures will reduce habitat quality for stream dependent species and sometimes exceed stream temperature lethal limits for salmon and other fish. Harmful algal blooms will become more widespread, severe, and frequent. Crowding and warm temperatures are also conducive to the rapid spread of infectious disease among migrating salmon. Greater prevalence of warm water fish species will increase competition and predation for native fish species.¹³⁴

This sounds dire. Indeed, the HCP recognizes that, “based on climate change model scenarios **water temperature in streams and rivers can be expected to increase on average by 2°F and 3.5°F** by 2040 and 2080, respectively.”¹³⁵ This prediction is followed by a list of actions that ODF *may* take that minimally improve upon the status quo, accompanied with no analysis as to whether the HCP will actually mitigate these temperature increases likely to be lethal to listed fish. How can these “assurances” ensure that salmonids will survive these changing conditions, especially as the HCP unreasonably limits future “changed circumstances”?

A recent California case discussed the government’s failure to take a hard look at how a changing climate exacerbates the adverse impacts of the proposed project.¹³⁶ The court found that failure to consider the impacts of climate change is a “failure to consider an important aspect of the problem” facing the proposed action.¹³⁷ In this instance, the DEIS did disclose the expected impacts of the changing climate, but it seems not to have sufficiently analyzed how these changes will exacerbate the adverse impacts of the logging, road building and other activities covered by the HCP.

We request that the FEIS include analysis that demonstrates the mitigation measures in the aquatic “assurances” are indeed sufficient to protect and restore the covered salmonid species. We also ask that you consider comparing those assurances to a recent study that found un-managed stands significantly increase the amount of water flow in western Oregon forests.¹³⁸ This study showed that, relative to mature and old-growth forest dominated by Douglas-fir and

¹³⁴ DEIS Appendix 3.2 at pp.13-14.

¹³⁵ Draft HCP at 7-8.

¹³⁶ *AquAlliance v. U.S. Bureau of Reclamation*, 287 F.Supp.3d 969, 1028 (E.D. Cal. 2018).

¹³⁷ *Id.* at 1032 (citing *Wild Fish Conservancy v. Irving*, 221 F.Supp.3d 1224, 1233 (E.D. Wa. 2016)).

¹³⁸ Perry, T. & Jones, J., Summer streamflow deficits from regenerating Douglas-fir forest in the Pacific Northwest, USA, *Ecohydrology*. 2017;10:e1790. <https://doi.org/10.1002/eco.1790>

western hemlock or mixed conifers, forest plantations of native Douglas-fir produced summer streamflow deficits within 15 years of plantation establishment, and these deficits persisted and intensified in 50-year-old forest stands. These findings have “profound implications for understanding of the effects of land cover change, climate change, and forest management on water yield and timing in forest landscapes.”¹³⁹

Reduced summer streamflow has potentially significant effects on aquatic ecosystems. Summer streamflow deficits in headwater basin may be particularly detrimental to anadromous fish, including steelhead and salmon, by limiting habitat, exacerbating stream temperature warming, and potentially causing large-scale die-offs.¹⁴⁰ This paired basin study permits researchers to distinguish forest management from climate change effects on streamflow.¹⁴¹ Long-term paired-basin studies extending over six decades revealed that the conversion of mature and old-growth conifer forests to plantations of native Douglas-fir produced persistent summer streamflow deficits of 50% relative to reference basins, in plantations aged 25 to 45 years. The result of this study challenges the widespread assumption of rapid “hydrologic recovery” following forest disturbance. Widespread transformation of mature and old-growth forests may contribute to summer water yield declines over large basins and regions around the world, reducing stream habitats and sharpening conflict over uses of water.¹⁴² The Services should include this information and analysis in the final EIS.

The DEIS also fails to include any discussion of restoring beavers--a keystone species that offers widely recognized ecological, economic, and social benefits as an aquatic habitat engineer. Beaver-created and maintained habitat improves water quality, decreases the impacts of floods, and restores natural water flows. This benefits humans and a wide variety of fish and wildlife, including highly endangered coho salmon, as detailed in the following plans and guidelines:

[ODFW Guidelines for Relocation of Beaver in Oregon](#)
[The Beaver Restoration Guidebook - U.S. Fish and Wildlife Service](#)
[OFWO - Beaver Restoration](#)
[Beaver Restoration Toolbox](#)
[MidCoast Watersheds Council: Beaver Outreach & Education Materials](#)

While not an HCP covered species, beavers play an important role in improving Oregon’s water security and minimizing impacts of climate change on ESA-relevant imperiled species and their habitat. Beavers, their effects (and the proposed HCP’s effects on them should be evaluated in the final EIS.

¹³⁹ Id. at 8.

¹⁴⁰ Id. at 10.

¹⁴¹ Id at 11.

¹⁴² Id.

3. Climate and Terrestrial Species and Habitat

Regarding future climate change impacts on terrestrial species, it is unclear that the forests of 50-70 years from now will resemble current forests at all. As noted in the DEIS, climate change increases the frequency, severity, and extent of disturbances, particularly drought, fire, and invasive species. These disturbances have the potential to cause rapid ecological change at landscape scales, such as a transformation from one forest type to another.¹⁴³ Because of climate change, tree growth is likely to decrease. In particular, Douglas-fir growth is predicted to decrease where it is already water limited, which includes most of the plan area.¹⁴⁴ In short, the future holds both more stressed forests and more severe disturbances, which could transition the entire plan area into a different biome.

C. Forest Management and Fire

One major cause of ecotype transitions will be fire. As the DEIS notes, there is a long history of stand replacing fires in the wet forests of Oregon, driven by drought and wind. While most fires burn a very small amount of acreage, these wind-driven fires are the cause of the vast majority of burned forests, indeed only seven fires caused 58% of the burned area analyzed in the DEIS.¹⁴⁵ The fires that have the most impact are the same ones that do not change behavior because of land management practices. In addition, these highly predictable large fires were not included in the HCP's predicted "changed circumstances," which renders the HCP's Assurances around protecting an adequate amount of forest habitat from disturbance rather meaningless.

Thus, the DEIS falls short in its statement, "[t]here are numerous adaptation options for responding to climate change, which could minimize adverse effects. Resilience to drought, fire, insects, and pathogens can be increased by thinning, use of prescribed fire, and planting drought-resistant ecotypes."¹⁴⁶ While these are land management practices that might help some ecosystems become more resilient to climate change, the first two are not an appropriate suite of activities for increasing the resilience of Coast Range and other western Oregon forests.

First, there is scientific controversy regarding fire risk inherent in rotational harvest management proposed outside of HCAs that should be taken into account. The Services should include discussion of the findings of the following research and decisions in the final EIS:

¹⁴³ DEIS at 3.2-12.

¹⁴⁴ DEIS at 3.2-13.

¹⁴⁵ *Id.* at 6.

¹⁴⁶ *Id.* at 14.

- Zald and Dunn 2018 - Severe fire weather and intensive forest management increase fire severity in a multi-ownership landscape¹⁴⁷
- Bradley et al 2016 - Does increased forest protection correspond to higher fire severity in frequent-fire forests of the western United States?¹⁴⁸
- Stone et al 2008 - Forest Harvest Can Increase Subsequent Forest Fire Severity¹⁴⁹
- González-Cabán, Armando 2008 - Proceedings of the second international symposium on fire economics, planning, and policy: a global view¹⁵⁰
- Franklin et al. 2006 - Simplified Forest Management To Achieve Watershed And Forest Health: A Critique.¹⁵¹
- Countryman, C.M. - Old-growth conversion also converts fire climate.¹⁵²
- *Miller v. Mallery*, 410 F.Supp. 1283, 1294-1296 (D. Or 1976).

And, the best available science does not support fuel treatments in wet westside forests as means to minimize the effects of wildland fire. The most comprehensive review of whether dry forest fuels treatments worked in wet forests concluded decisively that they did not:

“Wet forests with natural stand-replacing fire regimes are inherently resilient to severe wildfires; therefore, it is difficult to “increase” their long-term resilience through vegetation treatments commonly used in dry forests, such as fuel reduction and fire management.”¹⁵³

As such, thinned & treated stands will not improve fire resilience and the final EIS should be updated to reflect the research. We expand on thinning and post-fire logging in the sections below.

¹⁴⁷ https://www.researchgate.net/publication/324786837_Severe_fire_weather_and_intensive_forest_management_increase_fire_severity_in_a_multi-ownership_landscape

¹⁴⁸ <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/ecs2.1492>

¹⁴⁹ Carter Stone, Andrew Hudak, Panelope Morgan 2008. Forest Harvest Can Increase Subsequent Forest Fire Severity. PSW-GTR-208, pp 525-534.

¹⁵⁰ https://www.fs.fed.us/psw/publications/documents/psw_gtr208en/psw_gtr208en_525-534_stone.pdf, In González-Cabán, Armando, tech. coord. 2008. Proceedings of the second international symposium on fire economics, planning, and policy: a global view. Gen. Tech. Rep. PSW-GTR-208, Albany, CA: Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture. 720 p.

¹⁵¹ Jerry Franklin, David Perry, Reed Noss, David Montgomery, Christopher Frissell. Simplified Forest Management To Achieve Watershed And Forest Health: A Critique. National Wildlife Federation.

<https://web.archive.org/web/20061008082841/http://www.coastrange.org/documents/forestreport.pdf>

¹⁵² Countryman, C.M. 1955. Old-growth conversion also converts fire climate. Fire Control Notes 17(4): 15-19. https://www.fs.fed.us/sites/default/files/legacy_files/fire-management-today/017_04.pdf

¹⁵³ Halofsky, J. S., D. C. Donato, J. F. Franklin, J. E. Halofsky, D. L. Peterson, and B. J. Harvey. 2018. The nature of the beast: examining climate adaptation options in forests with stand-replacing fire regimes. Ecosphere 9(3):e02140. 10.1002/ecs2.2140

1. Post-fire Logging

While a wide variety of wildlife species thrive in burned forests in the Pacific Northwest, post-fire salvage logging can have devastating effects on habitat for imperiled species. However, the draft HCP gives minimal consideration to the issue of post-fire timber salvage operations.¹⁵⁴

As the DEIS states, “[i]f not harvested, burned areas may include green trees and large numbers of snags, and so retain appreciable habitat value for some terrestrial species.”¹⁵⁵ On the other hand, “[s]alvage harvest removes organic matter from the forest floor, which can limit what species can be supported and thereby reduce diversity of structural complexity within the forest stand (Thorn et al. 2018).”¹⁵⁶ While we appreciate these acknowledgments, we think the issue of post-fire logging deserves more attention in the final EIS.

Multiple lines of research positively correlate post-fire logging with severe fire effects to soil, vegetation and wildlife habitat.¹⁵⁷ Post-fire logging increases the likelihood of catastrophic reburn at short timescales.¹⁵⁸ Slash fuel created by the proposed action will make direct attack of a future wildfire more difficult and hazardous, and will increase the likelihood of severe soil heating with corresponding losses of forest productivity.¹⁵⁹ Further, post-fire logging removes snags not consumed by a wildfire and replaces them with planted stands of highly flammable young trees. Young planted stands established over a fuel bed of woody slash will dramatically increase fire hazard and dispose the landscape to favor highly intense fire behavior and severe fire effects.¹⁶⁰ The best available science indicates that salvage logging increases small fuels that are most hazardous, and reduces large wood which is most valuable to wildlife.¹⁶¹ Additionally, soil displacement and exposure caused by road work and harvest operations can impair the

¹⁵⁴ Draft HCP at 3-16.

