Submission from Tahoma Bird Alliance

Contents

1. Introduction and General Principles

Tahoma Bird Alliance (TBA), formerly the Tahoma Audubon Society, was formed in 1969, 55 years ago, and had the privilege to comment on the formation of the North West Forest Plan (NWFP).

As a long-standing conservation organization, we appreciate the principles of the NWFP, creating a balance between the protection of endangered species such as the Northern Spotted Owl and economic drivers. We also appreciate the tremendous work that the US Forest Service (USFS) has done as the stewards of the plan and the work identifying the five needs within the review.

However, we feel that there is a sixth need that has not been fully addressed in any of the options, which is the ***unprecedented decline in bird populations across the US***. This has been acknowledged by the US Fish and Wildlife Service (USFWS) and has resulted in proposed USFWS management programs designed to address the continued decline of the Northern Spotted Owl.

Bird numbers declined by around 33% across the US over a 50-year period running from 1966 to 2016 and evidence from Cornell University's Feederwatch Program confirms that the rate of decline is accelerating with a high probability that US bird populations will have fallen by an estimated 50% between 1966 and 2030(1).

While there are numerous reasons for this decline the biggest issue is loss of natural habitat and therefore while we feel that the NWFP has generally helped, the continued decline of bird populations and especially species indigenous to the NWFP area indicates that we need to move the balance more towards conservation.

Of the four options presented we believe that ***a continuation of the existing plan, Option A, with flexibility to address the various needs*** is the best way forward as the other options provide less protection for trees and natural habitat.

2. Methodology

We do not believe that the US Forest Service is best served by an overly prescriptive approach and that the best way forward is to agree general principles with clear parameters. This submission therefore consists of individual general points and recommendations with two appendices, one detailing scientific sources/notes, and the other focusing on some individual high-risk species and their specific predicaments to help illuminate some of the general points.

We have addressed the specified needs within the points and recommendations. Recommendations are run from a) to m) and are included in the body of this document and also at the end for convenience.

3. Key Points and Recommendations

3.1. Increasing the Protection of Natural Habitat

The 1994 NWFP made impactful steps in the right direction. It laid out a landscape level science-based plan for protecting and restoring old-growth habitat. There is much to appreciate in the conservation elements of the current NWFP. It halted the decimation of mature forests and much of the remaining old growth. It also engendered greater public appreciation for the ecological aesthetic, spiritual, and cultural value of our national forests, and broadening of rural economies.

However, endangered and threatened species' populations have continued to decline, and general bird and wildlife numbers are declining at an accelerated rate as more and more natural habitat has been destroyed within the area of the NWFP. Therefore, more restrictions must be placed on protecting natural habitat if there is any hope in preserving endangered species and wildlife generally.

This can be addressed in a number of ways. For example, significant tracts of old-growth forest which were not included in the Late-Successional Reserves (LSRs) and so are still open to logging in the "matrix" areas, could be designated as LSRs. Further restrictions would also prevent the extensive network of logging roads from expanding into ecologically sensitive areas.

There is also a need to consider the indirect impacts of further habitat loss, even from thinning, and the construction of access roads. The creation of more access roads to support logging activity inevitably leads to greater roadkill of birds and all other wildlife as well as creating wildlife disturbance through the presence of humans using, maintaining, and repairing access roads. Thinning of forests with the accompanying decreased canopy cover also increases predation negatively impacting a number of species. While raptors may initially benefit from increased predation opportunities a major loss of prey species will disrupt sustainability.

Recommendations:

a) Restrictions on logging should be maintained and where appropriate, more restrictions should be put in place including in the matrix areas.

b) Consideration should be given to lowering the age at which trees should be protected to perhaps 70, rather than increasing the age from 80 to 120 years as proposed in Alternatives B and D.

3.2. Greater Focus on Endangered/Threatened Species

The NWFP put an end to over a century of unsustainable timber harvest that degraded streams, destroyed habitats, and disrupted the natural history of Marbled Murrelets, Northern Spotted Owls, Red Tree Voles, Pacific Marten, salmonids, and other threatened species. These species have not recovered, and some are even closer to extirpation now than they were in 1994. There is an argument that failure to recover sustainable populations of these species lies not in the NWFP doing too much, but in the federal agencies' being able to do too little under the plan either through lack of flexibility or clarity.

The NWFP should be seen as a minimum protection framework, but Government agencies must have **more flexibility to increase the protection level for specific species in specific areas**.

Recommendations:

c) The NWFP should serve as a minimum standard, allowing Federal agencies the flexibility to **increase the level of restrictions in specific areas to provide protection for individual species, particularly Marbled Murrelets, Northern Spotted Owls, Red Tree Voles, Pacific Martens, salmonids, and other threatened species**.

