Data Submitted (UTC 11): 3/16/2025 4:00:00 AM
First name: Joseph
Last name: Vaile
Organization: Defenders Of Wildlife
Title: Senior Representative, Northwest Program
Comments: Regional Forester Jacque Buchanan and Northwest Forest Plan Amendment Team,

On behalf of Defenders of Wildlife and our over 2,000,000 members and supporters, thank

you for the opportunity to comment on the Northwest Forest Plan Amendment Draft

Environmental Impact Statement. Our full comments are attached.

Thank you for your time and consideration of this important issue.

March 17, 2025

TO: Jacque Buchanan, Regional Forester, Pacific Northwest Region 333 SW 1st Avenue

PO Box 3623

Portland, OR 97208-3623 sm.fs.NWFPquestion@usda.gov Submitted electronically at

https://cara.fs2c.usda.gov/Public/CommentInput?Project=64745

Re: Draft Environmental Impact Statement to evaluate the impacts of amending land management plans for all or part of 17 national forests guided by the 1994 Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl, and attachment A, Standards and Guidelines.

Regional Forester Jacque Buchanan and Northwest Forest Plan Amendment Team,

On behalf of Defenders of Wildlife and our over 2,000,000 members and supporters, thank you for the opportunity to comment on the Northwest Forest Plan Amendment Draft Environmental Impact Statement ([ldquo]DEIS[rdquo]). Defenders of Wildlife is dedicated to the protection of all native animals and plants in their natural communities, and we have a long history of conservation advocacy and engagement in the Northwest Forest Plan ([ldquo]NWFP[rdquo]) area, including collaboration with agencies, partners and residents, promoting wildlife coexistence, and supporting the science-based management of imperiled species and conservation of their habitats.

Our full comments to the DEIS are attached herein as Attachment 1. We value the work of the Federal Advisory

Committee and the Forest Service in updating the 1994 NWFP. We support many of the proposed changes to address Tribal inclusion, older forest conservation, wildfire severity and forest resiliency.

The Amendment would provide long-needed protection for old-growth forests over 120 years in moist forest and 150-year-old trees in dry forests outside of reserved areas.

However, we are concerned that the Amendment redefines these areas in a way that leaves too many of them vulnerable to logging and road construction. These forests are highly valued by communities for their resilience to wildfires, their role as habitats for endangered species, their carbon storage capabilities, their function as climate refugia, and their ability to protect water quality.

We are concerned that the proposed action and other alternatives in the DEIS may leave late-successional associated species vulnerable. We ask that the agency improve the proposed plan components to ensure adequate conservation for species dependent on late-successional ecosystems in the planning area.

Thank you for your time and consideration of this important issue.

Sincerely,

[]

Senior Representative, Northwest Program Defenders of Wildlife

Attachment 1. Defenders[rsquo] Comments on the Northwest Forest Plan Amendment
Table of Contents

I. Introduction

Defenders of Wildlife ([ldquo]Defenders[rdquo]) appreciates the opportunity to comment on the Northwest Forest Plan ([ldquo]NWFP[rdquo]) Amendment Draft Environmental Impact Statement ([ldquo]DEIS[rdquo] or [ldquo]Amendment[rdquo]). The Forest Service amendment to the NWFP was initiated to address changes that have taken place since the NWFP was enacted in 1994. The agency is seeking to modernize the NWFP through this amendment by developing new strategies for addressing climate change and wildfires and engaging Tribal communities and Indigenous perspectives that were largely excluded from the original plan. Our comments are focused on the potential impacts and conservation measures for at-risk wildlife in the planning area.

Our comment submission first establishes the foundation of the NWFP, then examines the primary sections of the Amendment, beginning with Indigenous Knowledge and Tribal Engagement and Economic Opportunities and Sustainable Economies. We then provide comments on other significant issues related to wildlife conservation in the planning area, including mature and old-growth conservation, differentiating between moist and dry forests, and fire resilience. We provide our specific, substantive comments after each relevant topic.

Included in this comment letter is an assessment of the possible impacts of the proposed modifications outlined in the Amendment DEIS. We assessed the changes from the Proposed Action on LSOG habitat, which is essential for several species in the planning area. This assessment informs our comments on the proposed Forest Stewardship plan components. Finally, our comments conclude with sections on the Survey and Manage program, Salvage Logging, Climate Change and Adaptive Management.

In general, several of the elements of the NWFP Amendment, including aspects of the Tribal, fire resistance and resilience, and climate change plan components, would help modernize the NWFP. However, there is a lack of specific plan components that are needed to ensure the continued persistence of late-successional and old-growth ([ldquo]LSOG[rdquo]) dependent species, including the recovery of species listed as threatened or endangered under the Endangered Species Act ([ldquo]ESA[rdquo]). In other plan components, there are aspects that would weaken protection for mature forests that provide essential habitat for at-risk species and could lead to the decline of these species.

a. Foundation of the NWFP

NWFP was enacted in 1994 to strike a balance between timber production and the conservation of forest ecosystems on federal forest lands in the Pacific Northwest ([ldquo]PNW[rdquo]). The NWFP covered nearly 25 million acres of federal land, including 17 National

Forests and seven Bureau of Land Management ([ldquo]BLM[rdquo]) Districts across western Oregon, western Washington, and northwest California. It has been called the largest ecosystem management plan in the world (Blumm et al. 2022). The NWFP amended each BLM Resource Management Plan and United States Forest Service ([ldquo]USFS[rdquo]) Land and Resource Management Plan ([ldquo]LRMP[rdquo]) within the range of the Northern spotted owl ([ldquo]NSO[rdquo]). It remains an influential and model strategy for modern-era forest and landscape management planning that incorporates the principles of conservation biology into the multiple uses of public land (Johnson et al. 2023).

The NWFP was developed in response to the national controversy over the logging of old- growth forest ecosystems in the PNW, particularly regarding the federally listed northern spotted owl (Strix occidentalis caurina) and timber-dependent communities. As the result of a Forest Summit in 1993, a team of scientists and policymakers (known as the Forest Ecosystem Management Assessment Team or [ldquo]FEMAT[rdquo]) crafted the foundation of the NWFP to ensure both ecological protection and timber production. Ultimately, the plan introduced a new approach to land management, including new land-use allocations ([ldquo]LUAs[rdquo]) -- Matrix, Adaptive Management Areas, Late-Successional Reserves ([ldquo]LSRs[rdquo]) and Riparian Reserves -- alongside an Aquatic Conservation Strategy ([ldquo]ACS[rdquo]) to safeguard watersheds and biodiversity. The NWFP represented a significant shift in federal land management by integrating science-based conservation principles into land use planning while also addressing economic and social considerations.

b. Ecosystem Management Approach

Conservation of the federally threatened NSO and, eventually, ESA-listed Evolutionary Significant Units ([ldquo]ESU[rdquo]) of Pacific salmon species (Oncorhynchus spp.) were the catalyst for the creation of the NWFP. However, the PNW's LSOG forests support hundreds of other

species that rely on these ecosystems. Wide-ranging species that depend on large areas of contiguous habitat necessitated the development of a coarse-filter approach to maintain ecosystem processes, connectivity, and resilience. The NWFP applied a coarse-filter strategy by designating large block LSRs and Riparian Reserves, helping ensure protection for NSO, Pacific Salmon, and other LSOG species with large home ranges.

In developing the NWFP, the plan[rsquo]s architects realized that while LSRs would protect wide- ranging species, some species with highly specialized habitat needs would still be at risk. To address this gap, FEMAT identified a list of species that required additional, targeted

protection. As a result, the fine-filter "Survey and Manage" approach was developed to address the needs of these species, as well as others where information about distribution and habitat needs was lacking. This strategy required federal land managers to survey lesser known, rare, or habitat-specific species before ground disturbing activities (e.g., timber harvest, road construction). If these species were found, conservation actions (e.g., buffers, site-specific protections) were implemented. The NWFP integrated both coarse- and fine-filter strategies to provide more comprehensive biodiversity protection.

The LSR system is a fundamental strategy of the NWFP for conserving LSOG forests and the species that depend on them. Although scheduled timber harvest is typically prohibited, active management in LSRs is allowed in situations where ecological restoration is needed. This includes practices like thinning young stands to promote the development of old-growth characteristics or reducing fuel loads to mitigate wildfire risks.1 LSRs are central to NSO and other federally listed species[rsquo] recovery efforts, ensuring that the species have stable, high-quality habitat amid growing pressures on habitat. LSRs benefit a variety of other wildlife species which depend on the structurally complex LSOG forests.

Comment: Maintaining the integrity of the NWFP is crucial for safeguarding the ecological balance and at-risk species in the Pacific Northwest's forests. The NWFP's foundational approach, which combines coarse- and fine-filter conservation strategies, provides a comprehensive framework for protecting biodiversity, especially for species like the NSO, marbled murrelet, and ESA-listed Pacific salmon, consistent with the Forest Service[rsquo]s obligations under section 7 of the Endangered Species Act and the National Forest Management Act and its implementing regulations at 36 CFR 219.9. The coarse-filter strategy aims to protect habitat for wide-ranging species, while the fine-filter "Survey and Manage" approach addresses the needs of specific species with more specialized habitat requirements. Altering this approach could potentially undermine the protection of not only the NSO and salmon but also hundreds of other species that rely on late-successional forests for survival. In amending the NWFP, the USFS must uphold its foundational principles[mdash]scientific integrity, ecological credibility, and legal responsibility[mdash] and take a hard look at the potential impacts of modifying the coarse and fine filter approaches.

----

1 See Attachment A to the 1994 NWFP at B-1, [ldquo]These standards and guidelines encourage the use of silvicultural practices to accelerate the development of overstocked young plantations into stands with late-successional and old-growth forest characteristics, and to reduce the risk to Late-Successional Reserves from severe impacts resulting from large-scale disturbances and unacceptable loss of habitat.[rdquo]

II. The Context of the Proposed Amendment

The National Forest Management Act of 1976 ([ldquo]NFMA[rdquo]) mandates that the USFS revise individual National Forest management plans every 10-15 years, yet most of the NWFP National Forest plans are over 30 years old, predating the regional NWFP (USDA Forest Service 2020). The 2012 NFMA Planning Rule revised the set of guidelines to develop, revise or amend national forest plans, emphasizing collaboration, public participation, and scientific principles for forest ecosystem management, including ecological integrity (USDA Forest Service 2012).

There are several important policy updates and changes in the past three decades relevant to the NWFP, including: the U.S. Fish and Wildlife Service ([ldquo]USFWS[rdquo]) recovery plan for the NSO (2011), NSO critical habitat designation (2012) and revision of critical habitat (2021). Oregon BLM finalized revised Resource Management Plans ([ldquo]RMPs[rdquo]) in 2016, which effectively removed 2.6 million acres from the NWFP. While the BLM plans still mirror the NWFP in some respects, western Oregon BLM RMPs are now on a separate track from the USFS despite being embedded in the same landscape with similar management and regulatory issues (Blumm et al. 2021).

In the Notice of Intent to prepare this EIS, the Forest Service outlined changed conditions and new information that will guide the development of the Amendment. The stated objectives encompass enhancing wildfire resilience, facilitating climate adaptation and mitigation, tackling management needs to protect mature and old-growth forests, supporting affected communities, addressing environmental justice, and ensuring tribal inclusion in developing and implementing the plan (USDA Forest Service 2023). With the current policy context shaping the regulatory direction of the NWFP amendment process, it is important to understand the social and ecological transitions of the PNW region since the 1994 plan was established.

a. Federal Advisory Committee Outcomes

On November 18, 2022, the USFS announced it would establish the Northwest Forest Plan Area Federal

Advisory Committee ([ldquo]FAC[rdquo]) to offer expert recommendations on updating the NWFP (USDA Forest Service 2022b). The Committee was formally empaneled under the Federal Advisory Committee Act on July 7, 2023. It is composed of members approved by the Secretary of Agriculture, with each member serving a two-year term. On December 18, 2023, the USFS announced a Notice of Intent to begin a targeted amendment to the NWFP that would apply to National Forests that include provisions of the NWFP. The

notice states that [ldquo]changed ecological and social conditions are challenging the effectiveness of the NWFP (USDA Forest Service 2023).[rdquo]

The DEIS covers 17 national forests within the NSO[rsquo]s range in California, Oregon, and Washington. The Amendment aims to enhance wildfire resilience, adapt to climate change, improve old-growth forest conditions, include tribal perspectives, and support local economies. The DEIS does not include a preferred alternative, but the proposed action (Alternative B) reflects the FAC consensus recommendations that were developed and presented to the USFS.