¹⁵⁵ DEIS at 3.6-32.

¹⁵⁶ DEIS at 3.5-2.

¹⁵⁷ D. C. Donato, J. B. Fontaine, J. L. Campbell, W. D. Robinson, J. B. Kauffman, B. E. Law (2006) *Post-Wildfire Logging Hinders Regeneration and Increases Fire Risk*. Science 20 Jan 2006: Vol. 311, Issue 5759, pp. 352; Dennis C. Odion, Evan J. Frost, James R. Strittholt, Hong Jiang, Dominick A. Dellasala, and Max A. Moritz (2004) *Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California*. Conservation Biology. Volume 18 Issue 4 Page 927 - August 2004; Weatherspoon, C.P. and C.N. Skinner (1995) *An assessment of factors associated with damage to tree crowns from the 1987 wildfires in northern California*. Forest Science 41(3): 430-451.

¹⁵⁸ Odion et al. 2004; Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio (2007) *Reburn severity in managed and unmanaged vegetation in a large wildfire*. Proceedings of the National Academy of Sciences.

¹⁵⁹ Reinhardt, E.D., Ryan, K.C. (1998) *Analyzing effects of management actions including salvage, fuel treatment and prescribed fire on fuel dynamics and fire potential*, pp 206–209. In: Pruden and Brennan (Ed.), *Fire in ecosystem management: shifting the paradigm from suppression to prescription*, Tall Timbers Fire Ecology Conference Proceedings, No 20. Tall Timbers Research Station, Tallahassee, FL.

¹⁶⁰ Odion et al. 2004; Jonathan R. Thompson, Thomas A. Spies, and Lisa M. Ganio (2007) *Reburn severity in managed and unmanaged vegetation in a large wildfire*. Proceedings of the National Academy of Sciences.

¹⁶¹ Peterson, David W.; Dodson, Erich K.; Harrod, Richy J. 2015. *Post-fire logging reduces surface woody fuels up to four decades following wildfire*. Forest Ecology and Management. 338: 84-91.

competitive success of native plants and spread highly flammable invasive weeds.¹⁶² Post-fire logging can preclude recovery of biologically critical forest habitat elements.¹⁶³ Please include this research in the final EIS at a minimum.

Recent events in Oregon, following in the wake of over 1,000,000 acres of wildfire west of the Cascade Crest in fall 2020, have proven that responsible forest planning must proactively include robust protective provisions and sideboards regarding post-fire logging. In particular, ODF's plans for clearcut salvage harvest in the Santiam State Forest following the Beachie Creek Fire of 2020 was illustrative. The proposal included salvage logging up to 3,500 acres--every single acre that was feasible to log, including acreage within areas designated for HCAs and RCAs in the draft HCP consisting of complex, older forest that burned in a mosaic pattern of severity, then providing quality habitat for a variety of species, including spotted owls.

The proposed action (Alternative 2) indicates that salvage logging would be limited in riparian conservation areas (RCAs) and HCAs to hazard tree removal, whereas the no action alternative poses no limits on salvage logging. Eliminating salvage tree logging at least in the RCAs and HCAs regardless of burn severity is crucial. Wildfires exacerbated by climate change are expected to increase over the permit term, so will opportunities for salvage logging making it increasingly important to make clear commitments to protect post-fire habitat in these areas.

We do not see any criteria, expectations, or sideboards for ODF's hazard tree removal processes. As ODF's recent attempt to aggressively salvage log the Santiam State Forest demonstrated, state forest managers are inclined to view burned forests as commercial timber harvest opportunities, regardless of post-fire habitat values. In light of this, HCP planning should incorporate the best and most recent research on ecosystem benefits of unlogged, post-fire forests, and should include strict sideboards on salvage logging across the permit area. Fires cause incomplete loss of spotted owl habitat elements, for example, so the remaining habitat elements such as surviving green trees and large snags may still provide current habitat for spotted owls. ODF must not assume that all burned habitat is unsuitable; instead, retain all remaining habitat elements and allow for slow, natural successional development that provides high quality habitat for spotted owl prey. The EIS should base its analysis on a presumption that ODF will jettison HCA management directions in the event of wildfire.

2. Reforestation and Stand Management

We recommend an ecological and climate-smart approach to reforestation and young stand management that we do not see discussed in depth in the DEIS. The DEIS states:

¹⁶² Lindenmayer, D.B., P.J. Burton and J.F. Franklin (2008) *Salvage Logging and Its Ecological Consequences*. Island Press: Washington, D.C.

¹⁶³ Lindenmayer et al. 2008; Lindenmayer, D. B. and R. F. Noss (2006) *Salvage Logging, Ecosystem Processes, and Biodiversity Conservation*. *Conservation Biology* 20, 949-958; Spies 2004.

“Specific reforestation and stand management activities include site preparation, tree planting, manual release treatments, control measures for ungulates and beavers, precommercial thinning and pruning, salvage, and other techniques to control the establishment, composition, growth, health, and quality of stands.”¹⁶⁴

An ecological, climate-smart approach to reforestation would include prescribing variable spacing (and less density), retaining non-Douglas fir trees and non-conifer trees, planting diverse species mixes that are better adapted to future predicted climate scenarios, and retaining some of the understory shrubs, especially those that support ecologically important native invertebrates and birds, and should be discussed. This type of approach is far more preferable to uniform tree-farming design because diverse forests support diverse wildlife and are much more resilient in the face of climate change.

Additionally, while pesticide use is no longer a proposed covered activity in the HCP, the draft EIS should evaluate its potential impacts to covered species. Herbicide use on Oregon’s forests has widespread environmental impacts to human health, water quality and quantity, wildlife, greenhouse gas emissions and climate resilience, among other impacts that require full evaluation as a reasonably foreseeable activity, both via ODF’s continued use as well as drift from nearby operations.¹⁶⁵ The EIS should carefully evaluate the potential and cumulative impacts to covered species stemming from ODF’s or other land manager’s use of pesticides such as Dicamba, Imazapyr, Glyphosate, and several others being sprayed near occupied or unoccupied terrestrial habitat or the potential use of pesticides of high- and moderate-risk to aquatic organisms sprayed near streams.

V. Socioeconomics and Recreation

A. Socioeconomics and Use of IMPLAN

It is hard to discuss major points of view or evaluate DEIS Alternatives of socioeconomic effects when the quantitative modeling was centered and built around the effects of timber production. Land is a productive asset. How state forest land is used often precludes other uses. An economic impacts analysis must discuss economic tradeoffs as they ripple through an economy or foreclose on alternative economic activity. A dollar spent on state forest logs may very well be a dollar not spent on logs from private landowners. A landscape (or portion of it) dedicated to timber production is arguably a landscape highly foreclosed to incompatible alternative economic uses such as certain forms of outdoor recreation and non-timber forest products. Businesses associated with non-timber land uses may lose income and jobs, or may never exist. Amenities associated with non-timber land uses have positive economic effects in nearby communities which, in the case of Oregon’s Northwest Forest District, are arguably

¹⁶⁴ DEIS 2-5.

¹⁶⁵ See, e.g., Caroline Cox (1995) *Pesticide Drift*, *Journal of Pesticide Reform*, 3.

significant. All of the above is extensively explored in the economic literature.¹⁶⁶ But the DEIS either ignores the impact of amenity value loss or denies its significance, and NOAA should address this flaw in the next phase of its NEPA work.

For example, the ecosystem services discussion is generally **qualitative**, more of a listing, in the DEIS. And while we commend NMFS for quantifying net carbon sequestration per alternative (and make recommendations for improvements below), the fact remains that the vast majority of economic effects or socioeconomic representations in the DEIS are simply table after table of timber related metrics organized by alternatives. Further, as discussed below, the use of IMPLAN is highly limited. All IMPLAN modeling was based on input data from ODF's stand inventory and expected timber output using the USDA Forest Service's FVS model (as opposed to broader relevant input data and use of IMPLAN).

We therefore begin our comments on the DEIS by reviewing its discussion of the timber analysis and what for the general public must be a totally confounding narrative. The sheer quantity of timber related tables in the DEIS and Appendices appear to convey substance of analysis. In fact, the substance of economics effects is hardly insightful and likely highly inaccurate. Regarding DEIS narrative, the Code of Federal Regulations state, "*Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.*"¹⁶⁷

Even granting accuracy, the tables of timber revenues, timber jobs and timber employment income are only meaningful relative to the economy's total jobs and total employment income. The hundred plus pages of projected timber revenues to local governments and taxing districts in the Appendix is simply verbose and questionable for reasons discussed below. Much of the DEIS Socioeconomic Appendix 3.12 is 'bulk' and no measure of the adequacy of the five alternatives' socioeconomic significance.

We consulted two IMPLAN experts, Dr. Hans Radtke and Dr. Greg Alward, regarding the use of IMPLAN in the DEIS. Hans Radtke, PhD is an Oregon-based economist specializing in natural resource analysis using I-O modeling. Greg Alward is Senior Scientist at the Policy Analysis Group, University of Idaho College of Natural Resources. Dr. Alward was one of the creators of IMPLAN. As such, we believe the following points are highly relevant to addressing the use of IMPLAN as part of this HCP modeling and DEIS analysis, and that NOAA and the Board should ensure these points are addressed moving forward.

¹⁶⁶ see for example: "Lost Landscapes and Failed Economies: The Search For a Value of Place." Thomas Michael Power; (1996 Island Press).

¹⁶⁷ CFR Title 40, Chapter V, Sub Chapter, Part 1502 at 1502.15

Point 1: Dr. Alward states:

- *"IMPLAN consists of two parts: 1. a descriptive set of accounts of a region's economy and 2. a predictive model for estimating counterfactual impacts on that regional economy."*
- *"Contribution analysis uses IMPLAN accounts to portray how industry activities are organized to utilize a region's capital and labor to produce products (e.g., how stumpage growers, logger/harvesters, and mills are organized to produce wood products and how they each use capital and labor to do this). Contribution is typically measured as each industry's utilization of employment and "income" (labor and capital)."*
- *"Income" is also referred to as "Value Added" or "Gross Domestic Income". GDI can be further broken down into categories: Employee Compensation (income of employees), Proprietors Income and Other Property Income (income of owners), and Taxes on Production and Imports (government). Summing the "Value Added" of all industries in a region measures the regions GDI using the "income approach". Summing the prices of all final products produced in a region measures Gross Domestic Product using the "expenditure approach". Since GDI equals GDP in an accounting sense, we can measure an industry's contribution to regional GDP/GDI by measuring its Value Added (it's use of labor and capital), often as a percent of the regions total GDP or employment. The contribution of a particular product (e.g., lumber) can be measured by the sum of VA contributions of the sequence of industries (e.g., stumpage growers, logger/harvesters, and mills) that are engaged in producing the final product."*
- *"In the context of a DEIS, analysts should use contribution analysis to provide the "current situation" and the "no action" alternative."*

Given Dr. Alward's clarification of IMPLAN functionality, we do not see a table in the DEIS stating the state forests contribution as a percentage of the region's total GDP or employment or any required discussion of socioeconomic significance relative to the total economy. Even if IMPLAN inputs are limited to timber-focused information (e.g., ODF's stand inventory data), this broader look at regional economics and relative contribution of state forests in the total economy context is important. This is important because some often portray state forest timber harvest as if relative up or down shifts in this activity will make or break the North Coast's economy, when in fact harvest on this limited land base and related jobs are far from the driving economic force compared to private industrial lands in this region. NOAA should correct this flaw and provide this analysis.

