These comments are submitted in response to the request for public comment on the Northwest Forest Plan Amendment #64745.

This is an important time to begin to address the changed conditions that have adversely affected the progress achieved by the Northwest Forest Plan (NWFP). The changed conditions that are most important include:

- The increase of wildfires and wildfire damage in NWFP areas
- Increased scientific knowledge acquired concerning endangered species, forest ecology and the effects of climate change
- The changed economic situations of communities within the NWFP area

The effect of wildfire experience on the NWFP

Wildfires generally fall into two categories: 1) human caused fires and 2) naturally occurring fires, mostly started by lightening. Since human activities in the forests and lightening cannot be removed from the forest, any analysis of fires must begin with the recognition that fires are an inevitable part of the NWFP forests. The future NWFP needs to learn to live with fires; adapting and avoiding rather than trying to suppress except in special circumstances. What Obi Kaufmann says, in *The Coasts of California* applies to all Northwest forests: "the difference between surviving fire and living with fire *** is the size of individual fire events." Fire suppression has not worked, we need to adapt to fires, to figure out ways to avoid fires or lessen their intensity. And we need to stop justifying any forest management activities by saying that since fire suppression has not worked in the past, we need to undertake selected forest management activities to prepare for or facilitate fire suppression.

Point one: The NWFP needs to recognize that forests are fire stored in the form of trees, and adapt to this reality.

Adaptation can consist of several changes:

1. focus on fire avoidance for those fires that are human caused
2. identify means to reduce the intensity of fires
3. increase the area of the forests under protection so that the ecology of these forests has enough scope to survive the occurrence of fires even as they might increase in number

If the Forest Service and the BLM are prepared to recognize that protecting the northwest forests involves more than regulating logging, there are things that could be done to address some of the worst wildfires. One example would be changing the terms of private, commercial access to the forest. For example, powerlines crossing federal lands are there by permission. Requiring the immediate implementation of modern technologies that shut off power immediately in the event of a powerline break and the implementation of other protections against sparking wildfires would help reduce wildfires. There are other steps that could be taken to protect the forests from human caused wildfires, once the right attitude is developed.

One of the main concerns about wildfires is the potential for damage to structures within and near the forests. Scientific studies have shown that the danger of structural damage can be reduced or avoided by structure owner's hardening the structure and taking simple steps to remove vegetation. If the Forest Service and the BLM were to engage in an educational program concerning how to harden structures and make them fire safe, by for example removing trees and brush near the structures, the

risk to these structures would be reduced, especially if the Forest Service and BLM also informed the structure owners that the practical realities of forests in an era of climate disruption means that structure owners who choose to build or remain adjacent to forests must assume their own responsibility for responding to wildfire dangers.

Point two: proper management of the forests can change wildfire behavior. While it is anecdotal evidence based on observation of a few fires, it seems to this observer, that one of the things that contributed to small fires becoming large fires is the presence of monocultural plantations.

The announcement of the amendment process for the NWFP discusses mature forests and old-growth forests. To properly address northwestern forests the several other categories of forests: 1) recently logged areas, which rapidly develop fire conducive undergrowth; 2) plantations, which are planted at the same time and usually with only one species of tree in crowded conditions; 3) naturally regenerating young forests; 4) maturing forests; 5) mature forests; and 6) old-growth forests. The classifications reflect increasing mature forest tree canopies. The usual fire discussion is based on the idea of fuel load. This is a misnomer, because not all fuel load is the same. The classifications set forth here are a true measure of combustible fuel. There may be more theoretical fuel in an old-growth forest, but the reality is that, as the forests move up the categories set forth here less of the easily combustible fuel is consumed in a fire, no matter how intense the fire.

Comparing fires in the coast range of Oregon with fires in the Cascades help clarify the matter of what is meant by combustible fuel loads. Coast range forests may have more fuel, but fires are usually smaller and less intense. Because the forests are damper, the combustible fuel load is less.