3.3. Addressing Wildfire Resistance and Resilience

Current science indicates that forests with historically long fire frequency intervals, like the Pacific Northwest(PNW)'s moist forests, do not suffer as a result of fire suppression and will not benefit from fuel reduction.(2) In fact, it is the exact opposite, fire severity may be reduced by forest growth and the absence of fire. As time passes and forests grow, canopy closure increases cooling the microclimate (3) and reducing growth of hazardous understory ladder fuels. (4) Additionally, tree bark thickens, and roots grow deeper providing stronger fire resistance in individual trees (5), (6). Altering natural fire regimes by logging and fire management practices in moist forests can have significant negative effects on fire-resistant biodiversity, particularly in ecosystems where wildfires have historically been rare (7).

Fire frequency intervals in moist Pacific Northwest forests are typically low even when including the recent 2020 fires which were larger than past fires but were remarkably consistent with historical fires (8). Reports from the early 1900s, along with paleo- and dendro-ecological records, indicate similar and potentially larger wildfires over the last millennium. Moreover, fire

severity is predominantly low to moderate with high severity fire remaining relatively rare (9). Finally, because we cannot reliably predict where and when fire will occur, and vegetative recovery is generally vigorous, fuel treatments (logging and thinning) intended to modify fire behavior must be extensive and repetitive (forest-wide management zones). This is not economically or logistically feasible, and conflicts with other objectives, particularly in LSRs, where it would have broad negative impacts on many forest species, in particular, closed-canopy dependent species like Northern Spotted Owl and Marbled Murrelet. Also, in many cases, "fuel reduction logging," especially when targeting canopy trees, will increase fire hazard as it makes stands hotter, drier, and windier (10) and stimulates the growth of understory ladder fuels. Yet, this is what some of NWFP amendment options propose in moist forest to "create wildfire resistance and resilience."

Recommendations:

d) Identify and prioritize all ecosystem services in the context of all values, public input, and not just economic sustainability of timber harvest.

e) None of the alternatives should include forest-wide fire management zones in moist forests. Fire management only needs to occur within the fire danger or "ignition zone" near at-risk communities and other human infrastructure. The most effective way to reduce the threat of wildlife to communities is to treat fuels in the immediate vicinity of homes, buildings, and other vulnerable infrastructure. Reducing fire hazard within 300 feet of infrastructure(11), but outside of this "ignition zone" ecological goals should take priority. USFS should focus resources on community preparedness and protection, not on large-scale thinning projects across federal lands.

f) Canopy trees should not be removed to reduce fuels. Such actions, which have been taken before in the NWFP area (12), degrade closed-canopy and late-successional species habitat. This includes ESA listed species like the Northern Spotted Owl but also Northern Goshawk, Pacific fisher, Pileated Woodpecker, and many other species.

g) Fuel breaks may be justified on a small scale and directed primarily at protecting communities and infrastructure, but large-scale ones would significantly degrade habitat and negatively impact wildlife.

3.4. Climate Change and Carbon Sequestration

There is an opportunity to make real gains in sequestering carbon in our Pacific Northwest forests. Moist forests in the Western US have the potential to sequester up to 5,450 Tg CO_2 equivalent (1,485 Tg C) by 2099, which is up to 20% of the global mitigation potential previously identified for all temperate and boreal forests, or up to 6 years of current regional fossil fuel

emissions. A single big tree can add the same amount of carbon to the forest within a year as is contained in an entire mid-sized tree (13),(14). Restricting harvest on public lands increases net ecosystem carbon balance significantly (15). Moist Pacific Northwest forests will be more effective in the fight against climate change if we protect accumulated carbon stocks in older forests and reduce harvest levels(16),(17). None of the Alternatives in the NWFP Amendment EIS make any real progress on carbon sequestration and in fact backtrack on what could be gained.

Under the general banner of climate change there are other issues to consider within the NWFP area particularly the impacts of the logging road network, and any extensions to the network, which could negatively impact stream stability; water quality; hilltop stability; aquatic and terrestrial wildlife habitat; soil productivity and riparian vegetation and floodplain.

Recommendations

h) The benefits of carbon sequestration should be fully considered and acted upon.

i) USFS should proactively conduct broadscale estimates of indirect and cumulative impacts of increased logging and associated road networks on downstream riparian habitat, stream stability, water and sediment supply, flood frequency, soil productivity, aquatic and wildlife habitat, and species diversity.

j) The impacts of increased logging and increased road density on birds, mammals, amphibians, fish, insects and pollinators, people, and on terrestrial/aquatic habitats need to be identified and evaluated. Many of these parameters have existing broad-based models and equations that allow predictions in trends based on changes in area and density of dirt roads and changes in forest cover. Many models do not require high levels of site-specificity to predict trends.

k) Going forward the NWFP must consider and seek to anticipate environmental trends, and the impacts highlighted above.

l) The NWFP must also factor in consideration of other climate change factors including, but not exclusively:

- Noise pollution.
- Sediment production, and changes in nonpoint sediment sources affecting water quality, sediment routing, and its storage.
- Road-related runoff, changes in infiltration, and downstream extent and frequency of flooding.