III. Summary of the Amendment

The Amendment is divided into topics that were the focus of FAC subcommittees. The Proposed Action includes several new Tribal Inclusion and Indigenous Knowledge components related to increasing Tribal co-stewardship, treaty and protected tribal rights, access and gathering, and Indigenous Knowledge.

Alternative A (No Action) maintains the existing 1994 NWFP direction with no changes.

Alternative B (Proposed Action) introduces updated plan components, including tribal inclusion, forest stewardship, fire resilience, climate adaptation, and economic support for communities. It is based on the FAC recommendations and emphasizes conserving old-growth forests, improving wildfire resilience, and integrating Indigenous Knowledge through co-stewardship with Tribes. It emphasizes climate adaptation, carbon stewardship, timber and ecosystem services to support sustainable communities.

Alternative C focused on natural processes and further limits logging and active forest management compared to Alt. B. It prioritizes passive restoration, prohibits salvage logging in moist Late-Successional Reserves ([ldquo]LSRs[rdquo]), and strengthens protections for NSO. This alternative emphasizes ecological integrity, wildland fire use, and cultural significance, with strict guidelines for protecting old-growth and late-successional habitat.

Alternative D emphasizes flexibility in forest restoration and wildfire risk reduction and predictability of timber outputs. It expands fuels treatments in high-risk areas, allows limited salvage logging, and provides exemptions for certain activities. Tribal inclusion is enhanced with added input on management and culturally significant plant restoration. It emphasizes community and economic needs and expands active forest management.

IV. Indigenous Knowledge and Tribal Engagement

There are over 70 federally recognized tribes in the NWFP area, as well as many others with ancestral lands that overlap the planning area (Stuart and Martine 2005). At the time of the NWFP, tribes were hardly considered central in the [ldquo]loggers versus jobs[rdquo] debate. While the NWFP emphasized the importance of tribal consultation, it failed to consider the influence of tribal fire use and management on forest health, the value of cultural management practices to tribes, or the access tribes needed to resources for subsistence, cultural purposes and overall economic well-being (Long and Lake 2018).

There is growing awareness that the reduction in Indigenous fire use has resulted in impacts on PNW forest ecosystems, including the buildup of fuels that can lead to more severe wildfires (Prichard et al. 2021). In addition to the beneficial reduction in fire severity, cultural fire use provides materials that sustain Tribes. Tribes in the region have expressed interest in increasing their role in the stewardship of forests in the Pacific Northwest, including the re-establishment of traditional fire use (Long et al. 2021). The Forest Service has aimed to use the Amendment as an opportunity to foster a more inclusive approach and strengthen relationships with Tribal entities. (DEIS at 1-9).

Comment: The Draft EIS marks a significant improvement from the original NWFP[rsquo]s lack of inclusion of Tribes. However, the proposed Amendment should be further refined based on input from Tribal entities. Elevating Tribal leadership and integrating Indigenous Knowledge into national forest management could be transformative. Moreover, implementing the Tribal plan components directly addresses many forest management challenges outlined in the DEIS. For example, increasing allowances for the use of Tribal fire could dramatically increase community safety, forest resiliency, and protect habitats. It is essential for the USFS to prioritize Tribal inclusion in the Amendment and the Record of Decision ([ldquo]ROD[rdquo]).

Comment: The FEIS and ROD should clarify how the USFS will resolve issues where there are overlapping Tribal interests and ancestral lands. Consider working with Tribes to add an additional Tribal component to address methods for potential differing views and requests between tribes (see TRIBAL-TPTR-OBJ-01).

Comment: The DEIS includes a desired condition plan component in the Tribal section to improve beaver habitat. This component is aimed at increasing watershed and beaver habitat restoration, especially via tribal partnerships (TRIBAL-BIO-DC-01). This plan component would directly benefit groundwater, surface water, and aquatic habitat complexity (Fairfax and Westbrook 2024). To ensure beaver projects are implemented, the FEIS and ROD should create an objective to implement at least 10 beaver restoration projects every 5 years in the planning area.

V. Economic Opportunities and Sustainable Communities

The Amendment includes specific plan components that are aimed at providing economic opportunities and sustainable economies. The DEIS affirms that forests provide essential social and economic benefits, including forest products and jobs, along with critical ecosystem services such as clean air and water, food, medicine, recreation, and climate

change mitigation. The health of these ecosystems is key to sustaining both social and economic well-being. (DEIS at A1-14).

Public expectations have evolved since 1994, with a greater demand for diverse and equitable recreation opportunities, a stronger role for Tribes, and more focus on non- timber resource management. (DEIS at A1-14). Additionally, the region has adjusted to the changes in forest management brought forth in the past three decades, and timber is no longer the driving economic force that it was in the past.

Charnley and others (2018) synthesized findings from monitoring and research on the relationship between federal forest management and socioeconomic well-being in NWFP communities to evaluate the effects of the 1994 plan. The results are mixed with uneven effects of the reductions in federal timber harvest in different communities. For example, Donoghue and Sutton (2006) found that between 1990 and 2000, 27 percent of NWFP-area communities underwent little change in socioeconomic well-being, 37 percent experienced a decrease, and 36 percent experienced an increase.

Many of the job losses in the timber industry are not attributed to logging levels. Helvoigt and Adams (2009) found that 38% of job decline between 1988 and 1994 (when the NWFP was enacted) is attributed to automation that reduced labor needs. Due to automation, mill numbers and jobs have declined while the capacity of mills to process logs may have even increased in some areas. For example, the number of Washington State sawmills declined from over 200 in 1968 to 75 in 2002, while the capacity of mills increased as mills became larger and more efficient (Helvoigt and Adams 2009).

Over the past three decades, the relative contribution of wood products manufacturing to the regional economy has been much less than it was prior to the NWFP. In Oregon, the timber industry dropped from about 8 percent of the state[rsquo]s gross domestic product in the late 1980s to about 1 percent in 2009 (Lehner 2012). Overall, the economies of the three states have diversified and expanded. The resilience of many communities to adapt to natural disturbances, especially increasingly severe wildfire seasons, is now a central socioeconomic issue in the region (Charnley et al. 2018).

Comment: The timber industry is nowhere near as central to the regional economy as it was 30 years ago. Other socioeconomic factors have emerged in the region that provide important context for the Amendment, which belies the emphasis on timber production in the Amendment. The Draft EIS emphasizes timber production and a [ldquo]predictable supply of timber[rdquo] to support communities, which leads to a variety of plan components (see for example FORSTW-MTX-MOI-OBJ-01-B which calls for plan components to [ldquo]bolster timber production[rdquo]). The DEIS assesses the sustainability of regional communities based on the

amount of timber volume supporting direct and secondary jobs (DEIS at ES-11). Given the shifts in the regional economy, the FEIS and ROD should reconsider plan components that are designed to elevate timber production for the purposes of community stability. The FEIS should take a hard look and disclose the myriad economic contributions of healthy, intact forests and not over-emphasize the contributions of timber production to community stability in the region.

VI. Mature and Old-Growth Forest Ecosystem Conservation

The conservation of mature and old-growth forests (i.e. LSOG) forests and the wildlife that depend on older forest habitat was a primary driver of the NWFP. Principally, the NWFP was established to balance the needs of species dependent on old forest ecosystems, including the NSO, with the economic contributions of timber production to rural communities. However, the plan was a compromise and failed to protect all the remaining old-growth forests (Blumm et al. 2021). In the years since the NWFP was finalized, timber sales in older forests continued to be controversial and led to protests and litigation (Malmsheimer et al. 2004).

The social and ecological value and awareness of older forests has grown since 1994. While the focus of the USFS is on the ecological roles of older forests, these forests also have spiritual, intrinsic, and ecosystem service values (Spies et al. 2018). There is also increasing recognition of the importance of carbon storage of the older forests managed by the NWFP. PNW LSOG forests contain some of the highest concentrations of carbon biomass of any forest ecosystem globally (Law and Waring 2015).

While timber harvest of older forests has declined, and the NWFP has led to increases in older forest habitat from forest succession, the extent of loss of old-growth forests from wildfire and other disturbances has exceeded increases in old forest in some portions of the NWFP (Hayes 2006). The declines in older forests from wildfire were generally highest in the southern and eastern portions of the NWFP area, where wildfires have been relatively common and where there have been large high severity patches (Spies et al.

2018).

The fate of the NSO is intertwined with the fate of old-growth, and the NWFP was enacted to help recover the threatened species. Yet, populations of NSO have continued to decline dramatically since 1994. According to Franklin et al. (2021), the most recent range-wide data show that NSO populations are declining by 6[ndash]9% annually in over half of the demographic study areas and 2-5% annually in the remaining study areas. The decline in old forests from wildfire led to a loss of suitable habitat for the NSO. However, NSO in portion of the range with a low severity fire regime can benefit from a mix of forest

successional stages created by natural disturbances that create edges older forest (Franklin et al. 2000; Yackulic et al. 2019).

Another major change since 1994 is the emergence of a new threat from the invasion of the barred owl (USFWS 2008). The barred owl presents a significant and unanticipated impact, and it is now a primary concern for NSO. Despite the threat from the barred owl, the protection of older forest habitat remains a primary goal in the recovery plan of the NSO (U.S. Fish and Wildlife Service 2011).

Comment: The recovery of the NSO and other at-risk forest-dependent species must continue to be a central driver in the Amendment. The plan was originally established to balance the conservation of old-growth forests with the needs of rural communities, with the NSO's recovery as a key objective. However, since its inception, the NWFP has not fully protected all remaining old-growth forests, and NSO populations have continued to decline dramatically. In particular, the loss of LSOG due to wildfire, particularly in the southern and eastern portions of the NWFP area, has reduced the NSO[rsquo]s suitable habitat. The recent invasion of the barred owl has further compounded the challenges to NSO recovery. Given that NSO is intrinsically tied to the preservation of older forest habitat, it is crucial that the Amendment focuses on strengthening protections for these forests (see Sections IX-XI for specific modifications to plan components and additional plan components).

VII. Differentiating Between Moist and Dry Forests

Categorizing Pacific Northwest forests into moist and dry types can help reflect [ldquo]their composition, growth conditions, and historic disturbance regimes, while recognizing that these represent contrasting ends of a disturbance continuum[rdquo] (Johnson and Frankin 2009). The 1994 NWFP made slight adjustments in management approaches between forests that are classified as moist (generally in the west and northern portion of the planning area) and those that are dry (generally in the southern and eastern portions of the planning area). However, most of the plan components applied to the entire planning area.

The Amendment introduces a significantly different approach to forest management depending on whether a forest is classified as moist or dry. To protect older moist forests, the Amendment proposes increasing timber outputs through variable density treatments in younger stands, concentrating harvests within a smaller footprint compared to dry forests.

For dry forests, where fire histories and vulnerabilities to fire, insects, disease, and climate-induced stress are concerns, the Amendment seeks to accelerate resiliency-

focused management. Differentiating between moist and dry forests is, therefore, a critical first step in determining the appropriate management approach and application of plan components.

In the absence of a definitive map or delineation within the NWFP Amendment, a new guideline (FORSTW-ALL-GDL-01) instructs interdisciplinary project planning teams to classify forests as moist or dry using one or more of the following methods:

* Identifying stand-scale plant associations.
* Consulting relevant scientists and interested Tribes to characterize plant communities.
* Mapping variables, such as climate water deficit, that indicate forest type.
* Mapping overstory tree composition characteristics that are indicative of forest type.
* Applying emerging scientific approaches to differentiate forest types.