Dr. Alward further states: *"Using IMPLAN for impact analysis uses the fixed relationships from the contribution accounts as the basis for describing the consequences of counterfactual situations. In the case of the DEIS, this amounts to: "If harvest of State-owned stumpage increases/decreases, and all relationships between wood processing industries are fixed, then how does the sum of GDI & employment change throughout the chain of industries producing the final wood product?". As a counterfactual (i.e., DEIS alternative), this should be compared to the "factual" current situation contribution analysis."*

IMPLAN was used to model the “counterfactual” DEIS alternatives but, again, the direct, indirect and induced jobs and income were not discussed compared to the total relevant economy. Nor was IMPLAN used for modeling non-timber forest products or ecosystem services, which skews the economic picture painted by the analysis.

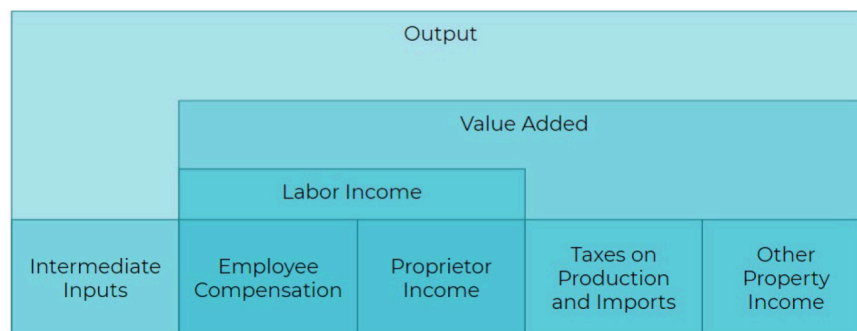
Point 2: There is an error in representing the IMPLAN analysis. Figure 1. In DEIS Appendix 2.12 provides the following explanation of the components of IMPLAN analysis – including the use of “output” values. The category termed **Output** is an artifact of the IMPLAN software analysis and Dr. Radtke and Dr. Alward strongly advise against using the Output metric in public representations of IMPLAN analysis. Their advice is similar to a caution stated in a paper by Henderson et al. published in the *Journal of Forestry* discussing use and misuse of IMPLAN in forest industry modeling.¹⁶⁸

The Henderson et al. paper states:

- *“Total output, as calculated by IMPLAN, is not the same thing as GDP. GDP only considers the final cost of goods and services (the total of four value-added components: employee compensation, proprietor income, indirect business taxes, and other property type income) and excludes the value of intermediate goods to avoid double counting. IMPLAN’s measure of total value added, not total output, is the most comparable measure of GDP or GSP.....”*
- *“Analysts should be aware of this very important difference, and when both output and value-added are reported, each should be clearly distinguished. However, output is a simpler concept than value added, and because it reports much larger values, it is often requested by forest industry advocates for use in lobbying legislatures.”*

In line with best practices of IMPLAN analysis, we strongly recommend IMPLAN’s Output values not be reported in the DEIS and instead that the focus be on “value added.” The purpose of the DEIS is not to contenance double counting (or support lobbying) but to accurately discuss economic significance and social context.

Figure 1. Components of Output, Value Added, and Labor Income



Source: IMPLAN Group 2019b

¹⁶⁸ Henderson, et al., “Standard Procedures and Methods for Economic Impact and Contribution Analysis in the Forest Products Sector.” *Journal of Forestry* (March, 2017).

Point 3: Dr. Alward has expressed concern regarding the DEIS IMPLAN analysis use of NAICS industry categories. He states:

- *“The nexus for the DEIS impact analysis is how harvest of State-owned stumpage will affect the economy, and the principal estimator used for this is the “direct effect” employment and wages of NAICS Industry 113 Forestry and logging. (DEIS Appendix 3.12, Direct Employment and Wages section, page 5). Specifically, the analysis uses reported employment and wages for NAICS 3-digit Industry 113 to measure average employment and wages per MBF of harvest of State-owned stumpage.”*
- *“However, NAICS 113 is comprised of three 6-digit industries: 113110 Timber Tract Operations (private stumpage companies), 113210 Forest nurseries, and 113310 Logging. Using NAICS 113 includes employment (and wages) of private stumpage companies and excludes employment (and wages) from State stumpage operations in computing the direct effects.”*
- *“Using this method seems contradictory of the purpose of the analysis and is a serious concern.”*

This method would seem to significantly and inaccurately skew employment and wage information reported in the DEIS. We urge the NMFS to reassess the use of the NAICS industry components and, if necessary, consult with Dr. Alward¹⁶⁹ regarding his concern.

Point 4: Appendix 3.12’s explanation of the IMPLAN analysis (the documentation) states the following *“Because it is unclear what portion of ODF timber harvest spending flows to each mill type, this analysis uses only sawmills (IMPLAN Industry 132) to calculate value added, output, and the corresponding secondary effects.”*

The use of IMPLAN’s off-the-shelf sawmill metrics means that national milling coefficients were used. Because Oregon is the nation’s leading producer of lumber, we hardly believe Oregon sawmills match national metrics. Log utilization and recovery metrics by sawmills in Oregon are known. The fact is that the vast majority of Oregon’s log production is processed in the nation’s most efficient, low cost and automated sawmills. We recommend that the Services document Oregon-specific sawmill metrics, and that this aspect of the IMPLAN analysis be corrected or justified in the final EIS.

Overall, we recommend that the Services review two journal articles in the course of next steps on this EIS analysis and related response to these and other comments. First is the aforementioned paper by Henderson et al.¹⁷⁰ and the second is a 2007 paper by Watson et al.¹⁷¹ on best practices of IMPLAN analysis. Both journal papers are attached to these comments on this DEIS. (see Attachments 5 and 6).

¹⁶⁹ See: <https://www.uidaho.edu/cnr/faculty/alward>

¹⁷⁰ Henderson, et al., “Standard Procedures and Methods for Economic Impact and Contribution Analysis in the Forest Products Sector.” *Journal of Forestry*. (March, 2017).

¹⁷¹ WATSON, P., J. WILSON, D. THILMANY, AND S. WINTER. “Determining economic contributions and impacts: What is the difference and why do we care.” *Journal of Regional Analysis and Policy*, 37(2): 140–146 (2007).

B. Jobs per MBF of Timber

The DEIS notes that the IMPLAN analysis of indirect and induced jobs and wages is limited to only a ten year period because of future uncertainties in the economy. However direct employment and wages from timber harvest are given a fixed ratio and then calculated out to 2092. We find the assumption of linear proportionality over the next 70 years not credible.

DEIS Appendix 3.12 states:

- *“The alternatives vary by the amount of allowable harvest in the 5-year period increments, measured in MBF [thousand board foot]. Accordingly, the measure of the change is recorded in jobs and wages per MBF to understand the proportional change. On average from 2016 to 2019 there were 0.0035 jobs in the three industries per MBF of timber harvested in Oregon.”*
- *“An assumption inherent in this approach is that jobs and wages are linearly proportional to changes in harvest levels. The analysis also assumes that the ratio of direct employment and income per MBF does not change over the analysis period.”*

The DEIS uses the below table to justify the 0.0035 employment per MBF metric. On face value, the three NAICS industries indicate declining employment regardless of harvest level.

Table 2. of Appendix 3.12:

Employment per Thousand Board Feet, 2016 to 2019, Oregon Statewide			
Year	Total Harvest (MBF)	Total Employment (FYE)	Employment per MBF
2016	3,888,348	14,124	0.0036
2017	3,851,038	13,312	0.0035
2018	4,064,315	13,227	0.0033
2019	3,541,291	12,916	0.0036

Source: Calculated by ECONorthwest using data from U.S. Bureau of Labor Statistics and Oregon Department of Forestry
 a – This table reflects total employment for only the NAICS industries 321113, 3221, and 113.
 MBF = thousand board feet; FYE = full-year-equivalent

A large collection of literature exists on forest products industry employment in Oregon. For example, a report from Simmons et al. states:

- *“The forestry and logging sector saw a 2 percent increase in labor income, despite a decrease (8 percent) of employment from 2013 to 2017. The forestry support sector also experienced this*

trend, where a modest employment increase of 5 percent was accompanied by an increase in labor income of 42 percent.”¹⁷²

- “A trend of employment increasing less than income may be observed during periods of expansion as a result of existing employees working more hours rather than additional workers being hired. Conversely, while the wood products manufacturing sector experienced the largest employment increase at 9 percent, labor income increased by only 6 percent. The average employee in the wood products manufacturing sector earned \$58,450 in 2017, compared to \$60,280 in 2013 (constant 2017 dollars)—a decrease of 3 percent.”¹⁷³
- “Decreasing employment trends in the forest industry reflect numerous factors, including innovations in the manufacture of wood products and paper, technological improvements to production, characteristics of timber available for harvest, market conditions, and shifts in public policy and forest management objectives.”¹⁷⁴

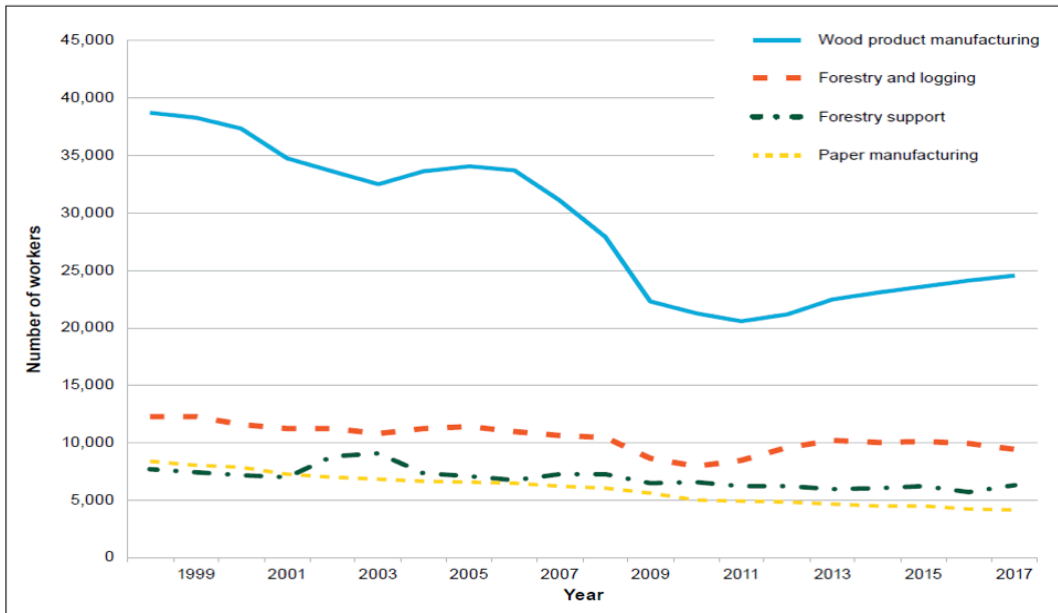


Figure 18—Oregon’s forest industry employment by sector, 1998–2017.