- Increased fire ignitions due to increased access by humans.
- Changes in snowmelt on road surfaces and infiltration from compacted road surfaces.
- How increased road density will be influenced by increased rainfall intensity predicted from climate change.
- Changes in ground water storage, base flow to streams, potential changes in the distribution and extent of perennial, intermittent, and ephemeral flow, and expected changes in wetlands intersected by or adjacent to roads.
- Changes in the amount of available productive forestland due to conversion to road, especially as could be affected by increasing drought frequency predicted by climate change.
- Changes in slope stability as affected by road cuts and fills on steep hillsides, increasing risk of other destructive natural disasters such as avalanches and mud/rockslides
- Changes in downstream channel stability, caused by changes in flood frequency that affects pools depths, pool/riffle ratio, hydraulic geometry, width of riparian corridor.
- Carbon sequestration and future timber yield and productivity (trees do not grow on maintained haul roads)
- Economic costs to water districts, due to increased sediment supply that affects water quality and reduces storage capacity of reservoirs at a faster rate.
- Cumulative impact.

3.5. Protecting Ancient Woodlands and Sustainability

The original NWFP was adopted due to the growing concern that aggressive logging of mature and old-growth forests since World War II was not sustainable and that we were failing to conserve habitat to sustain viable populations of native fish and wildlife. As a result, numerous species associated with old-growth closed-canopy forests became listed under the Endangered Species Act and many more were identified as sensitive “survey and manage” species. A central focus of the current NWFP plan was to protect and restore habitat for these species. Given the continued decline in population for many of these species, any new iteration must extend protections and address any existing weaknesses in the protection plan for species and habitat while allowing sustainable timber harvest.

We have already addressed the need to reduce the age at which trees should be protected which means that the proposed change in timber harvest limit from 80 years to 120 years in moist and 150 years in dry forests in the Proposed Alternative B as well as Alternative D would have dramatically negative impacts on ESA listed species and many other sensitive species. In general, opening the canopy will change microclimate, shift predator dynamics, and cause other impacts that will lead already imperiled species to decline even more rapidly and increase the

chance of extinction both locally and regionally. Mature and old-growth forests were devastated prior to the NWFP being put in place and restoration is a slow process.

We are concerned about the ramifications within options B and D and the devastation to the forests these could cause. If trees older than 150 years are lost due to either natural or fire-related causes, and trees between 80 and 120/150 are removed, there won't be sufficient trees available to become the next generation of old growth (for a much longer time period), especially because they could all be cut if they started to grow after 1875. There is no identification of tree age under the "restored managed condition" that will actually function like a true old growth forest. There is also no logic to increasing the age at which trees should be protected to 120 years old compared to the current plan, which protects trees over 80 years old.

In addition, there is no specific definition or specification of the age classes and sizes of stands, or how they will be reliably identified. There does not seem to be any reporting of accuracy or error on how 'salvage' logging is defined and implemented and whether there is real understanding of how ecosystems work.

Post-disturbance "salvage" timber harvest in both dry and moist forest types further impedes forest progression towards increasingly biodiverse mature and old-growth conditions (18).(19). Removing the standing and downed legacy structure immediately reduces avian and arboreal vertebrate use, while diminishing future snag and wood recruitment. Post-disturbance logging disturbs soil and early seral plant recovery, disrupts foraging and pollination services and decreases native tree regeneration. Salvage operations also increase road redevelopment and use, thereby increasing soil disturbance, functional first order stream density, and serve as vectors for invasive species introduction and their spread, while compromising aquatic habitat conditions and recovery (20).

Recommendations relating to additional restrictions on logging and reducing the age at which trees should be protected have already been made and so these recommendations focus on more specific issues.

Recommendations

m) Salvage operations should be minimized to preserve natural habitat; prevent disruption to wildlife and damage to ecosystems, and in recognition that fallen trees are part of our ecosystem.

n) Old growth woodland must be preserved to prevent the extinction of the endangered and threatened species the NWFP was devised to protect. Appendix 1 provides six

examples of how a reduction in tree protection and increased logging under options B and D would potentially lead to the extinction of several flagship species in conflict with the Endangered Species Act and species recovery plans.

3.6. Incorporating Indigenous Knowledge

The failure to meaningfully engage Tribes and take into account Indigenous knowledge was a failing when the NWFP was created, and we welcome the formal acknowledgement of the value that Indigenous Peoples bring to the preservation and sustainability of our forests.