I believe that these distinctions are important in terms of fires and fire intensity. Fires can occur in any of these forest types. Super wildfires of the type that have recently changed our attitudes about fires are the result of many factors: climate change; weather conditions, such as the wind, recent rains, or the lack there of; and the amount of combustible fuel outside the mature forest canopy. While many things affect the amount of combustible fuel, this is the fire severity determinative factor that is most susceptible to human activity, thus it is the factor that can most easily be manipulated in efforts to avoid severe fires.

Arbitrary classification of forest fuel load by looking at the amount of woody material is inappropriate. While old-growth forests may contain the largest amount of woody material, old-growth forests actually burn less in most fire conditions than do younger forests, especially plantations. I am suggesting that the fire likelihood of forests is measured by combustible fuel, by which I mean fuel that is likely to burn under any conditions and likely to contribute to a fire becoming increasingly intense. Low level, slow moving fires that encounter clearcut areas that are beginning to be covered with brush are likely to burn quickly through these areas. Low level, slow moving fires that encounter plantations are likely to burn quickly through these areas, and perhaps to move from a ground fire to a crown fire that can then jump to more mature trees that would be able to survive the slow moving fires without danger.

Therefore, the more logging in any particular area, the more likely this area is to suffer forest damaging fires in the future, and the more likely this area is to contribute to superfires. Preservation of the forest, including preservation of the possibility of taking timber out of the forest depends on controlling cutting of trees so that the forest as a whole moves away from the categories of forest that intensify fires. The arbitrary division between matrix and LSR lands set forth in the NWFP does nothing to take

advantage of, is counterproductive to, any attempt to protect forests of the NWFP from the increased danger of fires.

If the NWFP accepts that fires are inevitable, then the question is; how can the NWFP be changed so that, even in an era of increasing fires, then NWFP goal of preserving a forest ecology that will support the endangered and threatened species that inhabit NWFP forests can be met? The answer is obvious: the area of the forest that can support the endangered species must be expanded so that the occasional reduction of the mature forests (the areas that support the endangered species) by fires does not further endanger the species. This means, simply put, that the distinction between LSR areas set aside to preserve endangered species and Matrix areas where no attempts are made to preserve the ecology necessary to nurture endangered species must end. All areas of the NWFP that can support the endangered species must be preserved. Further, all areas of the NWFP forests that can be, should be managed in a way that will move these areas toward the kind of maturity that will support endangered species.

It is an added bonus that this management change in the NWFP will move all these areas away from the most fire conducive conditions. This management change, by reducing the severity of wildfires preserve the most number of trees for future uses required of the NWFP. Further, this management change will also best enhance the use of the NWFP forests as carbon storage areas.

It is important to note that such a change in direction need not mean an end to logging in the NWFP areas. The legacy of logging in NWFP forests will take years, probably decades, before the appropriate conditions of maturing forests that maximize fire avoidance and fire reduction and endangered species protection are achieved. It could be argued that, especially in terms of carbon consumption reduction, the best way to achieve this goal of ecologically balanced forests would be to allow "natural thinning," absent logging. However, there are offsetting factors that argue in favor of allowing careful thinning through logging. This would allow periodic thinning logging in a manner that preserves the forest canopy. Two of these factors would be 1) advancing the general mandate of the Forest Service and the BLM to manage the nation's forests in a way that produces commercially usable forest products, and 2) by advancing the schedule of thinning and thus the reduction of the fire inducing combustible fuel load, there would probably be some more rapid advancement of the goal of fire management.

Examining the fire history during the years of the NWFP provides several lessons. The fire lessons learned from the first decades of the NWFP are:

- Fire is a natural and unavoidable part of the NWFP forests and people need to learn how to adapt to these facts.
- The attempts to control and suppress wildfires have instead contributed to worsening of fires within the NWFP area.
- Fire avoidance (fire mitigation) actions are likely to be more productive than fire suppression. These include such steps as
    - ending clear cutting and monocultural plantations
    - decreasing logging as the age of the forest increases,
    - thinning in a manner that does not increase the combustible fuel load by maintaining the canopy to reduce undergrowth, and
    - regulating human created activities and presences in the forest to avoid human caused fires as much as possible.
- Distinctions between Matrix and LSR lands do not help, in fact probably contribute to increased fire activity in all areas.