From **Simmons, et al. 2021**. Oregon’s forest products industry and timber harvest 2017 with trends through 2018. Gen. Tech. Rep. PNW-GTR-997. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 63 p.

The above discussion and figure from Simmons et al. indicate the long-term trend in the three NAICS is downward for employment per MBF and relatively flat or declining average wages in

¹⁷² Simmons, Eric A.; Marcille, Kate C.; Lettman, Gary J.; Morgan, Todd A.; Smith, Dorian C.; Rymniak, Luke A.; Christensen, Glenn A. 2021. “Oregon’s forest products industry and timber harvest 2017 with trends through 2018.” Gen. Tech. Rep. PNW-GTR-997. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station. 63 p.

¹⁷³ Id. at 53.

¹⁷⁴ Id. at 52.

constant dollars. Yet, tables 5 through 8 in DEIS Appendix 3.12 report an analysis of employee compensation by Alternative through 2092 that is based on the assumption that ***“the ratio of direct employment and income per MBF does not change over the analysis period.”*** Again, we find this assumption behind Tables 5 through 8 not credible and contrary to available data as pointed out in these comments. The Services should correct this information, revise its assumption, and disclose new results in the next phase of this EIS effort.

Environmental Consequences

Tables 5 through 8 present the total employee compensation generated under the proposed action and alternatives. Alternative 4 has identical direct employee compensation as the first 50 years of the proposed action (periods 2023–2032 through 2063–2072).

Table 5. No Action Alternative Total Employee Compensation by Decade (in 2019 dollars)

County	2023–2032	2033–2042	2043–2052	2053–2062	2063–2072	2073–2082	2083–2092	Total, All Years
Benton	\$14,502,542	\$20,177,566	\$21,433,937	\$21,710,530	\$20,895,761	\$20,564,152	\$20,638,274	\$139,922,760
Clackamas	\$6,750,742	\$7,651,503	\$6,706,729	\$6,801,236	\$5,600,154	\$7,883,959	\$6,746,863	\$48,141,185
Clatsop	\$79,750,468	\$60,602,771	\$64,992,480	\$63,560,295	\$60,198,214	\$60,120,422	\$61,913,447	\$451,138,098
Columbia	\$50,312,922	\$40,354,960	\$42,329,671	\$37,390,392	\$36,483,802	\$36,493,256	\$35,477,332	\$278,842,336
Coos	\$3,660,530	\$10,353,878	\$7,697,213	\$6,977,213	\$7,089,197	\$8,395,853	\$10,525,461	\$54,699,345
Curry	\$1,822,043	\$194,196	\$596,493	\$1,278,204	\$2,014,069	\$1,315,561	\$0	\$7,220,567
Douglas	\$3,408,852	\$4,308,837	\$6,159,916	\$8,181,874	\$7,251,526	\$6,037,325	\$5,666,842	\$41,015,171
Jackson	\$45,584	\$29,541	\$1,150,736	\$135,517	\$334,559	\$659,682	\$17,816	\$2,373,435
Josephine	\$1,406,417	\$911,436	\$169,634	\$148,951	\$191,685	\$652,700	\$549,534	\$4,030,358
Lane	\$46,326,536	\$45,898,894	\$45,919,906	\$47,391,327	\$44,378,485	\$45,910,851	\$46,132,850	\$321,958,848
Lincoln	\$7,180,845	\$11,644,442	\$11,296,483	\$12,504,288	\$11,441,240	\$10,785,868	\$11,598,810	\$76,451,974
Linn	\$28,634,493	\$27,279,598	\$28,189,270	\$31,713,651	\$36,213,502	\$26,654,771	\$26,420,072	\$205,105,356
Marion	\$10,568,246	\$8,329,234	\$8,547,967	\$6,883,121	\$3,008,740	\$7,611,536	\$10,303,183	\$55,252,027
Multnomah	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Polk	\$1,816,591	\$4,722,787	\$3,642,094	\$2,685,979	\$2,891,216	\$3,032,183	\$4,975,684	\$23,766,532
Tillamook	\$98,994,780	\$95,381,179	\$96,054,303	\$104,084,964	\$102,975,172	\$98,193,022	\$98,050,927	\$693,734,348
Washington	\$77,731,277	\$49,586,714	\$48,974,060	\$53,657,942	\$55,502,423	\$49,841,693	\$53,001,261	\$388,295,371
Yamhill	\$65,702,254	\$53,672,132	\$53,279,200	\$56,771,814	\$57,403,793	\$53,485,323	\$55,020,826	\$395,335,342
Total, Decadal	\$498,615,124	\$441,099,668	\$447,140,090	\$461,877,297	\$453,873,538	\$437,638,156	\$447,039,182	\$3,187,283,054

For example, Table 5 (No Action Alt. projections, shown above) states the total “employee compensation” over the full analysis period, 2023 to 2092, is \$3,187,283,054. Such a projection is bordering on fantasy. If nothing else, just as we commented that IMPLAN could have been used to context total state forest timber values to regional or state domestic product, the EIS analysis should context employee compensation tied to western Oregon state forest management to the corresponding total income for the region/analysis area. Or, in other words, what does \$498.6 million in total employee compensation for the first ten years of state forest management (under No Action or any HCP Alternative) mean in the context of the region’s total economy? There are other economic contributors not considered in the DEIS’s analysis here, including that of the recreation business sector. The simple fact is that the DEIS does **not** discuss Tables 5 through 8 in the context of total income for the relevant socioeconomic area, which includes Metro Portland as well as economic sectors other than timber.

Perhaps the reason for the above omissions is that state forests are fixed in size as is their future timber production. Such relatively fixed size and production volume is indicated by

Tables 5 through 8. Yet, Oregon's income will expand due to economic development and increased population. The final EIS should discuss what will inevitably be a shrinking portion of the economy tied to state forest timber outputs regardless of the Alternative chosen. The DEIS must be revised to compare timber values relative to total regional and state income as well as other comparable metrics (and contributing economic sectors), then discuss such a comparison.

The entire presentation of timber related metrics appears to be motivated by a concern for ODF's budget and revenue distributions to local government and taxing districts, and not about the HCP's environmental or economic impacts to Oregon's citizens. A major question is why only timber outputs were modeled using IMPLAN? In 2011, the Massachusetts Department of Fish and Game, Division of Ecological Restoration (DER) commissioned ICF (NMFS's contractor for this DEIS), to use IMPLAN in assessing socioeconomic effects of a set of ecological restoration projects.¹⁷⁵

ICF was asked to answer four ecosystem services questions:

1. Flood Protection – Economic Impacts of the Town Creek Flood Mitigation and Salt Marsh Restoration Project.
2. Water Quality – Economic Impacts of Improving Water Quality through Implementation of the Muddy Creek Estuary Restoration Project,
3. Carbon Sequestration – Estimates of Carbon Sequestration from Wetland Restoration Projects and Reductions in the Social Cost of Carbon.
4. Landscape Appeal – Analysis of Property Value Changes Resulting from the Herring River Restoration Project.

The DER report states:

"Phase 2 of the study estimated the economic value of selected ecosystem services improved by DER projects. Under contract with DER in 2012-2013, economists from ICF International analyzed four types of ecosystem service enhancements: flood protection, water quality, carbon sequestration, and land- scape appeal. The findings show a significant increase in value for the selected ecosystem services which represent just one of many service benefits resulting from each restoration project."

Arguably, flood protection, water quality, carbon sequestration and landscape appeal are of as great or greater economic value to Oregon's citizens as state forest timber. Towns and cities associated with state forest land watersheds (i.e. Vernonia and Tillamook) have experienced major flooding events. "Ecosystem Services" are explicitly addressed in this DEIS. Yet while IMPLAN and FVS were used to produce volumes of data about timber, no multi-year quantitative analysis for ecosystem services (other than carbon sequestration) was seen fit to

¹⁷⁵ <https://www.mass.gov/doc/phase-2-estimates-of-ecosystem-service-values-from-ecological-restoration-projects-in-0/download>

conduct. Why? The DEIS should be revised with such analysis—including revenue projections from non-timber forest products sales and recreation (including fees) over an appropriate time horizon. Tables of such income and revenue contributions to local governments and taxing districts should be included, as well as economic contributions related to flood risk mitigation, water quality, and other ecosystem services that have economic value. This kind of revision is necessary to the generation of an accurate picture of socioeconomic contributions from state forest lands.

C. Forest timber production model simulations

Beyond our above concerns, we identify the following significant questions regarding timber production analysis.

1. Model Function and Scenario Constraints: the Objective Function

DEIS Appendix 3.1-B states:

“The most common objective function structure employed in forest linear programming analyses is net present value, otherwise known as discounted cash flow (Belavenutti et al. 2018). The discount rate employed in all versions of the forest model is 3 percent. In the absence of constraints, this solution would be consistent with a Faustmann (1849) approach for even-aged stands. For the habitat considerations, the model approach is more like what is described in Montgomery et al. (2006). The model was solved to maximize net present value for 100 years encompassing 20, 5-year time periods.”¹⁷⁶

We ask the Services to discuss the Forest Management model’s Objective Function of net present value (NPV). Why was a 3% interest rate chosen and not another rate, or zero percent? On a deeper level, economic optimization for the DEIS is based on one value frame, namely the exchange value of transactions in markets. We find such a singular approach to value and meaning an affront to multiple cultures present in Oregon. The DEIS must discuss how economic optimization denies all other cultural perspectives outside of market exchange transactions. Oregon is home to cultures and citizens who believe in sacred value or any number of non-market values.

2. Analysis Used-Linear Programing

We ask the Services to discuss the limitations of linear programming related to future forest conditions and socioeconomic effects. Arguably an uncertain future due to stressed planetary ecological limits, the certainty of climate impacts and lessons learned from the recent 2008 financial collapse all suggest that linear projections undoubtedly fail to capture a dynamic future. As a general rule most human and natural systems are nonlinear (i.e the [Lotka–Volterra](#)

¹⁷⁶ DEIS Appendix 3.1-B, Forest Management Modeling.

[equations](#) in biology). Again, it is important to distinguish between reasonable estimates of future conditions and fantastical speculation draped in technical analyses.