There is nothing in the original NWFP that precludes USFS from incorporating proposals and initiatives from Indigenous Peoples, or from acting on recommendations that came out of the FAC process and that are currently incorporated into the NWFP Amendment EIS. We are living in turbulent times with the survival of many species on a knife edge and we need to ensure that USFS holds true to their commitments to protecting the sustainability of our endangered species and our forests moving forward.

Recommendations:

o) We recommend the advancement of all Tribal inclusion components presented in each of the action alternatives in the Draft EIS and urge the agency to revise and further expand the Tribal Inclusion section in the Final EIS.

p) Tribal inclusion components should be moved forward independently and not tied to any of the alternatives.

q) A more comprehensive analysis should be undertaken that more accurately discloses the impacts of the proposed Amendment on Tribes (by analyzing impacts on air, water, and ensuring fair working conditions).

3.7. Providing Economic Sustainability and Long-Term National Interest

3.7.1. Economic Sustainability

The original NWFP sought to achieve a balance between conservation and economic progress, and creating a predictable supply of timber and non-timber products derived from logging. Thirty years later the world and the US economy are more nuanced, and timber production is not the only economic driver for our forests. Tourism is now one of the primary economic drivers in the US generating $2.4 trillion per annum (21), far in excess of the timber industry

which, citing its own publications, claims to have a value of $200 billion(22). The Bureau of Labor Statistics identifies that approx. 2.25 million people are employed in the Agriculture, Forestry, Fishing and Hunting industries with only 82,000 employed in the logging industry(23). It is estimated by the Industry Select that around 471,000 people are employed in the entire US Forestry Products sector, including everything from forestry to furniture making, paper production, fuels, and all other byproducts (24). Around 189,000 people are employed in non-logging economic activity (23) related to forests such as hunting and fishing and tourism related employment is a multiple of more than 10 to 1 for every individual employed in the timber industry(23). We make these points to demonstrate that other industries apart from timber production provide significantly greater and sustainable, long-term economic opportunities for the communities within the area of the NWFP and other communities located proximate to NFS land and economically connected to forest resources.

The draft EIS does not consider how expansion of the level of logging and the areas in which logging can be undertaken would adversely impact these other, and more sustainable, areas of economic activity. Outdoor recreation is one of the primary economic drivers in the region, and timber harvest usually requires large area closures during and following implementation that disrupts these recreation activities and access. There are many economic benefits that are gained simply by leaving landscapes intact including recreation, fishing, and water quality. In addition, the USFS needs to include an assessment of the Ecological Services (25) provided by recreational and other opportunities that would be impacted by increased logging described in the NWFP amendment alternatives. The Forest Service must analyze these economic benefits in the Final EIS.

When we discuss the balance of economic and conservation issues it is easy to assume that economic sustainability refers to the timber industry, but as we have demonstrated above the timber industry is a small part of the holistic economic opportunities for communities proximate to our forests and the least sustainable as it exploits a limited resource and should be seen in that light.

3.7.2. Long Term National Interest

The other key assessment is the perceived need to provide a sustainable and predictable supply of timber, and this is where macro-economic considerations come into play.

The Covid-19 pandemic brought issues such as globalism and national interests into sharp relief. It exposed some if the flaws of globalism and the vulnerabilities of countries not being self-sufficient in key areas. At the same time, it also highlighted scarcity issues and that we do not have infinite resources.

In this context, a strong and sustainable US timber industry is critically important, and with a $200 billion GDP contribution(22), the US timber industry is in robust health. However, the key word is **sustainable**. From a long-term perspective, it makes no economic sense to take more timber from our forests and disrupt other industries that generate greater revenues, employ more people, and will be adversely impacted by greater timber harvests. From a long term national interest perspective it is also critical to manage a scarce resource carefully, If we preserve a scarce national resource, like timber, while continuing to import timber products economically from our neighbors that is a more prudent approach from a long term national interest perspective and more beneficial for the timber industry in the long term.

The recent Executive Order calling for the Expansion of American Timber Production may be reconsidered in the light of national economic security and sustainability considerations and may prove to be a bargaining chip to negotiate better economic terms with international timber suppliers.

Recommendations:

r) Evaluate and factor in non-logging economic opportunities for communities proximate to the NWFP area and compare it to marginal increase in timber harvesting.

s) Evaluate potential negative economic impact of any increase in timber harvesting on other more sustainable industries and quality of life for communities within or proximate to the NWFP area.

t)

u) Evaluate national economic security and long-term national interest factors including resource sustainability to establish whether it provides US more national security to preserve a scarce resource and continue to import timber products.

3.8. Definitions and Clarity

It is appreciated that this is a complex issue and that is why clarity is critically important and why some elements need greater definition. For example, how is a 'stand' of trees defined and can the decision of whether to fell or not fell trees be changed by adding to the 'stand.'