- Any forest management activities that decrease the mature forest canopy contribute to fires and fire intensity.
- Forest management techniques within the NWFP areas must , in order to achieve the goals of endangered species protection, adapt to increased fire threats by maximizing and increasing areas of mature forests that form the ecological environment conducive to endangered species surviving and thriving.

Effect of changed knowledge on amendments to the NWFP

The consideration of possible amendments to the NWFP in light of increased scientific knowledge acquired concerning endangered species, forest ecology and the effects of climate change is potentially of too broad a scope for any single comment to encompass, especially for one who is not conducting any scientific investigations. That said, this commentator is aware of several scientific points that deserve careful consideration.

Recently Suzanne Simard has written a book called *Finding the Mother Tree.* This is a popularized report of considerable scientific work done by Ms Simard and others concerning the relationship between the fungi in forests and the trees in the forest.

There are several lessons to be taken from this research. Younger and older trees are interconnected, and younger trees do better when they are supported by older trees nearby. Trees of different species are interconnected and provide support for each other, especially at different times of the year.

These findings mean that logging in the northwest forests must change if the protective intent of the NWFP is to be maintained. Clearcutting, no matter how it is labeled, must end if the forests are to do their best. Monocultural plantations are the equivalent of ecological deserts and must be eliminated. Biodiversity in all forms is a necessary part of the northwest forests, which means that any species, for example the Northern Spotted Owl (NSO), can really only survive and thrive if all species, flora and fauna, are protected.

Scientific studies of the NSO shows that its numbers are declining within the NWFP area. This makes it clear that the distinction between LSR lands, designated to be NSO habitat, and Matrix lands, where cutting is less restricted, is not conducive to the protection of the NSO. A related observation specific to the NSO is that if the NSO is to survive the forests, the forests must contain NSO supportive land (NSO habitat) beyond the land immediately surrounding identified NSO pairs. The lessons here is that all the Matrix land needs to become LSR land.

Scientific studies of the NSO show that the barred owl is a major factor in the decline of the NSO. To the extent that the NWFP is tied to the survival of the NSO, it would be contrary to the purpose of the NWFP to allow it to expire because the barred owl has eliminated the NSO. Therefore, the NWFP must be amended to include a program to limit or exclude the barred owl from the NWFP area.

Scientific studies have highlighted the importance of forests, and northwest forests in particular, as elements for carbon storage and even carbon dioxide removal. There have been recent numerous suggestions that logging trees is carbon neutral because of the residual carbon stored in the wood turned into lumber and then into houses. Scientific investigations have debunked these fictions. Whatever its other values, the evidence is clear that logging and milling emits far more carbon than remains in the wood used for construction.

Studies have also shown that old growth forests contain more stored carbon, and continue to sequester more carbon than any other form of forest. Old-growth forests store carbon not just in the trees, but in the ground as well, as the ground absorbs downed trees. Cutting trees releases more carbon than is left in the lumber; cutting old trees releases carbon that will not be regained until the mature forest returns hundreds of years after the trees are cut down. There is no such thing as sustainable logging of a forest from a climate change perspective.

Changed economic conditions in NWFP areas

When the NWFP first came into existence, the Pacific Northwest was undergoing significant economic changes. These forces of economic change, and others, have continued to change the economies of the Pacific Northwest. These changes, in turn, mean that many of the foundational directions of the NWFP should change.

The timber industry in the Pacific Northwest has changed since the creation of the NWFP. The relative importance of the timber industry in the Pacific Northwest has changed since the creation of the NWFP.