This framework aims to apply forest management strategies grounded in ecological characteristics that are tailored to the unique needs of moist and dry forests.

Comment: The principle of tailoring management approaches based on only moist and dry forest types is too limiting, as it does not fully account for the environmental and climatological gradients within the planning area. For example, Reilly et al. (2020) present wet, moist, cool, and dry forest types with different fire regimes and restoration needs. At a minimum, we recommend that the Amendment incorporate a third forest type: intermediate or mixed. Intermediate forests allow for treatments tailored to the transitional forests from the pure, moist, coastal types to the dry types found more commonly in the eastern and southern portions of the planning area.

VIII. Fire Resilience
Across the plan area, forested landscapes are increasingly vulnerable to severe, large- scale disturbances from drought, high-severity fire, and other natural disturbances. Many forests within the region have deviated from their historical structure, composition, and fire regimes, influenced by various factors such as fire suppression, logging practices that favor removing larger, more fire-resistant trees, and the loss of Indigenous fire use (Prichard et al. 2021). In the seasonally dry forest in the eastern and southern portions of the NWFP area, climate change is already increasing the extent and severity of wildfires (Halofsky et al. 2018). While the NWFP was crafted to accommodate natural disturbances, wildfires pose a greater challenge than was considered in the 1994 NWFP (Spies et al.

2018).

The impacts of the increasing extent and severity of wildfire include a loss of older forest habitat for late-successional species, which is the foundation of the NWFP. Recently, the USFS outlined a 10-year plan, [ldquo]Confronting the Wildfire Crisis: A Strategy for Protecting

Communities and Improving Resilience in America[rsquo]s Forests,[rdquo] that calls for focusing fuels and forest health treatments more strategically and scaling up the efforts by working closely with partners outside the agency (USDA 2022). The need to increase the use of prescribed fire is featured prominently in this plan.

The community protection area ([ldquo]CPA[rdquo]) is a new overlay in the Amendment, and it would be on the top of the LUA hierarchy. This would allow a CPA definition tied to Community Wildfire Protection Plans ([ldquo]CWPPs[rdquo]), which can have inconsistent Wildland Urban

Interface ([ldquo]WUI[rdquo]) definitions. Where there is not a more comprehensive fire risk assessment [ldquo]this plan direction applies in all LUAs within 1 mile of a community (see DEIS at A1-24)." This is an overly broad categorization of CPAs.

Moreover, the CPAs and fuels treatments take precedence over riparian reserve standards and guidelines when necessary to meet fire behavior objectives (FIRE-ALL-GDL-03). Fuels treatments also take precedence over other standards and guidelines across the LUAs when necessary to meet fire behavior objectives in CPAs (FIRE-ALL-GDL-04).

Comment: USFS should enhance protections for mature and old-growth trees, as well as riparian reserves, within CPAs through plan components. According to Lesmeister et al. (2021), LSOG forests in the planning area are less prone to uncharacteristic fires, and their integrity should not be compromised during fuel treatments. The primary objectives of LUAs should be given equal priority (see e.g., FORSTW-ALL-DRY-STD-01, FORSTW-LSR-MOI-STD-01, and FORSTW-MTX-MOI-STD-01), rather than being subordinate to general fuel treatment goals.

Comment: All CPAs should reference and use the definitions from the U.S. Forest Service publication [ldquo]Wildland Urban Interface of the Conterminous United States[rdquo] (Martinuzzi et al. 2015). Engaging in community-led CWPP definitions and other collaborative fire mitigation efforts is important, but analyzing the magnitude of CPA boundaries and the potential impacts of management in CPAs becomes impossible if these are based on future mapping efforts that may significantly expand the boundaries. The USFS should take a hard look and assess all potential impacts of the future CPA boundaries.

Comment: The USFS should advance the fire guideline from Alternative D (FIRE-ALL-GDL- 05-D)2 and support standards for the appropriate use of unplanned ignitions to manage fire and restore fire-adapted ecosystems while balancing safety and ecological restoration objectives. This includes beneficial fire in wilderness (Goal) and managing (as opposed to fighting) wildland fire (Potential Management Approach). The FEIS and ROD should clarify definitions for "wildland fire use" and associated terms, specifying conditions under which unplanned ignitions can be used to meet restoration goals.

Comment: The Amendment should support the creation of fire management zones that vary suppression levels based on ecological and community protection goals, as outlined in Alternative D. The USFS should integrate planned ignitions into the forest planning framework to expand treatment areas where necessary to utilize fire, while balancing risks and benefits.

IX. Assessment of the Amendment on At-Risk Wildlife

We assessed the potential effects of proposed changes introduced in the Amendment DEIS by evaluating impacts on the LSOG habitat that is important to the NSO, marbled murrelet (Brachyramphus marmoratus), Pacific fisher (Pekania pennanti), and coastal marten (Martes caurina humboldtensis). These species were selected due to their conservation status, broad ranges, and potential vulnerability to changes in LSR Standards and Guidelines.

Three of these species[mdash]the northern spotted owl, marbled murrelet, and Pacific fisher[mdash] are strongly associated with LSOG forests, making them particularly sensitive to habitat loss and fragmentation. The NSO and marbled murrelet are federally listed under the ESA, necessitating careful consideration in any management revisions. The coastal marten, though possibly not an obligate of LSOG forests, remains poorly understood in terms of population status and distribution, warranting its inclusion in the assessment. The Pacific

----

2 Alternative D includes language that supports the use of wildland fire (prescribed fire, tribal cultural burns, unplanned naturally caused wildfire ignitions) to meet multiple resource objectives when and where conditions permit and risk is within acceptable limits on all LUAs, including congressionally reserved lands. Multiple resource objectives could include: 1) re-introducing wildland fire as a necessary ecological process,

2) enhancing plant and wildlife habitat, including critical habitat for threatened and endangered species (where appropriate), facilitating tribal cultural use objectives, 3 improving forest health, conserving ecosystem services, 4) managing smoke emissions, 5) reducing fuel loading, and 6) protecting communities and infrastructure.

----

fisher, while not federally listed, depends on structurally complex forests and is vulnerable to habitat fragmentation, climate change, and increased wildfire activity.

By assessing how these four species could be impacted by the proposed amendments, we can better understand the ecological consequences of management changes and ensure that forest policies promote biodiversity, ecosystem resilience, and balance the needs of late-successional habitat with the forest resilience plan components in the Amendment.

This assessment can inform the FEIS and ROD so that it achieves the USFS obligations to assure the viability of Species of Conservation Concern ([ldquo]SCC[rdquo]) and contribute to the recovery of species listed under the ESA.

a. Northern Spotted Owl

NSO has experienced significant population declines across its range. As note above, Franklin et al. (2022) found in the most recent range-wide data that populations are declining by 6[ndash]9% annually in over half of the demographic study areas and 2-5% annually in the remaining study areas. The primary drivers of these declines are habitat loss and competition from the invasive barred owl (Strix varia) (Lestmeister et al. 2018). Barred owl presence is correlated with reduced survival and reproduction rates in NSOs, further exacerbating their downward trajectory (Wiens et al. 2014). In addition, climate change is influencing the frequency and severity of wildfire in key NSO habitats, increasing uncertainty about future population stability (Glenn et al. 2010).

One of the most significant threats to NSO populations is habitat fragmentation, driven by forest management and land-use changes. NSOs generally avoid human-dominated landscapes (e.g., developed areas, tree plantations) in favor of older forest habitat (Gutie´rrez 1996; Duggar et al. 2005). Barred owls have rapidly expanded their range into the range of the NSO. A generalist, barred owls are more adaptable than NSOs, capable of occupying a broader range of forest types and consuming a wider variety of prey. Barred owls also aggressively outcompete NSOs, displacing them from territories and reducing their access to resources (Wiens et al. 2014), further threatening the NSO. Given the dual threat of a deficit of LSOG habitat and the barred owl, the remaining habitat for the NSO is essential to its recovery (Dunk et al. 2019) and a central issue in this Amendment.

b. Marbled Murrelet

The marbled murrelet has experienced significant population decline across its range, from Alaska to California and was listed as threatened under the ESA in 1992 due to habitat loss and other factors. In 2009, the U.S. Fish and Wildlife Service determined that the murrelet population in Washington, Oregon, and California met the standards of

discreteness and significance and designated a Distinct Population Segment ([ldquo]DPS[rdquo])

(Service 2009).

Timber harvest during the 20th century significantly reduced marbled murrelet habitat across its range in the lower 48 United States (Perry 1995). As of 2017, only about 7% of the

8.1 million hectares (20 million acres) within the NWFP area capable of supporting forests remains suitable for nesting (U.S. Fish and Wildlife Service 2024). Populations in these states have declined in recent decades, with some regions experiencing steeper declines. Low reproductive success, primarily driven by habitat loss and predation, remains a key threat to the species[rsquo] survival (Zarikov et al. 2007).

Unlike other seabirds that nest in colonies, marbled murrelets nest in old-growth forests up to 50 miles inland, relying on large, moss-covered branches for nesting (U.S. Fish and Wildlife Service 2024). This makes them highly dependent on intact LSOG forests. Their populations are particularly vulnerable because they produce only one chick per year, and many nesting attempts fail due to predation or disturbance. The majority of nesting habitat occurs on federal lands that have been designated LSR in the NWFP (Lorenz et al. 2021).

c. Pacific Fisher

The Pacific fisher has experienced significant population declines across its historical range in the western U.S. and Canada, primarily due to habitat loss, fragmentation, and human-caused mortality (Aubry and Lewis 2003). Historically found throughout the PNW and California, fisher populations are now largely restricted to isolated populations in the Sierra Nevada, southern Oregon, and parts of northern California. Some reintroduction efforts have recently expanded their range in Washington state in the southern Cascades and Olympic Peninsula (Green et al. 2022a).

Pacific fishers rely on LSOG forests with specific structural characteristics. In general, they require large-diameter trees and snags for denning and resting, high canopy closure (often

>60%) for protection from predators, complex understory and woody debris, which support key prey species like small mammals and connectivity between forest patches, allowing for movement and genetic exchange between populations (Powell et al. 2003).

The greatest threat to Pacific fishers is habitat fragmentation, caused by habitat removal, road construction, and urban development. Fishers rely on LSOG forests with dense canopy cover, large trees, and abundant downed woody debris for denning and foraging (Aubry et al. 2013). When forests are aggressively logged or fragmented, fishers lose critical habitat and become more vulnerable to predators. Small, isolated populations of Pacific fishers are particularly vulnerable to local extinction. Their low reproductive rates and slow dispersal make it difficult for populations to recover once they are lost. Research has also highlighted the genetic bottlenecks that have developed in fragmented populations, which may impact long-term viability (Wisely et al. 2004).

High-severity wildfires, exacerbated by climate change, have become another growing concern. While fishers are adapted to some level of natural fire disturbance, increasingly frequent and wildfires with large swaths of high severity effects are further isolating populations and post fire logging negatively impacts the species (see, for example, Green et al. 2022b; Thompson et al. 2021). Human-caused mortality is another significant threat, particularly from rodenticide exposure from marijuana cultivation on public lands and other sources (Gabriel et al.

2015).

d. Coastal Marten

The coastal marten, a subspecies of the Pacific marten, is a rare carnivore found in the coastal forests of northern California and southern Oregon. A recent publication indicates that marten populations are likely to represent a single subspecies (Schwartz et al. 2020). Once widespread, coastal marten populations have declined significantly, leading to their federal listing as a threatened species under the ESA in 2020. Recent studies estimate that fewer than 400 individuals remain across their range, with small, isolated populations persisting in forest patches (Service 2020).