3. Net Revenue and Log Prices

The DEIS states,

*“Net revenue for both the 2010 FMP scenario and HCP scenario included log prices specific to each region. The model tabulated log species and grade in each period. Costs were broken down into free-to-grow regrowth, pre-commercial thinning, road maintenance, spur roads, harvest cost, and hauling costs. The scenarios **did not consider** other ODF costs including the costs of road construction and repair.”¹⁷⁷*

We request that NMFS disclose and discuss why it did not include “*other ODF costs*” and “*road costs*” in the forest output values? Road construction and maintenance is a substantial cost of forest management. Whether in this portion of the EIS or elsewhere, these kinds of costs are relevant to any evaluation of net revenue (or net costs) on state forest lands, as well as a clear and complete economic analysis.

4. Log Values

Past actual log sale values from state forest timber sales are available. Why were regional log values used? It is important for the public as well as ODF, the Board, and other stakeholders to know not only why this choice was made but to see the EIS provide an actual comparison between regional log values and past ODF log sales by log type. USDA Forest Service General Technical Report PNW-GTR-997 (October 2021) provides a detailed overview of log type and quantity harvested from major ownership types – including state forests.

Table 7—Oregon timber harvest by ownership class and product type, 2017

Ownership class	Sawlogs ^a	Veneer logs	Chipped logs ^b	Other timber products ^c	All products
	<i>Million board feet Scribner</i>				
Corporate ^d	1,831.4	411.4	287.9	29.3	2,560.1
Noncorporate ^e	389.2	72.2	34.2	14.4	509.9
National forest	240.2	71.8	25.2	0.8	338.0
State	241.1	60.1	1.6	—	302.8
Bureau of Land Management	117.1	43.0	2.3	0.2	162.7
Other public	32.9	11.1	0.7	—	44.8
All owners	2,852.0	669.6	352.0	44.7	3,918.3

^aExport logs are included in sawlogs.

^bChipped logs are primarily roundwood pulpwood and also include industrial fuelwood.

^cOther timber products include logs for posts, small poles, pilings, utility poles, log homes, firewood, and log furniture.

^dFormerly “industrial private,” an ownership class of private forest lands owned by a company, corporation, legal partnership, investment firm, bank, timberland investment management organization, or real estate investment trust (USDA FS 2006).

^eFormerly “nonindustrial private and tribal,” private forest land owned by nongovernmental conservation or natural resource organizations; unincorporated partnerships, associations, or clubs; individuals or families; or American Indians (USDA FS 2006).

Note: Columns and rows may not sum to total because of rounding.

¹⁷⁷ Id. at 4 (emphasis added).

And, USDA Forest Service research indicates that the theory of ‘one price’ (i.e., regional log value) appears to not hold for log sales on western federal forest timber sales.¹⁷⁸ All the more reason to document, compare and discuss state forest timber sale values relative to regional sale values.

D. Effects of Climate Change on State Forest Income and Employment Projections

The DEIS states:

“Climate change will continue to affect western region through the analysis period. The projected effects of climate change on western Oregon include increased temperatures, significantly drier summers, somewhat wetter winters, elevated sea-surface temperatures off the Oregon coast, and reduced snowpack. There is projected to be a general shift in the timing and availability of water. Climate change is also projected to cause increased frequency, intensity, and duration of drought and disturbance events (i.e., severe storm events, wildfires, and invasive species).”¹⁷⁹

DEIS Appendix 3.2 describes projected climate change effects in western Oregon in more detail.

- *“In summary, climate change is forecast to reduce the resilience of forests to all forms of stress, particularly those associated with heat and drought, leading to reduced growth and increased vulnerability to stress-related disturbances such as pathogens and insect attack. Drought stress also increases vulnerability to severe fire because temperature, humidity, and fuel moisture loadings under drought conditions are conducive to ignition and rapid spread of fire. Climate change forecasts also predict more frequent occurrences of extratropical cyclones and thus increased risks of blowdown, flooding, and associated disturbances such as shallow-rapid landsliding and modification of stream channels.”*
- *“Accordingly, all disturbances discussed in Disturbance History and Effects are projected to become more severe during the analysis period, exceeding 20th century norms by mid-century and becoming even more severe by the late 21st century. A measurable increase, including disturbances of all kinds that meet or exceed previous conditions, can be expected by halfway through the analysis period. Substantial further increases in both disturbance frequency and severity can be expected by the end of the analysis period.”*

¹⁷⁸ Daniels, Jean M. 2011. “Stumpage market integration in western national forests.” Res. Pap. PNW-RP-586. Portland, OR: USDA, Forest Service, Pacific Northwest Research Station. 27 p. (“Statistical evidence suggests that prices from the Beaverhead-Deerlodge and Salmon-Challis Forests and the Kootenai and Idaho Panhandle Forests are linked and that only these two sets of forests can be modeled as integrated stumpage markets. Aside from these four forests, there is no evidence that the law of one price holds for national forest timber markets in the West.”)

¹⁷⁹ DEIS at 3.2-2.

While not a rosy picture of a future we would like to see, we agree with the above description. However, we disagree with what the DEIS does in the context of evaluating income and employment in light of this information. The DEIS states:

“Income and employment: This analysis quantitatively evaluates direct impacts on income and employment arising from changes in timber harvest activities in the plan area over the 70-year analysis period. . . The forest model computes timber quantity and net harvest value, which are used as inputs to this analysis (Appendix 3.1-B, Forest Model Description).”¹⁸⁰

Appendix 3.1-B (Forest Model Description) then states under **Growth and Yield**:

“The U.S. Forest Service’s Forest Vegetation Simulator (FVS) (Dixon 2002), a distance-independent individual-tree growth model was used to project the stands with available SLI data forward in time for 100 years in 5-year periods. Post-harvest forest conditions were also projected using FVS, assuming reforestation with a site-appropriate species mix. These stand projections were completed using the range of site conditions present across the permit area. The model assigned yields to harvest units using site-specific and geographic rules.”

The U.S. Forest Service has an FVS model that incorporates anticipated climate change and has made it readily available. We quote the users manual for this Climate FVS Version 2:

“The base FVS model, used without the climate adjustments, predicts a future that is a reflection of climates that predominated the last half of 20th Century. That time frame is coincident with most of the measurements on which the model is based. The climates of the 21st Century are predicted to be warmer; assuming that they will not change is most likely wrong (IPCC 2013). While outputs from Climate-FVS may not turn out to be correct, ignoring climate change in prognoses of future forest species and size composition would misinform forest planning and forest management decisions.”¹⁸¹

There is no indication in the DEIS or its Appendices that income and employment projections were based on the US Forest Service’s Climate-FVS version. On face value, it appears the Services used the wrong FVS model (one the U.S. Forest Service has disavowed due to it being based on outdated climate information) to determine *“income and employment arising from changes in timber harvest activities in the plan area over the 70-year analysis period.”* Given the stated climate impacts to forests and non-climate FVS model output projections, it is reasonable to assume a significant inaccuracy exists in the projected timber quantity and net harvest values provided in the DEIS. Such inaccuracy will result in errors for *“direct impacts on income and employment arising from changes in timber harvest activities.”* If such an modeling

¹⁸⁰ DEIS at 3.12-1.

¹⁸¹ Crookston, Nicholas L. 2014. “Climate-FVS Version 2: Content, users guide, applications, and behavior.” Gen. Tech. Rep. RMRS-GTR-319. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. 38 p. https://www.fs.fed.us/ftproot/pub/fmsc/ftp/fvs/docs/climateFVS/ClimateFVS_UsersGuide.pdf

error has occurred, then the error is amplified through the 100+ pages of detailed state forest revenue sharing projections for the DEIS Alternatives.

The final EIS needs to address this issue. The EIS Socioeconomic section must discuss future socioeconomic conditions and alternatives in light of likely climate conditions. Likely global warming of 2 to 3 degrees centigrade will have demographic impacts (i.e. domestic climate refugees) relevant to state forest management and socioeconomic conditions. The current atmospheric CO2 trend is following a reasonable projection that indicates a mid-range stabilization leading to severe climate impacts from 2C to 3C warming.

Further, the available literature based on Climate-FVS modeling suggests substantial changes in coastal tree growing conditions. For example, the paper “Projected future suitable habitat and productivity of Douglas-fir in western North America” states:

“Douglas-fir (Pseudotsuga menziesii [Mirb.] Franco) is one of the most common and commercially important species in western North America. The species can occupy a range of habitats, is long-lived (up to 500 years), and highly productive. However, the future of Douglas-fir in western North America is highly uncertain due to the expected changes in climate conditions. This analysis presents a summary of work that utilizes an extensive network of inventory plots to project potential future changes in Douglas-fir habitat and productivity. By 2090, the amount of potential Douglas-fir habitat is projected to change little in terms of area (–4%). However, the habitat is expected to shift from coastal areas of North America to the interior. Corresponding changes in productivity are also projected as coastal areas experience reductions, while interior areas experience modest increases in productivity. Overall, the analysis indicates a sensitivity of Douglas-fir to climate and suggests that significant changes in North America are to be expected under climate change.”¹⁸²

As indicated by Weiskittel et al., suitable habitat for Douglas fir and the tree’s productivity will likely decline in Oregon’s coastal region—precisely where most state forest acreage is located. The climate impacts to Western Hemlock are even more dramatic. The Moscow, Idaho-based Forestry Sciences Laboratory of the USDA Forest Service, Rocky Mountain Research Station has modeled changes in site viability for numerous tree species under expected climate change. One mapped example, based on one of three climate models, demonstrates the potential dramatic shift in geographic suitability for Western hemlock.

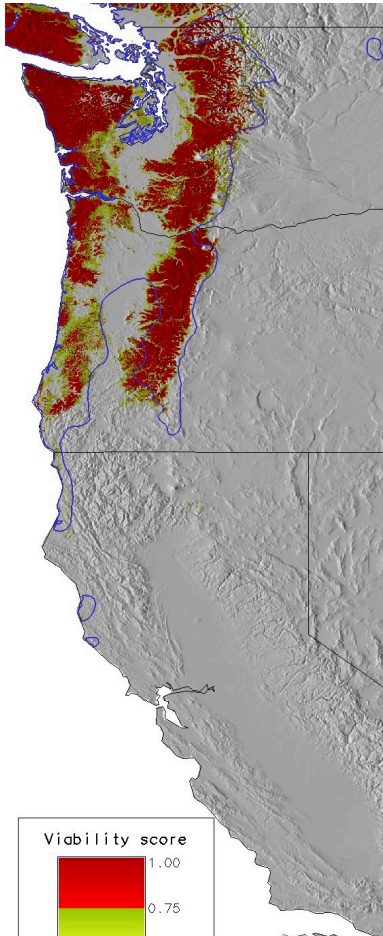
We urge the Services to assess and incorporate the extensive data and literature on climate impacts to forests available at <https://charcoal2.cnre.vt.edu/climate/> (“Research on Forest Climate Change: Predicted Effects of Global Warming on Forests and Plant Climate Relationships in Western North America and Mexico”). A cursory review of the mapped climate

¹⁸² Aaron R. Weiskittel; Nicholas L. Crookston; Gerald E. Rehfeldt. “Projected future suitable habitat and productivity of Douglas-fir in western North America.” *Schweizerische Zeitschrift für Forstwesen* (2012) 163 (3): 70–78.