How will compliance be monitored, especially in the light of recent reductions in Federal employees? How will Categorical Exemptions (CEs) and Good Neighbor Agreements (GNA) be monitored? GNA agreements create a perverse incentive that can damage, not restore, forests and watersheds, including increasing wildfire risk, which allows states to keep revenues generated from commercial timber sales to do more GNA projects thereby creating a self-perpetuating mechanism which results in targeting larger, older trees because they are the

ones that fetch higher prices. Yet these trees are also the most fire resilient, and they store the most carbon.

Having a plan is important, but it is even more critically important to be able to implement, monitor and manage the plan and for all parties to be clear on definitions.

Recommendations:

v) Definitions of critical terms should be included in the final version of the updated plan including how a 'stand' of trees is determined and how ages of trees are determined prior to any felling.

w) A plan for how the activities and actions of timber companies, planning managers and others involved in the decision to fell trees will be monitored in the light of declining federal employees should be included in the plan.

4. Conclusions

We appreciate that this is a complex issue and once again wish to record our appreciation for the work of the USFS in managing the NWFP and the work that has been done by the committee and the creation of the various Alternatives and the EIS.

The aim of the original plan was to try and balance conservation and economic drivers and in many ways, this has been successful, but the way the world has evolved in the intervening thirty years necessitated a review of the original plan.

We feel that while the Committee did great work, it may have perhaps not fully evaluated the massive decline in bird populations and other species as much of this data has only recently come to light. We also feel that the Committee, understandably, did not fully consider matters of macro-economic strategy and national security, but these issues are critical for finding the right ecological, economic, and national interest balance.

Our focus is always going to be on birds, and our critical consideration is always going to be on the huge decline of bird populations during the time the NWFP has been in place. The accelerating decline of bird populations, including the 67% decline in Rufous Hummingbird numbers(26), demonstrates that the balance needs to shift significantly more in favor of preserving natural habitat and protecting more trees.

During the thirty years the NWFP has been in place the GDP of the US has increased by 275% from $7.287 billion in 1994 to $27.356 billion in 2023 (27). The West Coast, the three States of

California, Washington and Oregon that are covered by the NWFP make up close to half of total US GDP.

This demonstrates that the economy has prospered while natural habitat and bird numbers have declined by well over 33% and so balance must be restored within the NWFP and more restrictions place on logging and more protection given to ancient woodlands, not less.

We have also demonstrated that there are other, more sustainable, economic drivers for communities proximate to the NWFP area than logging. Moreover, these more valuable and sustainable economic activities would be negatively impacted by an increase in timber harvesting.

We have also shown that wildfires will be more prevalent if forests are thinned, and that tribal input is valued and can be accommodated within the existing NWFP.

We have also flagged the long-term national interest and national economic security issue of using up our own scarce resources when an international economic supply is available. It is not in the national interest to use up our own resources now, when the international supply is plentiful and economic, and then we have to import at a higher rate when our resources are exhausted.

For all these reasons it makes economic, ecological, and national security sense to provide more protection for ancient woodlands, trees, and natural habitat within the next iteration of the NWFP.

We have demonstrated that all the needs previously identified, and the national economic security and declining bird population issues, can be addressed by maintaining the existing plan, but adding further restrictions on logging and more protections for trees. Logging should not be extended beyond the current existing areas; the thinning and salvaging in some designated areas should be further restricted or terminated and if anything, the age at which trees should be protected should be reduced from 80 years.

Thank you for the opportunity to submit our suggestions and we appreciate the work of all the government agencies in managing the NWFP and this process.

5. Summary of Recommendations

a) Restrictions on logging should be maintained and where appropriate, more restrictions should be put in place including in the matrix areas.

b) Consideration should be given to lowering the age at which trees should be protected rather than increasing the aged from 80 to 120 years as proposed in some options.

c) Federal agencies should have flexibility to increase the level of restrictions in specific areas to provide protection for individual species and particularly Marbled Murrelets, Northern Spotted Owls, Red Tree Voles, Pacific Martens, salmonids, and other threatened species.

d) Identify and prioritize all ecosystem services in the context of all values, public input, and not just economic sustainability of timber harvest.

e) None of the alternatives should include forest-wide fire management zones in moist forests. Fire management only needs to occur within the fire danger or "ignition zone" near at-risk communities and other human infrastructure. The most effective way to reduce the threat of wildlife to communities is to treat fuels in the immediate vicinity of homes, buildings, and other vulnerable infrastructure. Reducing fire hazard within 300 feet of infrastructure, but outside of this "ignition zone" ecological goals should take priority. USFS should focus resources on community preparedness and protection, not on large-scale thinning projects across federal lands.

f) Canopy trees should not be removed to reduce fuels. Such actions, which have been taken before in the NWFP area, degrade closed-canopy and late-successional species habitat. This includes ESA listed species like the Northern Spotted Owl but also Northern Goshawk, Pacific fisher, Pileated Woodpecker, and many other species.