The primary threat to coastal martens is habitat loss and fragmentation, driven by logging and land development. Martens rely on forests with dense understory vegetation and large trees for denning, foraging, and protection from predators. Clearcutting and forest thinning reduce the availability of suitable habitat, forcing martens to traverse open areas and regenerating forests where they are more exposed to predation (Slausen et al. 2019). High- severity wildfires also pose an increasing threat to coastal martens. Recent fires, such as those in northern California and southern Oregon, have burned large portions of their already limited habitat, further isolating populations (Service 2020).

e. Potential Amendment LSOG Impacts

The existing NWFP includes a standard that limits treatments in LSR to those under 80 years (see NWFP Standards and Guidelines at C-12). Treatments are permitted, but they are reviewed by the Regional Ecosystem Office for consistency with LSR objectives of protecting and enhancing LSOG forests (see Attachment A, NWFP at A-4). Critical Habitat Units ([ldquo]CHUs[rdquo]) are designated by the U.S. Fish and Wildlife Service for NSO to support the conservation of [ldquo]high quality[rdquo] NSO habitat to support its survival and recovery.

The Amendment would raise the age of treatments in moist LSRs from 80-120 years old (FORSTW-MTX-MOI-STD-01) and from an 80-year stand level standard to a 150-year tree level standard dry forest LSR (FORSTW-ALL-DRY-STD-01). CHUs outside of LSRs (i.e. in Matrix) would have a similar standard but based on stand birthdate (see details below).

We assessed the potential effects of proposed changes introduced in the Amendment by mapping all large reserve areas currently provided with protection under the Plan (Figure 1). Data were obtained from USFS NWFP geodatabase. NWFP LSRs and/or NSO CHU with forests patches mapped over 80 years of age were classified as currently protected mature and old-growth (i.e., LSOG) forests. The [lsquo]Susceptible Forest[rsquo] includes all LSRs and CHUs in the planning area, where changes to existing plan direction are most likely. These are forest stands in moist forests aged 80-120 years and dry forests aged 80-150 years.

We assessed stands 80 years and older based on the maturation phase of stand development, which [ldquo]begins between 80 and 140 years depending on site conditions and stand history.[rdquo] (1994 NWFP at B-2). These forests are of importance to LSOG habitat that is important to the NSO, marbled murrelet, Pacific fisher, and coastal marten.

Figure 1. Currently Protected Mature and Old-Growth Forest map displays all LSRs and CHUs in the planning area, with moist forests 80-120 years and dry forests 80-150 years, where changes to existing plan direction are most likely.[figure showing susceptible forests, see pdf]

According to this assessment, currently protected LSOG forest equals approximately 7,830,400 acres in the plan area, while Susceptible Forest covers 2,791,897 acres.

Approximately 36% of the currently protected forest is susceptible under this Amendment.

f. Fire Refugia

Fire refugia are landscape features that remain unburned or experience minimal fire impact, allowing them to support postfire ecosystem functions, maintain biodiversity, and enhance resilience to disturbances like wildfires (Meddens et al. 2018). These refugia play a crucial role in providing durable habitat for species, including the NSO, particularly in dry forests where fire risks are higher. Fire refugia act as safe havens for wildlife, enabling species to survive in areas that may experience high-severity fire.

It is essential to protect fire refugia in the NSO[rsquo]s range because they can persist on the landscape and provide habitat diversity, enabling species recovery after fires. These refugia support the owl[rsquo]s nesting, roosting, and foraging habitat by providing suitable forest conditions that are conducive to its survival (Lesmeister et al. 2021). Moreover, the persistence of NSO habitat under global changes such as climate change is uncertain, making refugia conservation even more critical. Effective management of fire refugia can aid in sustaining ecological functions and species resilience in the face of increasing fire severity and frequency due to changing disturbance regimes.

We assessed the amount of fire refugia in the planning area that overlaps with currently protected mature forest (Figure 2). We used fire refugia data modeled from Oregon State University. There are multiple iterations of holistic model outputs that were run under three scenarios: p10, p50, and p90 representing fire weather and fire growth conditions and considering either solely "Fire Weather" (W) or "Fire Weather and Fire Growth" (WFG). Of these, we used the p10WFG model as it includes the most considerations and captures the greatest amount of fire refugia under current climactic conditions. The outputs of the models represent the likelihood a given area would result as fire refugia. We represented data outputs above 40% in the p10WFG model as fire refugia as a moderate-high cutoff.

Figure 2. Fire refugia map displays modeled fire refugia data from Oregon State University, representing outputs greater than 40% in the p10WFG model as a fire refugia as a moderate-high cutoff. Displayed fire refugia are clipped to be within mature forest and either CHU or LSRs, and do not represent the entirety of refugia in the region.[Figure showing mature and moist forest by state, see pdf]
The assessment mapped key acreage related to fire refugia and susceptible forests:

* Total Susceptible Forest: 2,791,897 acres
* Susceptible Dry Forest: 1,535,983 acres
* Total Fire Refugia: 1,230,288 acres
* Fire Refugia in Dry Forest: 528,547 acres

Fire refugia cover 44% of the total susceptible forest and 34% of the susceptible dry forest. Fire refugia in dry forest cover a total of 19% of all susceptible forest.

Considering fire refugia is important for preserving ecosystems, biodiversity, and listed species like the NSO, especially in dry forests where management could remove the constituent elements of the owl[rsquo]s habitat. Fire refugia provide safe areas during wildfires, supporting resilience and recovery. This assessment highlights the proportion of forests with fire refugia, indicating areas where heightened protection and management are essential to the conservation of federally listed species.

Comment: The Plan should place a strong emphasis on the protection of fire refugia, especially in dry forests, where active management may inadvertently degrade habitat for species like NSO. Fire refugia are vital for maintaining ecosystem integrity and supporting biodiversity, including listed species. Lesmeister et al. (2021) conclude that these refugia can dampen the effect of increased wildfire activity and are important components of landscapes with fire resiliency. A standard should be developed to identify fire refugia and avoid management that would degrade the LSOG attributes of these forests. The assessment clearly underscores the significance of increased protection for fire refugia to support the conservation of federally listed species.

X. Comments on the At-Risk Wildlife Assessment

Comment: The Amendment needs to be improved to ensure the continued persistence of NSO, Pacific fisher, marbled murrelet and coastal marten. Approximately 36% of the currently protected forest (LSR and NSO CHU over 80 years of age) is susceptible under this Amendment. The potential impacts of the changes to LSR Standards and Guidelines may lead to the loss of significant habitat for these species. The FEIS and ROD must be strengthened to ensure the conservation and recruitment of an adequate amount of NSO nesting, roosting and foraging habitat [ndash] while maintaining forested dispersal corridors.

Comment: The USFS needs to take a hard look at the potential impacts of the Amendment on the viability of species reliant on older forest conditions, including ESA-listed species.

Comment: The marbled murrelet remains at risk due to continued habitat loss and predation pressures. The FEIS and ROD require stronger conservation to ensure the species' survival. Protecting and recruiting more old-growth nesting habitat is critical for maintaining stable populations in the long term.

Comment: Pacific fisher populations remain highly vulnerable due to habitat fragmentation, wildfire, and human-related threats. While habitat protection and reintroduction efforts have provided some successes, continued forest conservation and restoration will be essential for ensuring the species[rsquo] long-term survival. Develop plan

components to ensure the conservation of Pacific fisher by protecting and recruiting more habitat.

Comment: To recover the coastal marten, the Amendment needs to ensure forest protection and habitat restoration, particularly through the designation of conservation reserves and restrictions on removing coastal marten habitat. Slausen et al. (2019) proposed a three-pronged approach that includes 1) protecting existing populations and suitable habitat; reestablish populations in areas of currently suitable but unoccupied habitat; and 3) restoring habitat conditions in specific areas to increase population size, distribution, and connectivity. The USFS needs to strengthen plan components to ensure the conservation of coastal marten.

Comment: The DEIS provides no analysis of the potential impacts of the alternatives on federally listed, Survey and Manage, or Regional Forester Sensitive Species. The DEIS states that an analysis will be provided in forthcoming Biological Assessments ([ldquo]BA[rdquo]) being prepared in ESA consultation with the USFWS and National Marine Fisheries Service as well as in the final Biological Evaluation ([ldquo]BE[rdquo]) and this information will be summarized in the Final EIS (DEIS at 3-51). The public should be able to provide comments on the analysis and that should inform the final Amendment and the ROD.

Comment: The Amendment needs strengthened plan components to protect NSO, pacific fisher, Marbled murrelet and coastal marten habitat during project implementation to comply with the ESA. For example. in the 2016 BLM RMP (USDI, Bureau of Land Management 2016), several measures were included in LSR management direction to protect NSO and marbled murrelet, through habitat protection and management actions to ensure compliance with the ESA (see page 70-74). Key aspects include:

Habitat Protection and Maintenance: The RMP focuses land management activities in LSR on maintaining and promoting the development of suitable nesting and roosting habitat for the northern spotted owl. This includes managing large blocks of habitat that support clusters of reproducing owls and ensuring these habitats are well-distributed across ecological conditions to facilitate owl movement and survival.

Similar efforts are directed at preserving nesting habitat for the marbled murrelet. The plan ensures that silvicultural activities do not interfere with nesting functions, while also allowing for fuels reduction or insect control that do not degrade habitat quality.

Structural Features and Habitat: Management includes the retention of important

structural elements in conifer forests, such as large, old trees (>30[rdquo] DBH), snags, and downed woody debris. These features are essential for providing complex habitat for both owls and murrelets.

Silvicultural treatments are designed to improve the quality of habitats, enhance prey availability, and maintain a complex forest structure that supports both species.

While protecting habitat, the plan allows for activities like fuels reduction and insect control to ensure overall forest health. However, such activities must be carefully managed to avoid downgrading or removing critical owl and murrelet habitats.

The removal of hazard trees is allowed, but with stipulations that the removal should not compromise the primary habitat functions for either species.

The RMP includes provisions for using prescribed fire to restore and maintain ecological conditions that are beneficial for wildlife. These treatments are meant to reduce the risk of uncharacteristic wildfires while improving habitat resilience for at-risk species.

The RMP emphasizes the protection of older, structurally complex conifer forests, which are especially important for the northern spotted owl as they represent the highest-value nesting-roosting habitats.

XI. Forest Stewardship

The forests within the NWFP vary significantly in terms of scale, setting, vegetation, species, and ecological functions. They are shaped by a variety of factors, including climate, disturbance regimes, management history, and the impacts of fire exclusion. Historically, these forests supported diverse, resilient landscapes with a balance of LSOG forests, as well as other habitats that were maintained by fire. Stewardship of these landscapes, as defined by the Amendment, recognizes the variability in fire regimes and their role in maintaining ecological resilience, acknowledging that different forest types[mdash] dry and moist forests[mdash]require distinct management approaches.

The Amendment distinguishes between these forest types and LUAs and provides specific management guidelines for each while also emphasizing the need to assess and manage forests at the stand level. This approach is intended to ensure that management strategies are tailored to the specific needs of each forest type and its associated ecosystems (see DEIS at A1-13 and 14).

Comment: FORSTW-ALL-GLD-03 is an important guideline that suggests that site-specific planning should be ecologically appropriate and consider both fine-scale plant associations and broader vegetation zones when planning and implementing treatments. Key factors include landscape context, historical and future disturbance regimes, desired conditions, scientific data, co-stewardship with Tribes, Indigenous knowledge, and collaboration with stakeholders. Importantly, protection of rare or sensitive species and

critical habitats for federally listed species is a consideration. We recommend elevating this approach from a guideline to a specific standard to ensure that projects protect habitat for sensitive species and federally listed species.

a. Moist Forest LSR Plan Components

The proposed changes in moist forests are substantial. The Amendment would increase the harvest age in moist LSRs from 80 to 120 years. One justification for this change is that many legacy plantation forests in the planning area have matured since 1994. However, the Amendment lacks clear language to distinguish between the harvesting of 80[ndash]120- year-old plantation forests and structurally complex natural stands that regenerated after disturbances.