Available at: <https://doi.org/10.3188/szf.2012.0070>

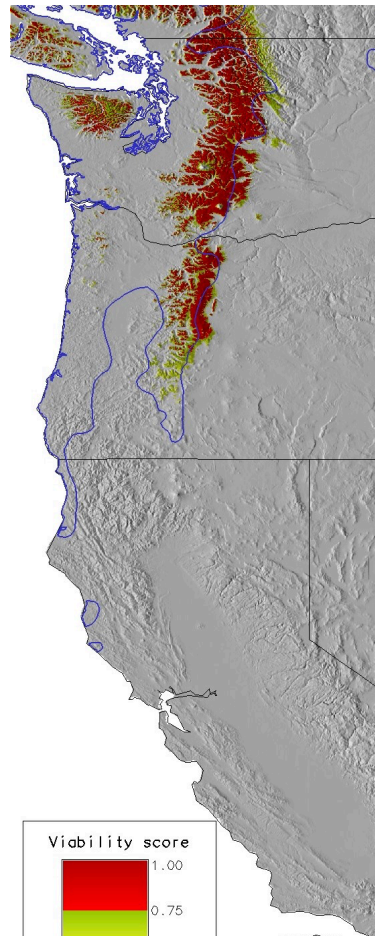
impacts to state forest commercial tree species and the extensive literature available here¹⁸³ suggests that the current timber modeling and appropriate forest management strategy is likely orders of magnitude in error. The two following maps of Western Hemlock site suitability under potential climate change are alarming.

Current Western Hemlock



Western-hemlock-

Western Hemlock 2060



Western-hemlock-

¹⁸³ <https://charcoal2.cnre.vt.edu//climate/publications.php>

E. State Forests & the Value of Intact Public Forests

The final EIS should fully evaluate impacts of proposed management activities in light of the recent slate of research highlighting the importance of intact forests in climate mitigation efforts.¹⁸⁴ Intact forests provide the following co-benefits for climate mitigation and adaptation:

- storing and sequestering atmospheric carbon for long periods of time;
- safeguarding biodiversity and establishing climate refugia;
- reducing flood and erosion risk as precipitation patterns change;
- increasing availability of drinking water for communities struggling with drought impacts; and
- possessing features that are more resistant to fire.

Intact forests help redistribute runoff, stabilize water table levels, and retain soil moisture by altering soil permeability. These processes interact with physiography to regulate the flow across the land surface and help stabilize slopes, prevent water and wind erosion, and regulate the transport of nutrients and sediments.¹⁸⁵

The final EIS should evaluate the economic benefits of keeping carbon stored in unlogged forests by calculating the avoided costs of global climate change. GHG emissions from fossil fuels, logging, and other land management activities impose significant costs on society, such as the cost of damage caused by climate change and the costs of adapting to climate change and

¹⁸⁴ See, e.g., Moomaw WR, Masino SA and Faison EK (2019) Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good. *Front. For. Glob. Change* 2:27. doi: 10.3389/ffgc.2019.00027; Beverly Law, et al. (2018) Land use strategies to mitigate climate change in carbon dense temperate forests. *PNAS*. doi:10.1073; Heather Keith, Brendan G. Mackey, David B. Lindenmayer (2009) Re-evaluation of forest biomass carbon stocks and lessons from the world's most carbon-dense forests. *PNAS* 106 (28) 11635-11640, doi:10.1073; Mildrexler David J., Berner Logan T., Law Beverly E., Birdsey Richard A., Moomaw William R. (2020) *Large Trees Dominate Carbon Storage in Forests East of the Cascade Crest in the United States Pacific Northwest*. *Front. For. Glob. Change* 3. <https://www.frontiersin.org/article/10.3389/ffgc.2020.594274> (“Given the urgency of keeping additional carbon out of the atmosphere and continuing carbon accumulation from the atmosphere to protect the climate system, it would be prudent to continue protecting ecosystems with large trees for their carbon stores, and also for their co-benefits of habitat for biodiversity, resilience to drought and fire, and microclimate buffering under future climate extremes.”).

¹⁸⁵ Moomaw et al. 2019; Watson, J. E. M. et al. (2016) *Persistent disparities between recent rates of habitat conversion and protection and implications for future global conservation targets*. *Conserv. Lett.* 9, 413–421; Dominick A. DellaSala, James R. Karr, David M. Olson (2011) *Roadless areas and clean water*. *Journal of Soil and Water Conservation*, 66 (3) 78A-84A; DOI: 10.2489/jswc.66.3.78A; Creed, Irena F., Marian Weber, Francesco Accatino, and David P. Kreuzweiser (2016) *Managing Forests for Water in the Anthropocene—The Best Kept Secret Services of Forest Ecosystems*. *Forests* 7, no. 3: 60. <https://doi.org/10.3390/f7030060>.

the cost of sequestering carbon to mitigate emissions. The NEPA analysis should carefully disclose the full range of these social costs, as well as recognize that the federal estimate of social cost of carbon (SCC) likely underestimates—perhaps significantly—the climate impacts of GHG pollution.¹⁸⁶ Otherwise, the full range of these impacts (costs) are hidden from the public and, in fact, often “paid for” by the broader environment and public in the form of degraded ecological resilience, public health impacts, and more. The NEPA analysis cannot ignore the costs associated with logging, as well as the economic benefits from leaving the forest intact. Please provide an economic analysis showing the costs of logging (degraded ecosystems, loss of ecosystem services, contribution to climate change, etc.) as well as the economic benefits from not logging (recreational opportunities, tourism, scientific research, photography businesses, etc.).

Forestry-related environmental impact analyses often undercount the severity and importance of the short- and long-term “ecosystem debt” created by logging and associated practices. Logging and roads reduce recruitment of snags and dead wood and all the ecosystem services they provide. One of the most significant and lasting effects of stand replacing disturbance, including regeneration logging, is to bring the process of snag recruitment to a virtual standstill for many decades. Especially when trees are removed by logging, the snag population is directly reduced to ensure safe conditions for workers, and remains low for many decades because the pool of green trees available for snag recruitment is greatly reduced. This results in a multi-decade “snag gap” that has serious adverse consequences for habitat and many other ecological processes.¹⁸⁷ The impacts of thinning, as widely proposed by this HCP both within and outside the HCAs and RCAs, must be fully considered in this light, as well. Thinning does not always accelerate development of late successional forests, and in particular commercial thinning has an adverse effect on snags and dead wood that are defining characteristics of late successional habitat.

The Services must conduct a true cost-benefit analysis of intact forests and all of the associated co-benefits, as opposed to ignoring the costs while focusing on the benefits of logging (and ignoring the benefits of not developing).

¹⁸⁶ The U.S. Environmental Protection Agency has concluded that “given current modeling and data limitations, [the federal SCC values] do[] not include all important damages. As noted by the IPCC Fourth Assessment Report, it is ‘very likely that [SCC] underestimates’ the damages. The models used to develop SCC estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.”

https://www.epa.gov/sites/production/files/2016-12/documents/social_cost_of_carbon_fact_sheet.pdf

¹⁸⁷ See Rose, C.L., Marcot, B.G., Mellen, T.K., Ohmann, J.L., Waddell, K.L., Lindely, D.L., and B. Schrieber. 2001. Decaying Wood in Pacific Northwest Forests: Concepts and Tools for Habitat Management, Chapter 24 in Wildlife-Habitat Relationships in Oregon and Washington (Johnson, D. H. and T. A. O’Neil. OSU Press. 2001)

<http://web.archive.org/web/20060708035905/http://www.nwhi.org/inc/data/GISdata/docs/chapter24.pdf>

F. Recreation and Other Amenity Values

The DEIS misses what is arguably the most important social and economic aspect of state forests – their amenity value contribution to regional economic vitality. Amenity values may sound fuzzy or fluffy to some, but they make real and substantial economic benefit contributions, including those related to recreation and public health. This economic dimension is well explored in economic literature and discussed in *“Economic Realities in the Tillamook and Clatsop State Forests: POSSIBILITIES FOR ECONOMIC EXPANSION AND DIVERSIFICATION”* by economists Thomas Michael Power and Philip J. Ruder (A Report Prepared for The Tillamook Rainforest Coalition, January 2003), which is attached to these comments. (see Attachment 7).

We quote the Power and Ruder report below:

- *“[C]onsiderable empirical evidence that documents the reality of such ‘amenity-supported’ local economic vitality. One could include in this the economic vitality in western and central Oregon between 1988 and the beginning of the current recession despite the declines in the forest products industry. There are few economic commentators who, in explaining the ways in which the Oregon economy was transformed during that time period, have not mentioned the role played by Oregon’s natural amenities in attracting both new residents and businesses.”¹⁸⁸*
- *“Knowing that natural amenities are likely to play a positive role in supporting local economic vitality does not necessarily allow one to predict exactly what the impact on the local economy will be if a certain part of the forested landscape is managed for something other than commercial timber production. While it is possible to say something fairly explicit about how increased timber harvests will impact employment in the wood and forest products mills, the same cannot be said for the impact of managing a certain percentage of those forest lands as forest reserves. We know that the direction of the change is positive and that it can be cumulatively very important (that is, Western and Central Oregon, or the Mountain West,) but a quantitative modeling of this impact is not possible. This fact does not mean that protected landscapes have no positive impact on the local economy or that this impact can be safely ignored. It means simply that the impact has to be considered in a qualitative manner when making public policy decisions.”¹⁸⁹*

That was 2003. Today—as reflected in our comments on IMPLAN above—modeling and quantification of amenity-related economic benefits is not only possible but much more robust, especially for certain sectors such as recreation, flood resilience, water quality protection, etc. Aside from recognizing the recreation amenity-related concept of “consumer surplus” (Rosenberger 2018) and dollar values associated with it,¹⁹⁰ the DEIS analysis does not go deeper and apply this to any quantitative analysis of the action alternatives and state forest amenity

¹⁸⁸ Power, T.M., and Ruder, P.J. *“Economic Realities in the Tillamook and Clatsop State Forests: POSSIBILITIES FOR ECONOMIC EXPANSION AND DIVERSIFICATION.”* A Report Prepared for The Tillamook Rainforest Coalition, January 2003.

¹⁸⁹ *Id.*

¹⁹⁰ DEIS at p. 3.9-4

potential. The Services should correct this flaw. The proximity of major ODF state forest landscapes to Metro Portland, particularly Washington County, and growing coastal populations is significant far beyond a DEIS review of ecosystem services quantities or their monetary values. The pull of state forests and their public land amenities is already happening and will grow in significance from a socioeconomic perspective in light of the future push of climate impacts combined with population growth. Climate refugees and businesses will seek more habitable states to settle in, and people living near Oregon's state forests will be increasingly drawn into state forests due to the ability of these lands to provide direct connection to the recreational, spiritual, cultural and other values they seek (and increasingly find harder to experience elsewhere).

The above economic issue is not adequately discussed, evaluated or quantified in the DEIS, and therefore the DEIS is in need of revision.