The timber industry has grown much more automated, with a consequent decline in the number of employees in the industry. This decline in employment has happened while the relative number of board feet harvested has not significantly changed. This means that, regardless of other economic changes, the economic importance of the timber industry has declined significantly since the NWFP. The economy of the Pacific Northwest has also diversified since the creation of the NWFP, so that the relative importance of the timber and lumber industry is much less than it was at the time of the NWFP.

The number of logs exported from the Pacific Northwest has increased over the decades that the NWFP has been in development and in place. While there are currently limits on the export of logs from US government owned land, the amount of exported logs is still very relevant to the question of the economic importance of the NWFP. Each exported log is a determination by the industry that it does not need that log to sustain its place in the economy of the Pacific Northwest. While the industry certainly profits from exporting logs, the economy of the NWFP area experiences little or no benefit.

All these changes mean that the economy of the Pacific Northwest is less dependent on logging and timber production from federal lands. A decrease in the number of trees felled mean little to the economy of the Pacific Northwest.

The recreation industry and recreational activities are much more important in the current NWFP area than is the timber industry. A change in the recreational attraction of the NWFP forests will enhance the economic importance of these areas. Economic studies of the effect of enhanced natural recreational areas show that the local economies benefit not only from direct recreational attractiveness, but also from non-recreational business who choose to locate near the natural recreational attraction. Old-growth forests are the most recreationally attractive aspects of the NWFP area.

An amended NWFP that increased the protection of all the forests of the Pacific Northwest by steps that will assure the maximization of mature and old-growth forests that would reduce the economically unimportant cutting of trees but would further increase the recreational attractiveness of the Pacific Northwest area. Such a change would make the economy of the area and the communities associated with the NWFP more sustainable and stable.

Conclusions

The original Northwest Forest Plan did partially achieve its goals:

- It did set aside some stands of old growth trees in an effort to protect the Northern Spotted Owl.
- It established Late Successional Reserves (LSRs) to allow some maturing trees to become old growth, and protecting some stands of old-growth.
- It brought the issue of protecting species directly into the discussion of logging on federal lands.
- It opened the door to considering other uses for the forest other than just cutting trees.

The Northwest Forest Plan needs revision:

- The Northern Spotted Owl has continued to decline in population in part because of inadequacies in the NWFP, in part because of changed conditions, such as the invasion of the barred owl.
- The rate and scope of wildfires has increased despite or because of massive suppression efforts
- While the Marbled Murrelet has been included in some parts of the NWFP, other endangered species in northwest forests have not been considered in setting forest policies
- Scientific knowledge about the ecological balance of forests, about the nature and causes of fires, about the importance of forests in solving the climate crisis and the carbon impact of logging and maturing forests has advanced since the NWFP was drafted.
- The economic situation of communities in the NWFP area has changed significantly.

In order to make good on its original intent, the Northwest Forest Plan must be improved in these ways:

- The category Matrix lands must be eliminated: all forest lands need to have the protections of limiting or eliminating logging where logging will negatively impact endangered or threatened species.
- The true impact of logging on forest lands must be considered: the carbon imbalance, the economic imbalance caused by the loss of recreational attraction, and the loss of the cultural value of being able to know and visit old-growth and mature forests.
- Contemporary scientific findings about the ecological balance of forests showing that sustainable forestry does not mean just replanting and soon thereafter logging again must be integrated into future logging regulations.

Changed conditions mean that the NWFP needs updated.

- Additional scientific information demonstrates that the most productive steps to protect the NSO and other threatened and endangered species associated with the NWFP area would be to make all areas subject to the NWFP have the same protections of LSR designation.
- Recent experience with wildfires suggests that the best possible reaction to the changed fire regime is to increase the amount of natural stands of maturing and old growth forests and institute behavioral and regulatory behavior in and around the northwest forests.
- The changed economic conditions in the NWFP area mean that the best course of action to promote a sustainable economic situation in the area would be to enhance the recreational

opportunities associated with the NWFP area which can best be achieved by increasing the scope of mature and old-growth forests of the area.

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