Additionally, younger but mature forests in the 80[ndash]120-year age range can provide essential habitat for species that depend on LSOG forests. The Amendment sets an Objective to treat at least one-tenth (65,000 to 81,000 acres per decade) of young stands established after 1905 in moist forest Matrix lands across the planning area. Significantly, the Moist Forest Guideline (FORSTW-LSR-MOI-GLD-01-B) changes the goals of LSRs. This language allows for LSR management for species [ldquo]dependent on younger stands.[rdquo] This is not the purpose of the LSR system and the USFS would significantly change the stated objectives of the NWFP LSR system with this language.

Comment: Include a standard that strengthens protection for late-successional and old- growth dependent species in moist forests. Forest stands between 80-120 years old are of particular concern, as they can provide critical LSOG forest habitat features. The Amendment should specify that only simplified tree plantations, rather than structurally complex naturally regenerated stands, should be included in plan components that permit timber harvest in moist forests LSR or Matrix. Forests in this age class are important to

late-successional species, including federally listed species.

Comment: Align the plan components with the FAC recommendations, ensuring that the focus for Moist LSRs is on maintaining and restoring LSOG forests, rather than creating "habitat for other species dependent upon younger stands" as suggested in FORSTW-LSR- MOI-GDL-01-B. The DEIS includes an incorrect interpretation regarding the moist LSR standards. The FAC clearly recommended that moist forest LSR stands under 120 years of age should not be harvested to create early seral habitat. Instead, the FAC advised that these LSRs should be managed solely to maintain and restore large blocks of late- successional habitat.

Comment: Remove the reference to exempting timber harvest in moist forest stands older than 120 years old in LSRs to reduce wildfire risk to communities FORSTW-LSR-MOI-STD-

01-B. There is no scientific justification for cutting old trees for wildfire risk reduction (Thompson and Spies 2019; Evers et al. 2022).

Comment: The DEIS asserts that LSR management would improve and maintain LSOG and "contribute to the recovery of federally listed species such as the northern spotted owl, marbled murrelet, and the coastal DPS of Pacific marten" (DEIS at 3-77). However, this conclusion is invalid if the USFS allows LSR forests to be converted into younger forests through logging (i.e., clear-cutting and replanting) or reduces the complexity of

LSOG forests under the dry forest plan components. In moist LSR, promoting young forests through active management would effectively eliminate the LSOG.

Comment: Address inconsistencies in guidelines for moist LSR management by explicitly prohibiting clearcutting and emphasizing selective thinning to maintain structural diversity.

Comment: Include in the moist forest LSR a standard to retain enough older trees to restore a characteristic amount and distribution of LSOG forest.

b. Moist Forest Matrix Plan Components

The Amendment includes a standard that protects forest stands that were established prior to 1825 in the Matrix (FORSTW-MTX-MOI-STD-01). The moist forest guideline would protect trees established between 1825 and 1905, unless projects are carried out to maintain and restore ecosystem integrity (FORSTW-MTX-MOI-GDL-01). The application of these standards and guidelines are a significant conservation gain in Matrix. However, management in young, moist forest stands in Matrix (those that were established after 1905) should be designed to produce a sustainable supply of wood products (FORSTW- MTX-MOI-GDL-02). As of the release of the DEIS, these stands are up to 120 years old and will only get older through the life of the plan. As mentioned above, the logging of mature forest stands could lead to a loss of habitat for species that depend on these forests, including federally listed species.

According to the DEIS, [ldquo]Treatment of younger stands in moist forest Matrix under Alternatives B and D could adversely affect plant and wildlife species that are more closely associated with closed canopy forest types.[rdquo] (DEIS at ES-8 and ES-9). [ldquo]Alternatives B and D has the potential to result in both short- and long-term adverse effects to habitat characteristics, such as a reduction in canopy cover and down wood, which could impact plant and wildlife species that utilize these forests.[rdquo] (DEIS at ES-9)

Comment: Remove the reference to exempting timber harvest in moist forest stands that were established prior to 1825 to provide to reduce wildfire risk to communities FORSTW-

MTX-MOI-STD-01. There is no scientific justification for cutting old trees for wildfire risk reduction.

Comment: Remove the reference to allowing timber harvest in moist forest (those that were established between 1825 and 1905) to reduce the risk of fire to adjacent stands FORSTW-MTX-MOI-GDL-01.

Comment: Include in the moist forest matrix a standard to retain enough older trees to restore a characteristic amount and distribution of LSOG forest.

Comment: The USFS must define and provide clear guidance on and scientific justification for "ecological forestry" in the DEIS. This prescription is included "in all action alternatives, [and] establishes an objective to increase restoration treatments using ecological forestry methods for forest management while also conserving and protecting older trees and achieving desired conditions for LUAs" (DEIS 3-146).

Comment: The USFS assumes in the DEIS that "[m]oist forest stands on Matrix LUAs under all alternatives provide connectivity between LSRs and LSOG-dependent species, as well as organisms associated with younger forests" (DEIS 3-27). However, the USFS should include plan components that ensure connectivity between LSRs and other reserved areas.

c. Dry Forest LSR and Matrix Plan Components

The perceived need for active management to restore forest resiliency in dry forests is a primary driver of the Amendment. In dry forests, fire is essential, and dry forests need to be restored to accommodate frequent, low severity fire (DEIS at A1-21). The differentiation of plan component language between LSR and Matrix LUAs in the dry forest is blurred in the NWFP Amendment to encourage resiliency-based treatments across the landscape. The new Standard (FORSTW-ALL-DRY-STD-01) applies to both LSRs and matrix land use allocations ([ldquo]LUA[rdquo]). While there are conservation gains in protecting 150-year-old trees in the Matrix LUA, one of the most significant changes is the shift from an LSR Standard that protects stands of trees aged 80 years and older to an LSR Standard that protects individual trees 150 years and older. The Amendment includes an objective to treat one- third (527,000 to 643,000 acres per decade or 790,000 to 964,000 acres per 15 years) of the dry forests within 15 years across the NWFP area.3

----

3 FORSTW-ALL-DRY-OBJ-01: Within 15 years of amendment approval, implement treatments that contribute to ecological resilience on at least one-third of dry forests (527,000 to 643,000 acres per decade or 790,000 to 964,000 acres per 15 years across the Northwest Forest Plan area, not including any additional acres of salvage treatments may occur, while also conserving and retaining older trees and promoting the development of future functional old-growth forest ecosystems appropriate for dry forests.

The concern with these changes is that species dependent on late-successional and old- growth forests require complex habitat structures, not just the presence of large, old trees. The DEIS acknowledges a potential "loss of dense canopy stands and habitat for associated species (DEIS at 3-29).[rdquo] While dry forest landscapes encompass a wide variety of stand types and conditions, many of which may benefit from understory vegetation treatments, it is critical to balance these management actions with the conservation of dense forest patches that serve as vital habitat for late-successional species.

Embedding this balance into the NWFP components is essential to ensure the agency remains committed to maintaining the habitat complexity necessary for the survival of forest-dependent species. Related to the immediate habitat needs for late-successional species in dry forests is the need to recruit future old-growth trees. This need is captured in components in the DEIS at A1-21.

* Desired Condition 02 [ndash] [ldquo]Large old trees are present at levels characteristic of

reference conditions[hellip][rdquo]

* Objective 01 [ndash] [ldquo][hellip] and retaining older trees and promoting the development of

future functional old-growth forest ecosystems appropriate for dry forests.[rdquo]

* Potential Management Approach [ndash] [ldquo]Conserve existing old trees and recruit new ones from the late seral (mature) stage.[rdquo]

However, these plan components are not standards nor guidelines and will not constrain project-level management decisions.

Comment: Fire risk reduction in dry forest should prioritize community preparedness and home hardening. Any logging aimed at increasing fire resilience should focus on retaining larger-diameter trees, enhancing overall stand diameter in the short term, and minimizing harm to wildlife. Thinning alone is insufficient to alter wildfire behavior; prescribed burning must accompany any thinning efforts (Prichard et al. 2021).

Comment: The Amendment needs plan components to ensure that habitat for species dependent on LSOG forests, including the ESA-listed species, persists in the planning area in dry forests LSRs.

*

* Option 1: The removal of stand-level LSOG protection is combined with a standard that requires identification of high-quality LSOG most likely to persist in project planning (e.g., Lesmeister et al. 2021).
* Option 2: Elevate guideline 3-B to a standard with language that requires the consideration of the maintenance of critical habitat in project planning "...To

promote ecological integrity... consider the following as feasible..... Rare or

sensitive habitat, flora and/or fauna including designated critical habitat for federally listed species (2-12)."

*

* Option 3: Include a standard that protects dense forest patches in dry forests, emphasizing habitat complexity for species dependent on late-successional and old-growth forests, such as the NSO.

Comment: Provide science-based decision-making tools for managers to guide selective thinning and understory treatments in dry forests without compromising critical habitat patches.

Comment: Every action alternative adds volume targets to dry LSR to contribute to economic stability (see DEIS A2-18). Adding economic purposes to the LSR is unnecessary to achieve Wildfire Resistance and Resilience desired conditions on the landscape and alternatives should have been analyzed that considered new approaches to [ldquo]reducing damages and enhancing benefits from wildland fire,[rdquo] without adding this commercial driver to the LSR.

Comment: Include in the dry forest standard to retain enough older trees to restore a characteristic amount and distribution of LSOG forest.

XII. Survey and Manage

As mentioned above, the Survey and Manage program is critically important because it ensures the protection of lesser-known, rare, or habitat-specific species that might otherwise be overlooked in the broad NWFP conservation strategies. This proactive approach is crucial in ensuring that species with specialized habitat requirements, or those with limited knowledge about their distribution, are not driven to further decline or extinction (Molina et al. 2006). Ultimately, the Survey and Manage enhances the NWFP[rsquo]s ability to protect biodiversity and maintain ecological health across the region.

Under the 2012 Planning Rule, SCC need to be identified, and plan components developed when undertaking a plan revision. Furthermore, for land management plans developed under older regulations 36 CFR 219.13.(b)(6) states [ldquo]For an amendment to a plan developed or revised under a prior planning regulation, if species of conservation concern (SCC) have not been identified for the plan area and if scoping or NEPA effects analysis for the proposed amendment reveals substantial adverse impacts to a specific species, or if the proposed amendment would substantially lessen protections for a specific species, the responsible official must determine whether such species is a potential SCC, and if so, apply section [sect] 219.9(b) with respect to that species as if it were an SCC.[rdquo]

Comment: While the DEIS claims that [ldquo]regulations and policy for Regional Forester Sensitive Species and Survey and Manage are retained in the Amendment[rdquo] (DEIS at 1-7), Alternative D (FIRE-ALL-GDL-06-D) proposes to exempt certain pre-disturbance surveys and management requirements (DEIS at A2-15). Yet, the USFS does not assess whether lessening these protections would affect potential SCC, and if so, apply SCC 2012 Planning Rule requirements to that species as if it were an SCC.

XIII. Salvage Logging in Matrix and LSR

As the occurrence and severity of wildfires and other natural disturbances increase across the region, there are calls for more active management of post-disturbance landscapes (e.g., Smith 2024). Post-disturbance management can include a range of actions, including tree or snag removal, fuels reduction of unburned vegetation, and salvage logging of large standing dead or dying trees. The 1994 NWFP generally permitted salvage logging with some limitations in identified key watersheds and LSRs, however it was prevented in most of the LSRs based on court interpretations of the LSR Standards and Guidelines.

The NWFP Amendment takes a similar approach with more restrictions on salvage logging in LSR. In moist forest LSR, salvage is generally prohibited.4 However, in moist Matrix, it is permitted.5 In dry forest LSR, limited fuel salvage is allowed, whereas in dry forest Matrix, salvage only needs to retain [ldquo]biological legacies.[rdquo]6

The ecological consequences of salvage logging have been reviewed extensively (e.g., Bechta et al. 2004; Lindenmayer et al. 2012) and certain practices hinder ecological recovery after disturbances. Specifically, the removal of large legacy snags (standing dead trees), ground-based logging, road construction, and activity fuel (logging slash)

4 FORSTW-LSR-MOI-STD-02: No salvage harvest shall occur in Late-Successional Reserves in moist forest stands except for tribal co-stewardship and cultural use, public and firefighter safety and access, protection of critical infrastructure, and along existing system roads.