g) Fuel breaks may be justified on a small scale and directed primarily at protecting communities and infrastructure, but large-scale ones would significantly degrade habitat and negatively impact wildlife.

h) The benefits of carbon sequestration should be fully considered and acted upon.

i) USFS should proactively conduct broadscale estimates of indirect and cumulative impacts of increased logging and associated road networks on downstream riparian habitat, stream stability, water and sediment supply, flood frequency, soil productivity, aquatic and wildlife habitat, and species diversity.

j) The impacts of increased logging and increased road density on birds, mammals, amphibians, fish, insects and pollinators, people, and on terrestrial/aquatic habitats need to be identified and evaluated. Many of these parameters have existing broad-based models and equations that allow predictions in trends based on changes in area and density of dirt roads and changes in forest cover. Many models do not require high levels of site-specificity to predict trends.

k) Going forwards the NWFP must consider and seek to anticipate environmental trends, and the impacts highlighted above.

l) The NWFP must also factor in consideration of other factors including, but not exclusively:

- Noise pollution
- Vehicle hits (birds, mammals)
- Predation (decreased canopy cover and more openings)
- Sediment production, and changes in nonpoint sediment sources affecting water quality, sediment routing, and its storage
- Road-related runoff, changes in infiltration, and downstream extent and frequency of flooding
- Increased fire ignitions due to increased access by humans
- Wildlife disturbance due to increased presence of humans
- Changes in snowmelt on road surfaces and infiltration from compacted road surfaces
- How increased road density will be influenced by increased rainfall intensity predicted from climate change
- Changes in ground water storage, base flow to streams, potential changes in the distribution and extent of perennial, intermittent, and ephemeral flow, and expected changes in wetlands intersected by or adjacent to roads.
- Changes in the amount of available productive forestland due to conversion to road, especially as could be affected by increasing drought frequency predicted by climate change
- Changes in slope stability as affected by road cuts and fills on steep hillsides.

- Increase costs and staffing needs for maintenance and repairs
- Changes in downstream channel stability, caused by changes in flood frequency that affects pools depths, pool/riffle ratio, hydraulic geometry, width of riparian corridor
- Carbon sequestration and future timber yield and productivity (trees do not grow on maintained haul roads)
- Economic costs to water districts, due to increased sediment supply that affects water quality and reduces storage capacity of reservoirs at a faster rate
- Cumulative impact.

m) Salvage operations should be minimized so as to preserve natural habitat; prevent disruption to wildlife and damage to ecosystems and in recognition that fallen trees are part of our ecosystem.

n) Old growth woodland must be preserved to prevent the extinction of the endangered and threatened species the NWFP was devised to protect. Appendix 1 provides six examples of how a reduction in tree protection and increased logging under options B and D would potentially lead to the extinction of several flagship species in conflict with the Endangered Species Act and species recovery plans.

o) We recommend the advancement of all of the Tribal inclusion components presented in each of the action alternatives in the Draft EIS and urge the agency to revise and further expand the Tribal Inclusion section in the Final EIS.

p) Tribal inclusion components should be moved forward independently and not tied to any of the alternatives.

q) A more comprehensive analysis should be undertaken that more accurately discloses the impacts of the proposed amendment on Tribes (by analyzing impacts on air, water, and ensuring fair working conditions).

r) Evaluate and factor in non-logging economic opportunities for communities proximate to the NWFP area and compare it to marginal increase in timber harvesting.

s) Evaluate potential negative impact of any increase in timber harvesting on other more sustainable industries and net impact.

t) Evaluate national security and long-term economic factors including resource sustainability to establish whether it provides US more national security to preserve a scarce resource and continue to import timber products.

u) Definitions of critical terms should be included in the final version of the updated plan including how a ‘stand’ of trees is determined and how ages of trees are determined prior to any felling.

v) A plan for how the activities and actions of timber companies, planning managers and others involved in the decision to fell trees will be monitored in the light of declining federal employees should be included in the plan.

Appendix 1 - Individual Endangered/Threatened Species Notes

1. **Northern Spotted Owls** are forest specialists that have evolved to survive in mature and old growth forests. Raising the threshold for logging from 80 to 120 years would destroy or degrade significant tracts of high quality Northern Spotted Owl nesting habitat. Proposed thinning to reduce fire risk in moist forests is scientifically flawed and would increase the likelihood of their extinction. The proposed harvest, thinning, and associated road construction within some options would further fragment spotted owl nesting, foraging, and dispersal habitat. These activities will accelerate competition from Barred Owls(1). A simple examination of the increasing footprint of Barred Owls demonstrates that they follow humans and as habitat generalists rapidly adapt to and can colonize diverse landscapes. High quality nesting spotted owl habitat (mature, old-growth, closed canopy, complex structured forest) has been shown to help buffer spotted owl populations from the impacts of barred owls(2). Weins et al (2014)(3) similarly provides evidence that Northern Spotted Owls and Barred Owls are more likely to co-exist when suitable mature and old-growth habitat is more abundant, so any loss of suitable habitat increases the extinction risk for spotted owls.