Further, on the issue of Recreation specifically, while the DEIS recognizes that recreation on Western Oregon forests has been on the increase and "is projected to continue to increase" over the HCP analysis period, it fails to consider economic data and contributions from industries and businesses tied to non-timber economic sectors that benefit from improved conservation outcomes on state forests.¹⁹¹ This includes fishing, hunting, wildlife viewing, hiking, trail running, and other forms of motorized and non-motorized recreation. The businesses and economic benefits from the recreation sector is driven by access to the existence of healthy fish and wildlife populations and related habitats that produce them, as well as unique experiences tied to intact, diverse, old and complex forests as well as healthy rivers, cool clean air beneath the forest canopy, and natural vistas. Western Oregon's state forests can and do produce these habitats and experiences, and the EIS needs to better evaluate, account for, and disclose not just the current contributions of the recreation sector but the potential impacts of the HCP alternatives on enhancing them (or detracting from them).

For example, while the DEIS Section 3.9.3 recognizes the relationship between forest composition (e.g., older stands vs. clearcuts), connectivity, and recreation, it does not appear to have analyzed how the creation of dedicated HCAs would shape recreational demand or notions of quality and value. In some areas, the DEIS actually advanced flawed and unfounded recreation assumptions. Regarding Alternative 3, it states:

"Increased protection would likely increase beneficial effects on water quality but is unlikely to affect treatment costs for drinking water or water quality for recreation. Expanded RCAs may improve habitat connectivity and benefit riparian species. Overall, however, it is unlikely that these provisions would meaningfully increase the value people derive from the ecosystem across the study area."¹⁹²

¹⁹¹ DEIS at 3.2-4.

¹⁹² DEIS at 3.12-38.

NOAA should disclose the information or assumptions that drive these conclusions. In light of existing data regarding the connection between recreation-driven economic benefits and the existence of healthy habitat (including fishing and healthy riparian or aquatic habitats that can grow and sustain population levels), the DEIS seems to make a significant erroneous assumption.

Additionally, the DEIS suggests that additional road system management requirements under Alternative 3 could reduce recreational access. While this may be true in the abstract, the DEIS should not make this assumption given that Alternative 3's inventory, planning and prioritization process will not be in the abstract; it provides a process for balancing recreational access values and conservation / resource impact reduction values. Further, Alternative 3 still contemplates many roads (and related access) on the landscape. In fact, it contemplates more roads and access compared to rolling forward with the status quo (No Action Alt.). And compared to Alternative 2 / the draft HCP, roughly the same number of new road miles would be built over the permit term (and more in the first 25 years) as well as maintained in use under Alternative 3 over the permit term.¹⁹³

In other words, even if Alt. 3 reduces roads and related motorized recreational access in some areas for conservation reasons, the HCP contemplates growth in other areas. Further, non-motorized access for angling, hunting, wildlife viewing, foraging, and other activities could be enhanced where motorized use is potentially reduced, thus creating a net gain for recreation. In the road-dense landscape of the permit area, non-motorized access is to be prized, and that should be pointed out and evaluated as a benefit in the EIS process. The Services should correct the flawed assumption that Alternative 3 could reduce recreational benefits on state forests by considering and addressing the above points.

Significant data exists on the economic benefits driven by the recreation sector. We do not see any of this considered in the DEIS, and the socioeconomic analysis is highly biased towards evaluation of costs and benefits related to the timber sector. There are other businesses and industries that rely upon, impact, and are impacted by state forest management. The DEIS should be revised to evaluate and better disclose economic effects related to recreation.

Specifically, **fish are a forest product too.**

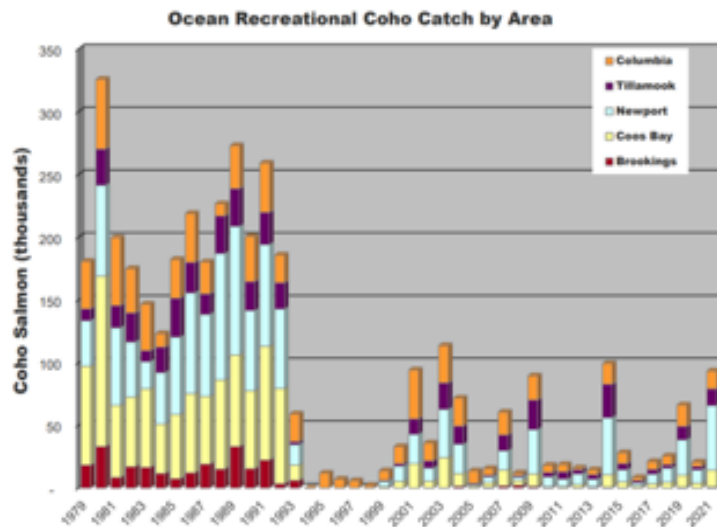
For much of history, wild salmon have been overlooked as a valuable and viable forest product, especially with the introduction of hatchery fish on the waterscape. Oregon claims to have one of the highest remnant historic abundance of wild salmonids, at a mere 3% amongst western states. During the late 1990's through early 2000's, sport and commercial fishermen lost consumptive "access" to 5 of the 6 runs of wild fish on the North Coast. Harvest of wild cutthroat trout, steelhead, chum, coho and spring Chinook were shut down completely to allow recovery of the species and regulating agencies to develop recovery plans for these species.

¹⁹³ Draft HCP at 3.1-3 (Tables 3.1-4 and 3.1-5)

Since the historic shutdown, fishermen have made modest-at-best gains to consumptive access to these wild species once again. Limited harvest for wild cutthroat trout and on occasion, wild coho, exist on the north coast. Consumptive harvest of the other species remains closed. And for the first time in modern history, wild fall Chinook harvest will be closed in the entire Tillamook Bay watershed in 2022, likely due to poor water quality and subsequent outbreak of cyptobia experienced by broodstock adults in the fall of 2019, as outlined in [this press release](#).¹⁹⁴ Due to a rebound in ocean health, wild coho will be the only salmon species (besides a very limited quantity of hatchery fall Chinook) that will be available for the sportfishing industry in the Tillamook Basin in 2022. This is unprecedented in nature, but also indicative of the economic sensitivity and value of healthy fisheries to the economy and the importance of state forests in protecting and enhancing habitat that can not only support but grow these fish runs.

A 2008 Oregon study identified both local and travel-generated expenditures by sector and found that the North Coast generates the largest amount of expenditures of nine regions in the State.¹⁹⁵ Between the four economic sectors, over \$150 million is generated annually from outdoor recreation enthusiasts, with fishing coming second to only wildlife viewing. These top-two outdoor related activities are directly related to state forests and forest health.

Coho salmon historically and currently make up the bulk of the species pursued and caught by sport anglers off of the Oregon Coast. It remains however, a fraction of its historical contribution.¹⁹⁶

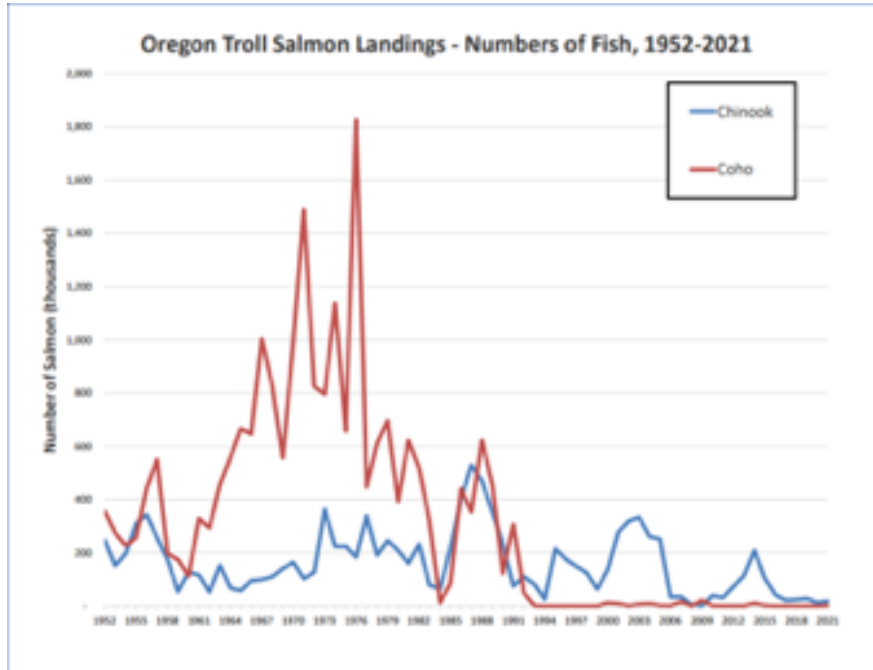


¹⁹⁴ ODFW, Additional Chinook mortality leads to North Coast fall salmon angling closure (Dec. 11, 2009), https://www.dfw.state.or.us/news/2019/12_Dec/121119.asp.

¹⁹⁵ Dean Runyan and Associates, "Fishing, Hunting, Wildlife Viewing and Shellfishing in Oregon: 2008 State and County Expenditure Estimates" (May 2009), https://www.dfw.state.or.us/fish/CRP/docs/coastal_coho/economic_reports/Report_5_6_09.pdf.

¹⁹⁶ Graph from ODFW: https://www.dfw.state.or.us/mrp/salmon/Historical_Data/docs/SportCoho.pdf

While most of today's commercially caught salmon off of the Oregon Coast actually originate from California watersheds, coho (often Oregon-grown) historically made up a significant portion of the commercial catch. Today, catches are sparse and next to non-existent on the Central and Southern Coast of Oregon.¹⁹⁷



Besides the obvious directed fisheries benefit that wild salmonids grown on state forestlands bring, wild fish are currently, and will forever in the future, play a vital role in sustainability of the species. With the degrading “fitness” of hatchery stocks in Oregon, wild fish have become a critical component of re-invigorating poorly performing, “washed-out” stocks of hatchery fish through the use of wild-captured steelhead, coho and Chinook broodstock to be raised and released into north coast watersheds.

The performance of these one-generation removed wild broodstock species is important to the economic vitality of sportfishing and conservation. Without abundant wild returns of salmon and steelhead, ESA restrictions justifiably prohibit the removal of sensitive stocks of fish for any reason. If wild fish continue on a downward trajectory, consumptive opportunity will also decline or go away altogether, along with the hundreds of millions of dollars in economic opportunity along with it, critical revenues for rural communities. Western Oregon state forests serve as the headwaters and habitat drivers for many of the great coastal river systems that support these species and economies.

A complete EIS should include a detailed analysis of the economic benefits of fishing, hunting, wildlife viewing and shellfishing; the user numbers for these activities tied to state forests; and the contribution of habitat (terrestrial, riparian, instream, water quality, etcl) on state forest

¹⁹⁷ Graph from ODFW: https://www.dfw.state.or.us/mrp/salmon/Historical_Data/docs/HistTrollFish.pdf

lands to these opportunities. This includes evaluation and incorporation of data from the Runyon and Associates study referenced above. It's imperative that fish, both wild and hatchery, are recognized as a forest product too. And state forest habitat is important to all of this. Although hatchery fish are obviously grown in a hatchery, water quality intrinsically affects the migration, rearing and spawning of hatchery fish too. We urge the agencies to do a deep dive and produce an analysis of the benefits (directed and undirected) of sport and commercial fisheries from salmonids grown on state forestlands, including the economic loss associated with any fishery closures, such as the one we'll experience in 2022 for the Tillamook Basin.