5 FORSTW-MTX-MOI-GDL-04: In moist forest Matrix, post-disturbance salvage should contribute to achieving

multiple desired conditions including timber harvest while retaining critical biological legacies. In post-disturbance settings, management activities in moist forest stands within Matrix should retain all live trees, as well as the largest, oldest dead trees as snags.

6 FORSTW-ALL-DRY-GDL-03: In Late-Successional Reserves in dry forests, limited fuel management salvage is permitted when beneficial to ecological goals, fire resilience, wildlife needs, and local communities. Dry forest salvage should retain a high number of large snags as well as all live trees. Exceptions are authorized for protection of critical infrastructure and existing system roads. FORSTW-ALL-DRY-GDL-04: In dry forests in Matrix, salvage with retention should contribute to achieving multiple desired conditions, including timber production while retaining critical biological legacies. Dry forest salvage in Matrix should retain all live trees and the largest, oldest dead trees as snags.

production impede ecological recovery. These practices have been shown to reduce natural regeneration, spread invasive species, lead to stream sedimentation, alter plant communities, and harm animal species (Lindenmayer and Noss 2006; Herrando et al.

2009).

Comment: To protect sensitive post-fire environments and species that depend on these habitats, all standards and guidelines for old-growth protection should apply to post- disturbance salvage, including FORSTW-MTX-MOI-STD-01, FORSTW-MTX-MOI-GDL-01, FORSTW-ALL-DRY-STD-01, and FORSTW-ALL-DRY-GDL-01.

Comment: We urge the USFS to prioritize natural regeneration over artificial regeneration, which often leads to overly dense "reforestation" and neglects crucial transitional habitat types. When reforestation is necessary, it should focus on a diversity of species, density, and distribution reflective of reference areas for the forest type, including non-commercial species and hardwoods.

Comment: The Forest Service should carefully evaluate the impacts of post-fire logging on fire-dependent species, such as black-backed woodpeckers, that rely on the temporary habitats created by high-severity wildfires. It is also essential to provide robust protection for complex early seral forests. The EIS failed to take a hard look at the impacts of post- disturbance logging on species reliant on post-disturbance and complex early seral habitats.

XIV. Climate Change

Climate change promises to significantly exacerbate forest conservation and management challenges, particularly in terms of habitat connectivity and water quality. Climate change is driving more extreme weather events, including heavy rainfall and intense storms (Espinoza et al. 2018), which can increase the risk of erosion, flooding, and sedimentation. Roads, especially those improperly maintained or poorly situated, can disrupt natural water flow, leading to erosion and sediment runoff that harms aquatic habitats and water quality (Jones 2000).

Roads create barriers to wildlife movement, isolating populations and hindering species' ability to adapt to shifting climates and habitats (Lister 2015). Additionally, roads can contribute to fragmentation of ecosystems, making it harder for species to find suitable habitats as they shift in response to changing conditions. Climate change may push species into new areas, but roads often act as physical barriers that prevent movement or create unsafe corridors. Therefore, in the era of climate change, reducing road density, disconnecting roads from water systems, and focusing on sustainable road management are essential strategies to mitigate these impacts and help ecosystems and wildlife adapt to climate change.

Road densities exceeding 1.0 mi/mi[sup2] pose significant ecological threats by fragmenting habitats, increasing wildlife mortality, and degrading aquatic ecosystems. Forman and Hersperger (1996) established that sustainable populations of large mammals require road densities below this threshold, as higher densities disrupt movement corridors, increase vehicle collisions, and elevate human disturbance. Similarly, Carnefix and Frissell (2009) reviewed extensive research demonstrating that road densities above 1.0 mi/mi[sup2] significantly impact cold-water fish populations. Collectively, these impacts highlight the importance of maintaining road densities below 1.0 mi/mi[sup2] to sustain functional ecosystems and biodiversity.

The Amendment includes one road-related plan component, but it is a desired condition and would not influence project-level planning (CLIMATE-DC-05). [ldquo]The transportation network is resilient to the effects of climate change, including the ability to accommodate increased erosion, runoff and peak flows that may exceed historic streamflow events.

Roads and trails are located in low-risk areas. Culverts and stream crossings are appropriately sized to accommodate expected peak flows.[rdquo] (DEIS at A1-28)

Comment: The Amendment needs to adequately consider the impacts of road construction, which can harm watersheds, drinking water sources, and critical habitats for salmon and other species. Instead of expanding the road network, the Forest Service should focus on reducing roads across the NWFP area. The Amendment includes aggressive timber targets and acreages that would necessitate significant road construction and reconstruction. A thorough analysis of these road impacts is essential to inform a responsible decision on the amendment.

Comment: We propose stronger plan components that would address the impacts of the existing road system and mitigate future roads in the planning area. Roads should not hinder fish and wildlife habitat connectivity and should not be hydrologically connected to the stream network. Please consider the following plan components to mitigate road impacts in the planning area:

DesiredConditions

* Roads do not hinder fish and wildlife habitat connectivity, allowing species to adapt to changing climate conditions.

* During climate-enhanced storm events, roads do not pose a risk to water resources.
* Roads do not disrupt hydrologic processes or aquatic habitat function.
* Road networks (densities and locations) do not substantially and adversely affect wildlife security or movement.

Objectives

* Within 15 years, reduce road-hydrologic connections and sediment delivery from roads by 50% across all management areas through hydrologic decommissioning and other treatments.
* Within 15 years, establish a minimum road system sufficient for safe and efficient travel. This system will consist of roads that can be well-maintained within a budget equal to the average road maintenance budget over

the past five years.
* Within 15 years, ensure that road density does not exceed 1 mile of road per square mile within each subwatershed.

Guidelines

* Reduce road mileage and disconnect roads from water resources across all land allocations.
* Prioritize treatments for roads that present the greatest ecological risks during climate-enhanced storms and affect fish and wildlife habitat connectivity.
* Timber roads, unless deemed necessary for other forest uses pursuant to 36 CFR 212 part A, are decommissioned and fully reclaimed within one year of completion of timber removal activities.

Standards

* In LSRs, projects shall reduce road mileage by fully decommissioning roads.
* Where road densities exceed 1mi/sq mile of as measured in subwatersheds and across each LSR, no additional roads may be added.
* In Matrix and Adaptive Management Areas, projects shall reduce road mileage through full road decommissioning, hydrological stabilization, and other appropriate treatments.
* There should be no net increase in Forest Service road densities.
* in LSRs, while road densities exceed 1 mi/sq mi as measured in subwatershed and across each LSR, no additional roads can be added.

Comment: The scope, extent, and location of roads and their effects should be assessed in the FEIS and ROD. Since the areas of timber harvest have been mapped and assessed, the USFS can determine the overall amount of road construction and reconstruction needed to support this required harvest. This analysis should take a hard look and disclose the potential consequences of the roads required to implement this Amendment.

XV. Adaptive Management

The Amendment includes a hierarchy of plan direction within Adaptive Management Areas ([ldquo]AMA[rdquo]) with the application of updated plan direction for Matrix and LSR and the respective forest type (i.e., moist or dry). In essence, the AMAs in the NWFP would become obsolete. Adaptive management frameworks can allow for real-time adjustments based on monitoring data and changing conditions. This is especially important in the era of climate change. There are several frameworks that would be useful in applying to (see e.g., Lynch et al. 2022).

Comment: The USFS should retain the AMAs in the planning area and continue to utilize an adaptive management framework to guide land management decisions. Some AMAs have specific objectives that should not be compromised in this amendment. For instance, the Snoqualmie Pass AMA includes connectivity goals that are central to regional efforts, with numerous partners working collaboratively to enhance connectivity in this region.

Similarly, the Applegate AMA focuses on reducing the risk of uncharacteristic wildfires to protect local communities. It is important to consider an adaptive management policy framework that involves regularly reviewing and updating regulations to incorporate current scientific knowledge and best practices, ensuring that land management remains responsive to evolving ecological and community needs.

XVI. Conclusion

Defenders appreciates the chance to comment on the proposed Amendment. We value the work of the FAC and the USFS in updating the 1994 NWFP. We support many of the proposed changes to address Tribal inclusion, older forest conservation, wildfire severity and forest resiliency. The Amendment would provide long-needed protection for old- growth forests over 120 years in moist forest LSR (established after 1905 in Matrix) 150- year-old trees in dry forests. However, we are concerned that the Amendments redefine these areas in a way that leaves too many of them vulnerable to logging and road construction.

USFS managed forests in the PNW are highly valued by communities for their resilience to wildfires, their role as habitats for endangered species, their carbon storage capabilities,

their function as climate refugia, and their ability to protect water quality. We ask that the agency improve upon the proposed plan components to ensure adequate conservation for species dependent on late-successional ecosystems in the planning area. We request that the USFS takes a hard look and adequately analyze the direct, indirect and cumulative impacts of these changes.

XVII. References

Anderson, M., 1994. A prescription for ecological disaster. Journal of Forestry, 92(4), pp.39- 39.

Anthony, R.G., Forsman, E.D., and Glenn, E.M., 2010. Population trends in northern spotted owls: associations with climate in the Pacific Northwest. Biological Conservation, 143(11), pp.2543-2552.

Aubry, K.B. and Lewis, J.C., 2003. Extirpation and reintroduction of fishers (Martes pennanti) in Oregon: implications for their conservation in the Pacific states. Biological Conservation, 114(1), pp.79-90.

Aubry, K. B., Raley, C. M., Buskirk, S. W., Zielinski, W. J., Schwartz, M. K., Golightly, R. T., Purcell, K. L., Weir, R. D., & Yaeger, J. S., 2013. Meta-analyses of habitat selection by fishers at resting sites in the Pacific coastal region. The Journal of Wildlife Management, 77(5), 965[ndash]974.

Beschta, R.L., Frissell, C.A., Gresswell, R., Hauer, R., Karr, J.R., Minshall, G.W., Perry, D.A. and Rhodes, J.J., 1995. Wildfire and salvage logging. Recommendations for ecologically sound postfire salvage management and other postfire treatments on federal lands in the west. Oregon State University, Corvallis.

Beschta, R.L., Rhodes, J.J., Kauffman, J.B., Gresswell, R.E., Minshall, G.W., Karr, J.R., Perry, D.A., Hauer, F.R. and Frissell, C.A., 2004. Postfire management on forested public lands of the western United States. Conservation Biology, 18(4), pp.957-967.

Blomdahl, E.M., Thompson, C.M., Kane, J.R., Kane, V.R., Churchill, D., Moskal, L.M. and Lutz, J.A., 2019. Forest structure predictive of fisher (Pekania pennanti) dens exists in recently burned forest in Yosemite, California, USA. Forest Ecology and Management, 444, pp.174-186.

Blumm, M.C., Brown, S.J.M., and Stewart-Fusek, C. 2022. The World[rsquo]s largest ecosystem

management plan. Environmental Law, 52(2), pp.151-216.

Burger, A. E., 2001. Using radar to estimate populations and assess habitat associations of marbled murrelets. The Journal of Wildlife Management, 65(4), 696[ndash]715.

Burns, A.F., Horngren, S., Mickey, R. and Partin, T., 2011. Judging the effectiveness of the Northwest Forest Plan: year eighteen. Northwest Science, 85(3), pp.504-505.

Carnefix, G. and Frissell, C., 2009. Aquatic and other environmental impacts of roads: the case for road density as indicator of human disturbance and road-density reduction as restoration target; a concise review. Pacific Rivers Council. Polson, MT.

Carroll, C., Dunk, J.R., and Moilanen, A., 2010. Optimizing resiliency of reserve networks to climate change: multispecies conservation planning in the Pacific Northwest, USA. Global Change Biology, 16(3), 891-904.