Older forests used by Northern Spotted Owls functioned as fire refugia during large wildfires over the past 30 years(4) and mixed- and high-severity wildfires have actually shown an overall benefit for Northern Spotted Owl foraging habitat(5),(6).

Based on the body of science, including information provided above, we need to prioritize retention of such high quality old-growth, mature, complex structure habitat in conformance with “Need #3”. Instead, the Proposed alternative and Alternative D directly conflict with habitat needs of the Northern Spotted Owl. These alternatives also conflict with the Recovery Goal and Recovery Objectives (in particular Objectives #2 and #3) of the Revised Recovery Plan for the Northern Spotted Owl(7). Specifically, timber harvest recommendations in the NWFP amendment EIS contradict Recovery Criterion #3 (Continued Maintenance and Recruitment of Spotted Owl Habitat) as well as “Conserve older stands that have occupied or high-value spotted owl habitat as described in Recovery Actions 10 and 32.”

Sources

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2. Marbled Murrelet - Raising the threshold for logging from 80 to 120 years would destroy or degrade significant tracts of high-quality Marbled Murrelet nesting habitat. Proposed thinning to reduce fire risk in moist forests is scientifically flawed (see Need #1 discussion above) and will accelerate fracturing of nesting habitat as well as create greater openness in the canopy thus increasing damaging edge effects. Road building needed to carry out these projects will allow increased human access to critical habitat bringing an increased risk of human caused wildfire and corvid predation.

The vast majority of Marbled Murrelet nests occur in older-aged stands. Relatively few nest in trees / stands younger than 80 years old(1),(2). Twenty-five of 37 nests (~68%) were found in 80–165-year-old trees in Oregon (Nelson and Wilson 2002). Thinning in suitable MAMU nesting habitat in excess of more than 70% of trees harvested can open up stands to corvid penetration (pers comm. Marbled Murrelet expert) leading to higher nest predation rates.

In conclusion, the Proposed Alternative (B) and Alternative D clearly would create conditions to accelerate the extinction of the Marbled Murrelet which therefore conflicts with the intentions of the listing of this species as Threatened under the Federal Endangered Species Act. It would also conflict with both Washington and Oregon's listing of the Marbled Murrelet as Endangered under each state's respective Endangered Species Act designations. Finally, it would conflict with the MAMU Recovery Plan.

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3. Red Tree Vole- conservation status is near threatened with a decreasing population. The North Oregon Coast population is a candidate species for listing under the federal Endangered Species Act. They are one of the most important prey items for the federally threatened Northern Spotted owl. Red tree voles are an arboreal rodent that is largely dependent on dense canopy old growth/mature habitat(1),(2) for all phases of their life cycle. They are dependent on interconnected tree canopies(3) for foraging, dispersal, and concealment from predators and rarely come to ground and will not cross open areas(4). Timber harvest can significantly impact red tree voles by altering their habitat. Thinning increases the vole's vulnerability to predation and reduces the availability of nesting substrate(5). Linnell et al (2013) determined that red tree vole habitat declined by 18% between 1994 and 2022, and that habitat change was the highest (at 65%) in coastal regions where timber harvest, rather than wildfire, was the prevalent disturbance(6). The red tree vole is also adversely impacted by habitat loss and fragmentation. Johnston & Moskal (2017) noted that the vole tends to avoid forest edges. Due to this avoidance of edges, activities such as logging road construction that cause habitat fragmentation likely make stands unsuitable for voles(7). Timber harvest and resulting fragmentation can remove or modify the canopy structure, create gaps that hinder vole movement reducing connectivity, and large trees that are crucial for red tree vole nesting and survival. Changes in microclimate are associated with logging

and thinning and potentially making it less suitable for voles for nesting and other essential activities. Lack of available nesting sites due to displacement from logging can lead to increased mortality and reduced reproductive success(8).
In conclusion, the Proposed Alternative (B) and Alternative D clearly would create conditions to accelerate the extinction of the red tree vole which are currently a species in consideration for listing under the Endangered Species Act. Within the red tree vole range, USFS should refrain from harvesting in stands older than 80 years old and minimize thinning activities to retain closed canopy and connected habitats for the red tree vole.