G. Ecosystem Services

The DEIS directly addresses Ecosystem Services at 3.12.2.4 within this frame: *“This analysis focuses on five categories of goods and services that forests in the permit area produce and people value: special forest products (plants used for food and materials) and hunting and fishing; climate regulation through carbon sequestration; water quality regulation; habitat for sensitive species; and cultural services (aesthetic, spiritual, heritage, and educational value).”*

1. Non-Timber/Special Forest Products

The DEIS notes that the *“Collection of special forest products can occur throughout the permit area but collection for commercial use requires a permit, which generates revenue for ODF.”* Unfortunately, no data is provided on what non-timber forest products actually contribute to past revenues and no counterfactual analysis is provided on the potential future value of non-timber forest products similar to the 70 year timber analysis. Why?

2. Climate Regulation: The social value of an additional metric ton of CO2 sequestration

The tree-growing potential (and history) on Western Oregon state forest lands is not only unique from a timber value perspective but also from a carbon sequestration and climate regulation perspective. In relevant part, the DEIS states:

- *“Trees and soils in the permit area are important carbon sinks for the region because they sequester carbon in their above- ground woody material and in their roots throughout their life cycle. Alternatively, forest disturbances can lead to the release of stored carbon (Binkley and Fisher 2019). Release of greenhouse gases such as carbon dioxide (CO2) contributes to climate change and leads to adverse health outcomes, increased risks of natural disasters such as floods, lost agricultural productivity, and other (largely adverse) economic outcomes for local, national, and international populations. The most recent estimates suggest that the social value of an additional metric ton of CO2 sequestration is about \$48 (in 2019 dollars) (Interagency Working Group on Social Cost of Greenhouse Gases 2021).”¹⁹⁸*

¹⁹⁸ DEIS at 3.12-10.

- **“Footnote 2:** *Though the International Working Group report does not provide estimates for the social cost of carbon in emissions years after 2050, we applied the current emissions year value of \$51 per metric ton of carbon dioxide for the entire analysis period.*”¹⁹⁹

The above quoted footnote 2 references the “*International Working Group.*” Did the DEIS intend to instead reference the “*Interagency Working Group on Social Cost of Greenhouse Gases (IWG),*” as referenced in the first DEIS-quoted bullet above?

More importantly, the DEIS is wrong to apply a \$51 per metric ton figure across the entire 70-year proposed HCP term. Aside from the reality that pricing will not remain static, this low-balls the likely market value of carbon and under-predicts the potential contribution of stored forest carbon in the context of the DEIS evaluation of potential economic benefits. The IWG provides the following figures regarding the social cost of carbon:²⁰⁰

Table ES-1: Social Cost of CO₂, 2020 – 2050 (in 2020 dollars per metric ton of CO₂)³

Emissions Year	Discount Rate and Statistic			
	5% Average	3% Average	2.5% Average	3% 95 th Percentile
2020	14	51	76	152
2025	17	56	83	169
2030	19	62	89	187
2035	22	67	96	206
2040	25	73	103	225
2045	28	79	110	242
2050	32	85	116	260

The IWG also states the following in regard to Table ES-1:

“Consistent with the guidance in E.O. 13990 for the IWG to ensure that the SC-GHG reflect the interests of future generations, the latest scientific and economic understanding of discount rates discussed in this TSD, and the recommendation from OMB’s Circular A-4 to include sensitivity analysis with lower discount rates when a rule has important intergenerational benefits or costs, agencies may consider conducting additional sensitivity analysis using discount rates below 2.5 percent. Furthermore, the IAMs used to produce these interim estimates do not include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature. For these same impacts, the science underlying their “damage functions” – i.e., the core parts of the IAMs that map global mean temperature changes and other physical impacts of climate change into economic (both market and nonmarket) damages – lags behind the most recent research. Likewise, the assumptions

¹⁹⁹ DEIS at 3.12-36.

²⁰⁰ “Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990”; Interagency Working Group on Social Cost of Greenhouse Gases, United States Government (February 2021).

regarding equilibrium climate sensitivity and socioeconomic and emissions scenarios used as inputs to the model runs in this TSD will need to be updated. It is the IWG's judgment that, taken together, these limitations suggest that the range of four interim SC-GHG estimates presented in this TSD likely underestimate societal damages from GHG emissions."²⁰¹

Unlike the DEIS, the IWG's carbon values increase in the future years, and the \$51 value used in the DEIS is not credible for the HCP time period. The Services should revise the EIS analysis to reflect a more realistic and non-static predicted future price for carbon. Related to that, the above passage suggests NMFS should reassess future carbon values and revise the DEIS to reflect a much lower discount rate than 3%, instead using a substantially higher social value of carbon using a schedule of values over the course of the planning period.²⁰² A current carbon market value estimate out of the University of Chicago suggests an immediate revision of the social cost of carbon to \$125.²⁰³

Values for net carbon storage:

The DEIS offers the following values of net carbon storage for the following Alternatives:

(1) No Action Alternative: *"Based on modeling, net carbon storage—the stock of carbon in the forest—would average 571,095 metric tons carbon dioxide equivalent (MT CO₂e) per year over the analysis period under the no action alternative (Section 3.14, Greenhouse Gas Emissions and Carbon Storage), which would have an estimated social value of \$27.4 million per year (in 2019 dollars)."*

(2) Proposed Action Alternative: *"Based on modeling, net carbon storage would average 467,017 MT CO₂e per year over the permit term under the proposed action (Section 3.14), which would have an estimated social value of \$22.4 million per year (in 2019 dollars)."*

(3) Alternative 3: *"The impacts on ecosystem services under Alternative 3 would be similar to the proposed action. Based on modeling, Alternative 3 would result in carbon storage amounting to a social value of \$23 million per year over the permit term (in 2019 dollars), a 17 percent decrease compared to the no action alternative."*

²⁰¹ Id.

²⁰² See Id. (*"When a rule has important intergenerational benefits or costs, agencies may consider conducting additional sensitivity analysis using discount rates below 2.5 percent."*)

²⁰³ See Carleton, Tamma and Greenstone, Michael, Updating the United States Government's Social Cost of Carbon (January 14, 2021). University of Chicago, Becker Friedman Institute for Economics Working Paper No. 2021-04, Available at SSRN: <https://ssrn.com/abstract=3764255> (*"This paper outlines a two-step process to return the United States government's Social Cost of Carbon (SCC) to the frontier of economics and climate science. The first step is to implement the original 2009-2010 Interagency Working Group (IWG) framework using a discount rate of 2%. This can be done immediately and will result in an SCC for 2020 of \$125. The second step is to reconvene a new IWG tasked with comprehensively updating the SCC over the course of several months that would involve the integration of multiple recent advances in economics and science. We detail these advances here and provide recommendations on their integration into a new SCC estimation framework."*)

(4) **Alternative 5 – Increased Timber Harvest:** “Based on modeling, increased timber harvest under Alternative 5 would result in carbon storage amounting to a social value of \$21 million per year (in 2019 dollars) over the permit term, a 23 percent decrease compared to the no action alternative and a 6 percent decrease relative to the proposed action.”

Therefore, the No Action Alternative (the lowest predicted timber harvest) will sequester a net 571,095 metric tons carbon dioxide equivalent (MT CO₂e) per year over the analysis period, whereas Alternative 5 presumably will decrease carbon sequestration by 23% to a net 439,744 metric tons. We request that, in addition to the total forest carbon per HCP alternative, NFMS also disclose the total potential state forest carbon storage without tree removal during the next 70 years of the proposed HCP’s time horizon. Doing so side-by-side with the estimate per HCP alternative makes sense from the perspective of what the socioeconomic analysis in a NEPA EIS should consider and disclose. Then, the departure per alternative from total carbon potential could be seen in proper perspective. We presume all mentioned values above are available from the DEIS carbon modeling exercise.

VI. Conclusion

We thank the Services for their thoughtful preparation of the draft EIS and look forward to participating in the further development and planning of this HCP. We are happy to meet to discuss these comments and attachments, provide further information, or anything else that is helpful over the course of moving from this draft EIS phase to a final EIS and Record of Decision. This includes being open to conversations with the Board of Forestry and ODF about their future direction related to the shape of this proposed HCP as it moves towards a finalization of the federal NEPA process and a Board vote in 2023.

Sincerely,

Lisa Arkin
Executive Director
Beyond Toxics

Brenna Bell
Forest Climate Manager
350PDX

Grace Brahler
Wildlands Director
Cascadia Wildlands

Brett Brownscombe
The Wild Salmon Center

Julia DeGraw and Doug Moore
Oregon League of Conservation Voters

Jim Fairchild
Audubon Society of Corvallis

Victoria Frankeny
Tualatin Riverkeepers

Stephen Fuller-Rowell
350 Eugene

Noah Greenwald
Center for Biological Diversity

David Harrison
Salem Audubon Society

Angela D. Jensen
Conservation/Legal Director
Umpqua Watersheds

Felice Kelly
Forest Defense Team Co-Lead
350PDX

Steve Pedery
Conservation Director
Oregon Wild

Bob Rees
Northwest Guides and Anglers Association

Bob Sallinger
Portland Audubon Society

Darrell Samuels
President
Klamath Basin Audubon Society

Debbie Schlenoff
Lane County Audubon Society

Joseph Vaile
Climate Director
Klamath-Siskiyou Wildlands Center

Diana Wales
President
Umpqua Valley Audubon Society

Chuck Willer
Director of Forest Programs
Coast Range Association

Joseph Youren and Steve Griffiths
Audubon Society of Lincoln City

ATTACHMENTS:

Attached to these comments as separate PDF documents (submitted through recreation.gov with these comments) are the following, which have been referenced as attachments in different places within the above DEIS comments:

- Attachment 1: Center for Biological Diversity's supplemental expert report: Expert declaration of Dr. Josh Roering
- Attachment 2: Center for Biological Diversity's supplemental expert report: Expert declaration of Dr. Kelly M. Burnett

- Attachment 3: Burns et al. 2022, “Protocol for Channelized Debris Flow Susceptibility Mapping”; published by the Oregon Department of Geology and Mineral Industries (DOGAMI)
- Attachment 4: Mapping for ODF’s 2023 Annual Operation Plans (showing 11 planned timber sales with unbuffered landslide terrain above coho spawning and rearing streams).
- Attachment 5: Henderson, et al., “**Standard Procedures and Methods for Economic Impact and Contribution Analysis in the Forest Products Sector.**” *Journal of Forestry*. (March, 2017).
- Attachment 6: WATSON, P., J. WILSON, D. THILMANY, AND S. WINTER. “**Determining economic contributions and impacts: What is the difference and why do we care.**” *Journal of Regional Analysis and Policy*, 37(2): 140–146 (2007).
- Attachment 7: “*Economic Realities in the Tillamook and Clatsop State Forests: POSSIBILITIES FOR ECONOMIC EXPANSION AND DIVERSIFICATION*” by economists Thomas Michael Power and Philip J. Ruder (A Report Prepared for The Tillamook Rainforest Coalition, January 2003)