Case, M. J., Johnson, B. G., Bartowitz, K. J., & Hudiburg, T. W., 2021. Forests of the future: Climate change impacts and implications for carbon storage in the Pacific Northwest, USA. Forest Ecology and Management, 482, 118886.

Charnley, S., 2006. The Northwest Forest Plan as a model for broad-scale ecosystem management: a social perspective. Conservation Biology, 20(2), pp.330-340.

Charnley, S., Kline, J.D., White, E.M., Abrams, J., McLain, R.J., Moseley, C. and Huber- Stearns, H., 2018. Socioeconomic well-being and forest management in Northwest Forest Plan-area communities. In: Spies, TA; Stine, PA; Gravenmier, R.; Long, JW; Reilly, MJ, tech. coords. 2018. Synthesis of science to inform land management within the Northwest Forest Plan area. Gen. Tech. Rep. PNW-GTR-966. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station: 625-715., 966, pp.625- 715.

Donoghue, E.M. and Sutton, N.L., 2006. Socioeconomic conditions and trends for communities in the Northwest Forest Plan region, 1990 to 2000. Socioeconomic monitoring results, 3, pp.7-36.

Dunk, J.R., Woodbridge, B., Schumaker, N., Glenn, E.M., White, B., LaPlante, D.W., Anthony, R.G., Davis, R.J., Halupka, K., Henson, P. and Marcot, B.G., 2019. Conservation planning for species recovery under the Endangered Species Act: A case study with the Northern Spotted Owl. PloS one, 14(1), p.e0210643.

Espinoza, V., Waliser, D.E., Guan, B., Lavers, D.A. and Ralph, F.M., 2018. Global analysis of climate change projection effects on atmospheric rivers. Geophysical Research Letters, 45(9), pp.4299-4308.

Evers, C., Holz, A., Busby, S. and Nielsen-Pincus, M., 2022. Extreme winds alter influence of fuels and topography on megafire burn severity in seasonal temperate rainforests under record fuel aridity. Fire, 5(2), p.41.

Fairfax, E. and Westbrook, C., 2024. The Ecology and Evolution of Beavers: Ecosystem Engineers That Ameliorate Climate Change. Annual Review of Ecology, Evolution, and Systematics, 55.

[FEMAT] Forest Ecosystem Management Assessment Team, 1993. Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Portland (OR), US Department of Agriculture, Forest Service, US Department of Commerce, National Oceanic and Atmospheric Administration, US Department of the Interior, Bureau of Land Management, US Fish and Wildlife Service, National Park Service, Environmental Protection Agency

Forman, R.T. and Hersperger, A.M., 1996, April. Road ecology and road density in different landscapes, with international planning and mitigation solutions. In Proceedings, transportation and wildlife: reducing wildlife mortality and improving wildlife passageways across transportation corridors, Florida Department of Transportation/Federal Highway Administration transportation-related wildlife mortality seminar (pp. 1-23).

Guti[eacute]rrez, R.J., Franklin, A.B. and LaHaye, W.S., 1995. Spotted owl (Strix occidentalis): Life Histories for the 21st Century. In The birds of North America No. 179: life histories for the 21st century. The Philadelphia Academy of Sciences and The American Ornithologists' Union.

Franklin, A.B., K.M. Dugger, D.B. Lesmeister, R.J. Davis, J.D. Wiens, G.C. White, J.D. Nichols, J.E. Hines, C.B. Yackulic, C.J. Schwarz, and S.H. Ackers., 2021. Range-wide declines of northern spotted owl populations in the Pacific Northwest: A meta-analysis. Biological Conservation 259:109168.

Forsman, E.D., R.G. Anthony, J.A. Reid, P.J. Loschl, S.G. Sovern, M. Taylor, B.L. Biswell, A. Ellingson, E.C. Meslow, G.S. Miller, and K.A. Swindle. 2002. Natal and breeding dispersal of northern spotted owls. Wildlife Monographs 1-35.

Franklin, A. B., Dugger, K. M., Lesmeister, D. B., Davis, R. J., Wiens, J. D., White, G. C., Nichols, J. D., Hines, J. E., Yackulic, C. B., Schwarz, C. J., and Ackers, S. H. 2021. Range- wide declines of northern spotted owl populations in the Pacific Northwest: A meta- analysis. Biological Conservation, 259, 109168.

Gabriel, M. W., Woods, L. W., Wengert, G. M., Stephenson, N., Higley, J. M., Thompson, C., Matthews, S. M., Sweitzer, R. A., Purcell, K., Barrett, R. H., and Keller, S. M. 2015. Patterns

of natural and human-caused mortality factors of a rare forest carnivore, the fisher (Pekania pennanti) in California. PLOS ONE, 10(11), e0140640.

Gaines, W.L., Hessburg, P.F., Aplet, G.H., Henson, P., Prichard, S.J., Churchill, D.J., Jones, G.M., Isaak, D.J., and Vynne, C. 2022. Climate change and forest management on federal lands in the Pacific Northwest, USA: Managing for dynamic landscapes. Forest Ecology and Management, 504, p.119794.

Gallo, K., Lanigan, S.H., Eldred, P., Gordon, S.N., and Moyer, C., 2005. Northwest Forest Plan[mdash]the first 10 years (1994[ndash]2003): preliminary assessment of the condition of watersheds. Portland, OR: General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-647).

Gaines, W.L., Peterson, D.W., Thomas, C.A., and Harrod, R.J., 2012. Adaptations to climate change: Colville and Okanogan-Wenatchee National Forests. General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-862)

Glenn, E.M., Anthony, R.G., and Forsman, E.D., 2010. Population trends in northern spotted owls: associations with climate in the Pacific Northwest. Biological Conservation, 143(11), pp.2543-2552.

Gray, A.N., Pelz, K., Hayward, G.D., Schuler, T., Salverson, W., Palmer, M., Schumacher, C. and Woodall, C.W., 2023. Perspectives: The wicked problem of defining and inventorying mature and old-growth forests. Forest Ecology and Management, 546, p.121350.

Green, D. S., Facka, A. N., Smith, K. P., Matthews, S. M., and Powell, R. A., 2022a. Evaluating the efficacy of reintroducing fishers (Pekania pennanti) to a landscape managed for timber production. Forest Ecology and Management, 511, 120089.

Green, D. S., Martin, M. E., Powell, R. A., McGregor, E. L., Gabriel, M. W., Pilgrim, K. L., Schwartz, M. K., and Matthews, S. M., 2022b. Mixed-severity wildfire and salvage logging affect the populations of a forest-dependent carnivoran and a competitor. Ecosphere, 13(1), e03877.

Gutie´rrez, R.J., 1996. Biology and distribution of the northern spotted owl. Studies in Avian Biology. 17:2[ndash]5.

Guti[eacute]rrez, R.J., Franklin, A.B., and LaHaye, W.S., 1995. Spotted Owl (Strix occidentalis). In

A. Poole and F. Gill, editors. Birds of North America. Number 179. The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA.

Halofsky, J.E., Peterson, D.L., and Prendeville, H.R., 2018. Assessing vulnerabilities and adapting to climate change in northwestern US forests. Climatic Change, 146, pp.89-102.

Halofsky, J.E., Peterson, D.L., O'Halloran, K.A., and Hoffman, C.H., 2011. Adapting to climate change at Olympic National Forest and Olympic National Park. General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-844).

Halofsky, J.E., Peterson, D.L. and Harvey, B.J., 2020. Changing wildfire, changing forests: the effects of climate change on fire regimes and vegetation in the Pacific Northwest, USA. Fire Ecology, 16(1), pp.1-26.

Halofsky, J., and Peterson, D.L., 2022. Climate change vulnerability and adaptation in southwest Oregon. Gen. Tech. Rep. PNW-GTR-995. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 445 p., 995, 1-445.

Haynes, R.W., 2006. Northwest Forest Plan: the First 10 Years (1994-2003): Synthesis of Monitoring and Research Results (Vol. 651). US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Hessburg, P.F., Miller, C.L., Parks, S.A., Povak, N.A., Taylor, A.H., Higuera, P.E., Prichard, S.J., North, M.P., Collins, B.M., Hurteau, M.D. and Larson, A.J., 2019. Climate, environment, and disturbance history govern resilience of western North American forests. Frontiers in Ecology and Evolution, 7, p.239.

Hofstadter, D. F., Kryshak, N. F., Gabriel, M. W., Wood, C. M., Wengert, G. M., Dotters, B. P., Roberts, K. N., Fountain, E. D., Kelly, K. G., Keane, J. J., & Whitmore, S. A., 2021. High rates of anticoagulant rodenticide exposure in California Barred Owls are associated with the wildland[ndash]urban interface. The Condor, 123(4), duab036.

Helvoigt, T.L. and Adams, D.M., 2009. A stochastic frontier analysis of technical progress, efficiency change and productivity growth in the Pacific Northwest sawmill industry. Forest Policy and Economics. 11(4): 280[ndash]287.

Hibbard, M. and Lurie, S., 2013. The new natural resource economy: environment and economy in transitional rural communities. Society & Natural Resources, 26(7), pp.827- 844.

Hudec, J.L. Halofsky, J.E. Peterson, and D.L. Ho, J.J., eds., 2019. Climate change vulnerability and adaptation in southwest Washington. General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-977)

Jenkins, J.M., D.B. Lesmeister, E.D. Forsman, K.M. Dugger, S.H. Ackers, L.S. Andrews,

S.A. Gremel, B. Hollen, C.E. McCafferty, M.S. Pruett, and J.A. Reid., 2021. Conspecific and congeneric interactions shape increasing rates of breeding dispersal of northern spotted owls. Ecological Applications 31:p.e02398.

Johnson, K. N., and Franklin, J. F., 2009. Restoration of federal forests in the Pacific Northwest: Strategies and management implications. Unpublished manuscript, Oregon State University.

Johnson, K.N., Franklin, J.F., and Reeves, G.H., 2023. The Making of the Northwest Forest Plan: the Wild Science of Saving Old Growth Ecosystems. OSU Press. 472.

Jones, J.A., Swanson, F.J., Wemple, B.C. and Snyder, K.U., 2000. Effects of roads on hydrology, geomorphology, and disturbance patches in stream networks. Conservation biology, 14(1), pp.76-85.

Lehner, J., 2012. Historical look at Oregon[rsquo]s wood product industry. Salem, OR: Oregon Office of Economic Analysis. https://oregoneconomicanalysis. com/2012/01/23/historical-look-at-oregons-woodproduct-industry/.

Lanigan, S.H., Gordon, S.N., Eldred, P., Isley, M., Wilcox, S., Moyer, C., and Andersen, H. 2012., Northwest Forest Plan[mdash]the first 15 years (1994[ndash]2008): watershed condition status and trend. General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-856).

Law, B.E. and Waring, R.H., 2015. Carbon implications of current and future effects of drought, fire and management on Pacific Northwest forests. Forest Ecology and Management. 355: 4[ndash]14. doi:10.1016/j.foreco.2014.11.023.

Lesmeister, D.B., Davis, R.J., Sovern, S.G. and Yang, Z., 2021. Northern spotted owl nesting forests as fire refugia: A 30-year synthesis of large wildfires. Fire Ecology, 17(1), pp.1-18.

Leverkus, A.B., Buma, B., Wagenbrenner, J., Burton, P.J., Lingua, E., Marzano, R. and Thorn, S., 2021. Tamm review: Does salvage logging mitigate subsequent forest disturbances?.

Forest Ecology and Management, 481, p.118721.

Lindenmayer, D.B., Burton, P.J. and Franklin, J.F., 2012. Salvage logging and its ecological consequences. Island Press.

Lindenmayer, D. B., and R. F. Noss., 2006. Salvage logging, ecosystem processes, and biodiversity conservation." Conservation Biology 20.4 (2006): 949-958.

Lister, N.M., Brocki, M. and Ament, R., 2015. Integrated adaptive design for wildlife movement under climate change. Frontiers in Ecology and the Environment, 13(9), pp.493- 502.