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4. Coastal (Humboldt) Marten - this species is listed as Threatened under the federal Endangered Species Act and is also listed on California's state ESA. They have been wiped out from 95% of their historic range(1) with fewer than 500 individuals thought to be remaining. Humboldt Martens are sensitive to habitat fragmentation or loss of high-quality landscape. In particular, clearcut harvesting will reduce population viability ≥40 years if >25 to 30 percent of the forest is composed of regenerating stands(2). The use of thinning to reduce fuel density can also make the maintenance or regeneration of a shrub layer challenging. Shrub and dense canopy cover(3) are key features this species depends on, as well as the availability of denning and resting structures (large-diameter trees, snags, and logs). Coastal martens dispersal is also impeded by regenerating (clearcut) landscapes moving shorter distances and suffering higher mortality rates.

In conclusion, some of the planned forest management practices of the Proposed Alternative (B) and Alternative D threaten these important features and life history requirements described above and would increase negative impacts to this federally threatened species. USFS should refrain from

harvesting in stands older than 80 years old and minimize thinning activities to retain closed canopy and connected habitats and retain large, downed woody debris.

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5. Humboldt's flying squirrel (originally the northern flying squirrel now a separate species in the NWFP area) - "[They are a] keystone species that disseminate the spores of ectomycorrhizal fungi symbiotic with pine trees and are preyed upon by a variety of vertebrate predators. Substantial research has shown that these squirrels tend to be most abundant in naturally regenerated forests >100 years old (old growth and younger mixed-age forest with legacies from old growth), whereas abundance in second-growth forests is highly variable and often quite low"(1). Humboldt's flying squirrels are also a main prey item of the threatened Northern Spotted Owl(2). Alternative B and D would negatively impact the survival of Humboldt's flying squirrel. Thinning and prescribed burning in ponderosa pine and dry mixed conifer forests puts the flying squirrel at risk by reducing forest canopy, woody debris, and the diversity or biomass of understory plants, truffles, and lichens(3),(4). Moreover, this species is largely dependent on closed canopy cover, so it is susceptible to negative impacts from thinning and the loss of suitable nesting sites, especially tree cavities, are a limiting resource for this species(5). Much of the northern flying squirrel's food sources rely on large, downed woody debris (for truffle production), shrub understories, and large trees thus the loss of these habitat features also threaten the survival of this species(6).

In conclusion, the Proposed Alternative (B) and Alternative D clearly would create conditions that would negatively impact the Humboldt's flying squirrel. Within the range of this species, USFS should refrain from harvesting in stands older than 80 years old and minimize thinning activities to retain closed canopy and connected habitats and retain large, downed woody debris.

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6. Great Grey Owl - f Great Grey Owl (GGO) is listed as endangered under the California ESA and a species of conservation concern in Oregon. GGOs prefer older and mature forests that have high canopy closure and are nearby to open stands and meadows for foraging(1),(2). The Oregon Department of Fish and Wildlife (ODFW) designates the Great Grey Owl (GGO) as an Oregon Conservation Strategy Species, and it is among 5 owls in the State in need of conservation help. The Oregon State listing is Sensitive and GGOs are uncommon to rare inhabitants of Central Oregon forests that have adjacent montane meadow openings usually above 3,000 feet elevation in the East Cascades ecoregion. ODFW considers the "special needs" habitat to be late-successional forests for nesting and grassy openings for foraging and large-diameter snags or large-branch structures are needed for nesting. Great Grey Owls have specific requirements for fledglings that cannot fly for 1-2 weeks after they fall from the nest. Leaning snags and understory cover are essential for their protection against predators during this time. Yet, these latter two elements are typically removed or modified during fuel management treatments and therefore fledglings would be put at high risk for survival. GGOs are known to require high snag density and ideally canopy cover of at least 80% (3) around nest sites. GGO do not make their own nests and in Central Oregon GGOs they use abandoned raptor nests in mature, well-shaded, ponderosa pine forests, as well as snags. The overhead dense canopy protects the nest from predation by raptors, ravens, and other owls. Reductions in large mature trees between 80 and 150 years old (especially those with available abandoned raptor nests) and in density of canopy cover will significantly reduce the availability and quality of nesting habitat.

If activities of logging, thinning, brush mowing, prescribed burning, pile burning, understory clearing, thinning, and limbing are conducted in the unique forest habitats occupied by the GGO there could be irreparable harm to this species because the direct and cumulative impacts of these activities are not presently understood. In addition, loss of the "special needs" habitat mosaic has already been identified to adversely affect the GGO and ODFW has identified two data gaps in need of more information to improve conservation efforts. They are 1) assessment of the value of harvested forest clearings that are used as GGO foraging habitat, and 2) evaluation of the effects of rodent control on GGO.
The disturbance and compaction created by logging and roadbuilding will also have negative impacts, as could the drying of wet and moist meadows resulting from the opening of stands. In some areas, this species does not appear to be significantly impacted from forest fire so thinning and fire prescriptions to "manage" habitat to minimize fire may not be necessary.

In conclusion, the Proposed Alternative (B) and Alternative D clearly would create conditions that would negatively impact the Great Gray Owl nesting habitat.

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