Long, J.W., and Lake, F.K., 2018. Escaping social-ecological traps through tribal stewardship on national forest lands in the Pacific Northwest, United States of America. Ecology and Society, 23(2).

Long, J.W., Lake, F.K. and Goode, R.W., 2021. The importance of Indigenous cultural burning in forested regions of the Pacific West, USA. Forest Ecology and Management, 500, p.119597.

Lorenz, T.J., Raphael, M.G., Young, R.D., Lynch, D., Nelson, S.K. and McIver, W.R., 2021. Status and trend of nesting habitat for the marbled murrelet under the Northwest Forest Plan, 1993 to 2017. Gen. Tech. Rep. PNW-GTR-998. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 64 p., 998.

Lynch, A.J., Thompson, L.M., Morton, J.M., Beever, E.A., Clifford, M., Limpinsel, D., Magill, R.T., Magness, D.R., Melvin, T.A., Newman, R.A. and Porath, M.T., 2022. RAD adaptive management for transforming ecosystems.

BioScience, 72(1), pp.45-56.

Mackun, P., Comenetz, J., and Spell, L., 2021. Around Four-Fifths of All U.S. Metro Areas Grew Between 2010 and 2020. August 12. U.S. Census. https://www.census.gov/library/stories/2021/08/more-than-half-of-united-states-counties-were-smaller-in-2020-than-in-2010.html Last retrieved Jan 24. 2024.

Malmsheimer, R.W., Keele, D. and Floyd, D.W., 2004. National forest litigation in the US Courts of Appeals. Journal of Forestry, 102(2), pp.20-25.

Marcot, B.G., and Thomas, J.W., 1997. Of spotted owls, old growth, and new policies: a history since the Interagency Scientific Committee report (Vol. 408). US Department of Agriculture, Forest Service, Pacific Northwest Research Station.

Marks, J.S., Cannings, R.J. and H. Mikkola., 1999. Order Strigiformes: Family Strigidae (typical owls): Subfamily Striginae: Tribe Strigini: Genus Strix. Handbook of the birds of the world 5:196-207

Meddens, A.J., Kolden, C.A., Lutz, J.A., Smith, A.M., Cansler, C.A., Abatzoglou, J.T., Meigs, G.W., Downing, W.M. and Krawchuk, M.A., 2018. Fire refugia: what are they, and why do they matter for global change?. BioScience, 68(12), pp.944-954.

Mikkelsen, A.J., Lesmeister, D.B., O[rsquo]Reilly, K.M. and Dugger., 2022. Feather corticosterone reveals developmental challenges in a long-term study of juvenile northern spotted owls. Functional Ecology 36:51-63.

Miller, S.A., Gordon, S.N., Eldred, P., Beloin, R.M., Wilcox, S., Raggon, M., Andersen, H., and Muldoon, A., 2017. Northwest Forest Plan[mdash]the first 20 years (1994[ndash] 2013): watershed condition status and trends. General Technical Report-Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-932).

Molina, R., Marcot, B.G. and Lesher, R., 2006. Protecting rare, old-growth, forest- associated species under the survey and manage program guidelines of the Northwest Forest Plan. Conservation Biology, 20(2), pp.306-318.

North, M.P., Bisbing, S.M., Hankins, D.L., Hessburg, P.F., Hurteau, M.D., Kobziar, L.N., Meyer, M.D., Rhea, A.E., Stephens, S.L. and Stevens-Rumann, C.S., 2024. Strategic fire zones are essential to wildfire risk reduction in the Western United States. Fire Ecology, 20(1), p.50.

Pascual, U., 2022. Climate-smart conservation: An opportunity for transformative change in the mainstream conservation movement. One Earth, 5(6), 609-611.

Peterson, D.L., Millar, C.I., Joyce, L.A., Furniss, M.J., Halofsky, J.E., Neilson, R.P., and Morelli, T.L., 2011. Responding to climate change in national forests: a guidebook for developing adaptation options. Gen. Tech. Rep. PNW-GTR-855. US Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, 109.

Phalan, B.T., Northrup, J.M., Yang, Z., Deal, R.L., Rousseau, J.S., Spies, T.A. and Betts, M.G., 2019. Impacts of the Northwest Forest Plan on forest composition and bird populations. Proceedings of the National Academy of Sciences, 116(8), pp.3322-3327.

Prichard, S. J., P. F. Hessburg, R. K. Hagmann, N. A. Povak, S. Z. Dobrowski, M.D. Hurteau,

V. R. Kane, R. E. Keane, L. N. Kobziar, C. A. Kolden, and M. North., 2021. Adapting western North American forests to climate change and wildfires: 10 common questions. Ecological applications, 31(8), p.e02433.

Raymond, C.L., Peterson, D.L., and Rochefort, R.M., 2014. Climate change vulnerability and adaptation in the North Cascades region, Washington. General Technical Report- Pacific Northwest Research Station, USDA Forest Service, (PNW-GTR-892).

Rideout, D. B., & Wei, Y., 2013. A probabilistic landscape analysis supporting the management of unplanned ignitions at Sequoia and Kings Canyon national parks. Journal of sustainable forestry, 32(5), 437-455.

Smith, N., 2024. OPINION: Post-fire salvage ensures forests recover more quickly. Portland Tribune, 11 December. Available at: https://www.portlandtribune.com/opinion/opinion-post-fire-salvage-ensures-forests-recover-more-quickly/article_786c9c9a-b67d-11ef-bf30-a3ab8f61beb9.html (Accessed: 13 March 2025).

Spies, T.A., Long, J.W., Charnley, S., Hessburg, P.F., Marcot, B.G., Reeves, G.H., Lesmeister, D.B., Reilly, M.J., Cerveny, L.K., Stine, P.A. and Raphael, M.G., 2019. Twenty- five years of the Northwest Forest Plan: what have we learned?. Frontiers in Ecology and the Environment, 17(9), pp.511-520.

Spies, T.A., Stine, P.A., Gravenmier, R.A., Long, J.W. and Reilly, M.J., 2018. Synthesis of science to inform land management within the Northwest forest plan area. Gen. Tech. Rep. PNW-GTR-966. Portland, OR: US Department of Agriculture, Forest Service, Pacific Northwest Research Station. 1020 p. 3 vol., 966.

Stankey, G.H., Bormann, B.T., Ryan, C., Shindler, B., Sturtevant, V., Clark, R.N. and Philpot, C., 2003. Adaptive management and the Northwest Forest Plan: rhetoric and reality.

Journal of forestry, 101(1), pp.40-46.

Stein, B.A., Glick, P., Edelson, N., and Staudt, A., 2014. Climate-smart conservation: putting adaption principles into practice. National Wildlife Federation.

Stuart, C. and Martine, K. eds., 2005. Northwest Forest Plan, the First 10 Years (1994- 2003): Effectiveness of the Federal-tribal Relationship (Vol. 646). US Department of Agriculture, Forest Service, Pacific Northwest Region.

Strittholt, J.R., D.A. Dellasala, and H. Jiang., 2006. Status of mature and old-growth forests in the Pacific Northwest. Conservation Biology 20:363-374.

Swanston, C.W., Brandt, L.A., Butler-Leopold, P.R., Hall, K.R., Handler, S.D., Janowiak, M.K., Merriam, K., Meyer, M., Molinari, N., Schmitt, K.M., Shannon, P.D., Smith, J.B., Wuenschel, A., Ostoja, S.M., 2020. Adaptation Strategies and Approaches for California Forest Ecosystems. USDA California Climate Hub Technical Report CACH-2020-1. Davis, CA: U.S. Department of Agriculture, Climate Hubs. 65 p.

Taylor, A.H., Harris, L.B., and Drury, S.A., 2021. Drivers of fire severity shift as landscapes transition to an active fire regime, Klamath Mountains, USA. Ecosphere, 12(9), e03734.

Thompson, J.R. and Spies, T.A., 2009. Vegetation and weather explain variation in crown damage within a large mixed-severity wildfire. Forest Ecology and Management, 258(7), pp.1684-1694.

U.S. Fish and Wildlife Service, 2011. Revised recovery plan for the northern spotted owl (Strix occidentalis caurina). US Department of Interior, Portland, Oregon, USA.

U.S. Fish and Wildlife Service, 2022. Initiation of 5-year status reviews for 167 species in Oregon, Washington, Idaho, Montana, California, Hawaii, Guam, and the Northern Mariana Islands. Federal Register, 87, 28031[ndash]28034.

U.S. Fish and Wildlife Service, 2024. Marbled Murrelet (Brachyramphus marmoratus) CA, OR, WA DPS 5-Year Review: Summary and Evaluation. U.S. Fish and Wildlife Service Washington Fish and Wildlife Office Lacey, WA

USDA & USDI, 1994a. Standards and guidelines for management for habitat for late- successional and old-growth forest-related species within the range of the northern spotted owl (Attachment A to the record of decision for amendments to Forest Service and Bureau of Land Management planning documents). U.S. Department of Agriculture, Forest Service & U.S. Department of the Interior, Bureau of Land Management.

USDA & USDI, 1994b. Final supplemental environmental impact statement on management of habitat for late-successional and old-growth forest-related species within the range of the northern spotted owl (Vol. I). U.S. Department of Agriculture, Forest Service & U.S. Department of the Interior, Bureau of Land Management.

USDA Forest Service, 2012. National Forest System Land Management Planning. Federal Register, 77 FR, No. 68, Monday, April 9, 2012, Rules and Regulations.

USDA Forest Service, 2020. Bioregional Assessment of Northwest Forests. https://www.fs.usda.gov/detail/r6/landmanagement/planning/?cid=fseprd677501, last accessed 1/15/2024.

USDA Forest Service, 2022a. Confronting the wildfire crisis: a strategy for protecting communities and improving resilience in America's forests. https://www.fs.usda.gov/managing-land/wildfire-crisis. Last accessed 12/6/2023.

USDA Forest Service, 2022b. Northwest Forest Plan Area Advisory Committee: Notice,

Federal Register, 88 FR 88042, pp. 64851-64852.

USDA Forest Service, 2023. Region 5 and Region 6; California, Oregon, and Washington; Forest Plan Amendment for Planning and Management of Northwest Forests Within the Range of the Northern Spotted Owl. Federal Register, 88, 87393[ndash]87398.

USDI, Bureau of Land Management, 2016. Southwestern Oregon Record of Decision and Approved Resource Management Plan: Klamath Falls Field Office of Lakeview District, Medford District, and South River Field Office of Roseburg District. U.S. Department of the Interior.

USDI Fish and Wildlife Service, 2008. Final Recovery Plan for the Northern Spotted Owl,

Strix occidentalis caurina. U.S. Fish and Wildlife Service, Portland, Oregon. xii + 142 pp.

USDI Fish and Wildlife Service, 2023. Draft Environmental Impact Statement for the Barred Owl Management Strategy. U.S. Fish and Wildlife Service, Portland, Oregon.

Yackulic, C.B., Bailey, L.L., Dugger, K.M., Davis, R.J., Franklin, A.B., Forsman, E.D., Ackers, S.H., Andrews, L.S., Diller, L.V., Gremel, S.A. and Hamm, K.A., 2019. The past and future roles of competition and habitat in the range-wide occupancy dynamics of Northern Spotted Owls. Ecological Applications, 29(3), p.e01861.

Zharikov, Y., Lank, D.B. and Cooke, F., 2007. Influence of landscape pattern on breeding distribution and success in a threatened Alcid, the marbled murrelet: model transferability and management implications. Journal of Applied Ecology, 44(4), pp.748-759.

Zharikov, Y., Lank, D.B., Huettmann, F., Bradley, R.W., Parker, N., Yen, P.P.W., Mcfarlane- Tranquilla, L.A. and Cooke, F., 2006. Habitat selection and breeding success in a forest-nesting Alcid, the marbled murrelet, in two landscapes with different degrees of forest fragmentation. Landscape Ecology, 21, pp.107-120.

ATTACHMENT-LETTER TEXT: NWFPADEISCommentsFINAL.pdf; This is the same content that is coded in text box; it was originally included as an attachment